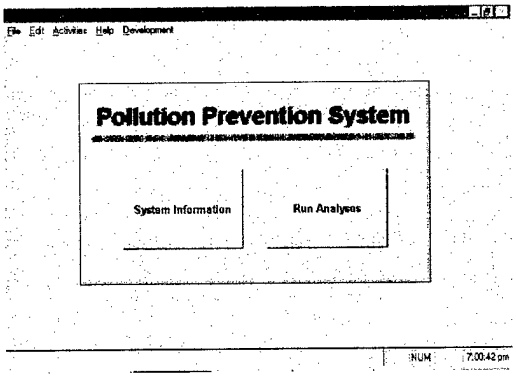
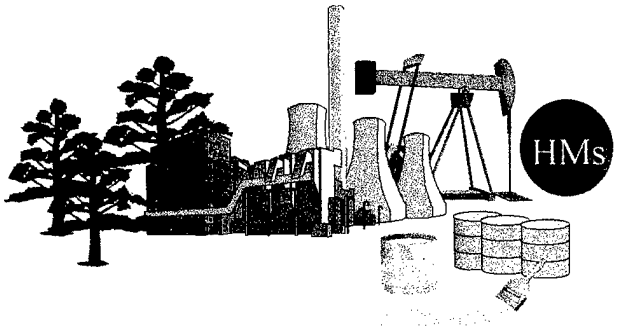
Prepared for:
Naval Supply Systems Command
Code 424
Mechanicsburg, PA

RESULTS OF THE FEASIBILITY ANALYSES PERFORMED TO IDENTIFY OPTIMUM VALUE POLLUTION PREVENTION ALTERNATIVES FOR PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, NEW HAMPSHIRE

FINAL TECHNICAL REPORT





Prepared by:
A.F. Meyer and Associates, Inc.
1364 Beverly Road, Suite 201
McLean, VA 22101

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	31 Dec 96	Final: 07/01/96 - 12/31/96

4. TITLE AND SUBTITLE
Final Technical Report - Results of the Feasibility Analyses performed to identify Optimum Value Pollution Prevention Alternatives for Portsmouth Naval Shipyard, Portsmouth, New Hampshire

5. FUNDING NUMBERS
Contract No.:
N00600-95-D-0290

6. AUTHOR(S)
Christine M. Palese

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
A. F. Meyer and Associates, Inc.
1364 Beverly Road, Suite 200
McLean, VA 22101-3627

8. PERFORMING ORGANIZATION REPORT NUMBER
DIN: 14-2-5/#03

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Naval Supply System Command
Code 424
5450 Carlisle Pike, P. O. Box 2050
Mechanicsburg, PA 17055-0791

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

Policies and procedures set forth in Executive Order 12856, OPNAVINST 5090.1B and SECNAVINST 5000.2A require the Navy to select and use the least hazardous materials to meet mission operations and maintenance needs. The Naval Supply System Command (NAVSUP), as Executive Agent for the Navy Hazardous Material Control & Management Program, is responsible for providing Navy-wide guidance for a uniform approach to the "up front" reduction of hazardous materials, consistent with engineering suitability, operational needs, and cost considerations. This Technical Report provides the results of feasibility analyses performed at Portsmouth Naval Shipyard, Portsmouth, New Hampshire, to identify Optimum Value Pollution Prevention Alternatives for 17 status quo hazardous materials surveyed on-site. Additionally, this report discusses the results of a separate feasibility analysis performed to research and analyze 655 hazardous or non-hazardous alternatives for gaseous ammonia used in the aperture card reproduction process, and fluorescent light bulbs. These studies were performed to ensure that management controls are applied to the procurement and use of less hazardous materials. These studies support DoD's mission to prevent pollution, protect the environment, and protect natural resources by reducing or eliminating pollution at the source.

14. SUBJECT TERMS	15. NUMBER OF PAGES
P2 Hazardous Material Management P2 Management Tool	16. PRICE CODE

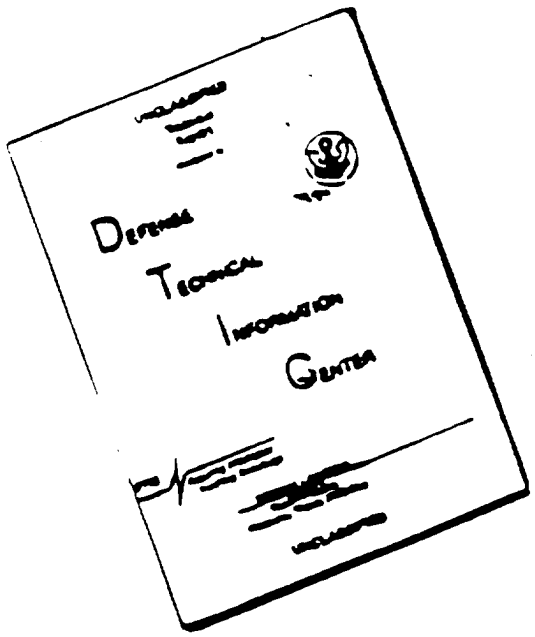
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18
298-102

19970213 072 DTIC QUALITY INSPECTED 4

DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

DISCLAIMER

The Navy is ultimately responsible for compliance with all legal and regulatory requirements, including environmental and occupational safety and health considerations, which pertain to the substitution of the optimum value pollution prevention alternatives described in this Technical Report.

The optimum value pollution prevention alternatives recommended for implementation at Portsmouth Naval Shipyard, Portsmouth, NH, are considered to be viable substitutes for the status quo materials to the best knowledge of A.F. Meyer and Associates, Inc., and the technical support representatives contacted for purposes of this study. A.F. Meyer and Associates, Inc. assumes no liability for legal and/or regulatory compliance associated with the implementation of the pollution prevention alternatives described in this report. These materials must be tested in the field to ensure that process requirements are met. This Technical Report is not intended to endorse any of the manufacturers cited within.

FOREWORD

Policies and procedures set forth in Executive Order (EO) 12856, SECNAVINST 5000.2A and OPNAVINST 5090.1B, include requirements for the Navy to select and use the least hazardous materials to meet mission, operations and maintenance needs. Naval Supply Systems Command (NAVSUP), as Executive Agent for the Navy Hazardous Material Control and Management (HMC&M) Program, has the responsibility of providing Navy-wide guidance for a uniform approach to the "up-front" reduction of hazardous materials, consistent with engineering suitability, operational needs and cost considerations.

This Technical Report for delivery order 0014 under Contract N00600-95-D-0290, provides the results of on-site value engineering studies, market availability studies, and economic and risk analyses performed to identify pollution prevention alternatives for Portsmouth Naval Shipyard (PNS), Portsmouth, NH. To support NAVSUP, A. F. Meyer and Associates, Inc. (AFMA) conducted site surveys at PNS, collected baseline information on current methodologies, and analyzed 17 hazardous material uses, or status quo materials. Additionally, AFMA researched and analyzed alternatives for one process and one waste stream observed on-site. These feasibility analyses were performed to identify optimum value pollution prevention alternatives, which are recommended in this Technical Report for implementation at PNS.

This Technical Report also includes a description of the tools AFMA used to complete the feasibility analyses. AFMA first attempted to use PNS's Hazardous Substance Management System (HSMS) to obtain environmental, safety and health information for the status quo materials surveyed on-site. Then the market availability studies were performed to identify feasible pollution prevention alternatives to replace the status quo materials, and to determine the availability and associated costs of these substitute materials. AFMA utilized the Pollution Prevention (P2) System to carry out economic and risk analyses on the status quo and substitute materials. Within this unique system, the NAVFAC P-442 Economic Analysis Model, Type II economic analysis format assisted with the selection of the most cost-effective alternatives to satisfy a current need or a deficiency at PNS. Furthermore, the P2 System performed a risk analysis through application of the Hazardous Material (HM) Substitution Process. This methodology consists of a Substitution Algorithm, which seeks to eliminate or minimize the entry of hazardous materials into the Navy system at the earliest point in the life cycle of the materials and the system, by identifying the most environmentally-sound substitute materials.

Based on the results of the economic and risk analyses generated by the P2 System, AFMA further analyzed the environmental, safety, health and economic benefits of the most promising pollution prevention alternatives using the Pollution Prevention Priority Number (PPPN) Analysis. Finally, AFMA performed a Benefit/Cost Ratio (BCR) Analysis on the most cost-effective, environmentally-sound pollution prevention

alternatives, to identify those substitute materials which will provide PNS with the most results or outputs for the least resources or inputs. These optimum value pollution prevention alternatives are recommended for implementation at PNS, as described in this Technical Report.

AFMA conducted these feasibility analyses to ensure that management controls are applied to the procurement and use of less hazardous or non-hazardous materials. The analyses are designed to contribute to the maintenance of the Navy's operational readiness by reducing risks to Navy personnel, the civilian population and the environment. The methodology and recommendations cited in this Technical Report accomplish this need by identifying the optimum value pollution prevention alternatives for implementation at PNS.

This Technical Report emphasizes the feasibility analyses performed on the 17 status quo hazardous materials identified on-site at PNS. AFMA applied the tools described herein to these materials and to the substitute materials and identified the most cost-effective, environmentally-sound pollution prevention alternatives for implementation at PNS. A separate feasibility analysis was performed on the process and waste stream for which AFMA collected baseline information while on-site. These studies are addressed independently throughout this Technical Report.

TABLE OF CONTENTS

FOREWORD i

TABLE OF CONTENTS iii

EXECUTIVE SUMMARY vi

CHAPTER 1 INTRODUCTION AND BACKGROUND

1.0 INTRODUCTION 1-1
1.1 Purpose of the Feasibility Analyses 1-1
1.2 Rationale for Shops Selected 1-1
1.3 Scope of Effort 1-2

CHAPTER 2 OVERVIEW OF THE TECHNICAL APPROACH USED TO CONDUCT THE SITE SURVEYS AT PORTSMOUTH NAVAL SHIPYARD

2.0 EFFORTS ON-SITE 2-1
2.1 The Kick-Off Meeting 2-1
2.2 The Site Surveys 2-2
2.3 Description of the Hazardous Material Uses, Processes, and Waste Streams Identified On-Site 2-5

CHAPTER 3 OVERVIEW OF THE TOOLS UTILIZED TO CONDUCT THE FEASIBILITY ANALYSES AT PORTSMOUTH NAVAL SHIPYARD

3.0 SUMMARY OF FINDINGS 3-1
3.1 The Hazardous Substance Management System (HSMS) 3-1
3.2 The Market Availability Studies 3-1
3.3 The NAVFAC P-442 Economic Analysis Model 3-2
3.4 The Hazardous Material (HM) Substitution Process 3-3
3.5 The Pollution Prevention (P2) System 3-3
3.6 The Pollution Prevention Priority Number (PPPN) Analysis 3-5
3.6.1 Hazardous Material Selection Factor (HMSF) 3-5
3.6.2 Investment Cost Factor (ICF) 3-5
3.6.3 Uniform Annual Cost Factor (UACF) 3-6
3.6.4 Weight Factor (WF) 3-6
3.6.5 Population Factor (PF) 3-6
3.7 The Benefit/Cost Ratio (BCR) Analysis 3-7
3.8 Gaseous Ammonia Use in the Aperture Card Reproduction Process 3-7
3.9 Fluorescent Light Bulb Waste Stream 3-8

CHAPTER 4 SUMMARY OF FINDINGS, RESULTS, AND ASSUMPTIONS

4.0 SUMMARY OF FINDINGS 4-1
4.1 The Hazardous Substance Management System (HSMS) 4-1
4.2 The Market Availability Studies 4-2

TABLE OF CONTENTS

4.3 Assumptions Made While Performing the NAVFAC P-442 Economic Analysis Model, Type II Economic Analysis Format 4-2
4.4 The NAVFAC P-442 Economic Analysis Model, Type II Net Present Value Economic Analysis Format 4-4
4.5 Assumptions Made While Using the HM Substitution Process to Perform the Risk Analysis 4-5
4.6 The Hazardous Material (HM) Substitution Process 4-6
4.7 The Pollution Prevention (P2) System 4-6
4.8 Assumptions Made While Performing the Pollution Prevention Priority Number (PPPN) Analysis 4-7
4.9 The Pollution Prevention Priority Number (PPPN) Analysis 4-7
4.10 The Benefit/Cost Ratio (BCR) Analysis 4-8
4.11 Gaseous Ammonia Use in the Aperture Card Reproduction Process 4-8
4.12 Fluorescent Light Bulb Waste Stream 4-8

CHAPTER 5 RECOMMENDATIONS AND CONCLUSIONS

5.0 SUMMARY OF FINDINGS 5-1
5.1 Findings and Recommendations 5-1
5.1.1 Neoprene Primer 5-1
5.1.2 Corrosion Inhibitor 5-9
5.1.3 Black Paint 5-9
5.1.4 Neoprene Primer 5-9
5.1.5 Dichloromethane, Technical 5-10
5.1.6 Silver Paint 5-10
5.1.7 Anaerobic Adhesive 5-11
5.1.8 Yellow Primer 5-11
5.1.9 Black Paint 5-11
5.1.10 Paint Remover 5-12
5.1.11 Paint Thinner 5-12
5.1.12 Antifouling Paint 5-13
5.1.13 Primer 5-13
5.1.14 Red Paint 5-13
5.1.15 Gray Paint 5-14
5.1.16 Orange Paint 5-14
5.1.17 Yellow Paint 5-15
5.1.18 Gray Paint 5-15
5.1.19 Gaseous Ammonia Use in the Aperture Card Reproduction Process 5-15
5.1.20 Fluorescent Light Bulb Waste Stream 5-16
5.2 Conclusions 5-16

TABLES

Table 1 List of the Major Hazardous Material Uses Identified On-Site at Portsmouth Naval Shipyard 2-3

TABLE OF CONTENTS

Table 2 List of Most Promising Pollution Prevention Alternatives at Portsmouth Naval Shipyard 5-3
Table 3 The Benefit/Cost Ratio Analysis 5-7

FIGURES

Figure ES-1 The Most Promising Pollution Prevention Alternatives Recommended for Implementation at Portsmouth Naval Shipyard vii
Figure 1 The Most Promising Pollution Prevention Alternatives Recommended for Implementation at Portsmouth Naval Shipyard 5-2
Figure 2 Annual Cost Savings Pending Implementation of the Optimum Value Pollution Prevention Alternatives at Portsmouth Naval Shipyard 5-19
Figure D-1 Personal Protective Equipment Assumptions and Costs D-1
Figure D-2 The Type II Net Present Value Economic Analysis D-30
Figure G-1 Investment Cost Factor (ICF) G-1
Figure G-2 Uniform Annual Cost Factor (UACF) G-5
Figure G-3 Pollution Prevention Priority Number Analysis - Ranked Alternatives. . G-9

APPENDICES

Appendix A Site Survey Checklists
Appendix B Aperture Card Reproduction Process
Appendix C Pollution Prevention Priority Number Calculation Charts
Appendix D The NAVFAC P-442 Economic Analysis Model
Appendix E Hazardous Material Substitution Algorithm Worksheets
Appendix F List of Pollution Prevention Alternatives Identified for Portsmouth Naval Shipyard
Appendix G The Pollution Prevention Priority Number Analysis
Appendix H Product Information

EXECUTIVE SUMMARY

PURPOSE

This Technical Report provides the results of the feasibility analyses performed to identify optimum value pollution prevention alternatives for 17 status quo hazardous materials identified on-site at PNS. Additionally, aperture card reproduction was analyzed, and a replacement for the gaseous ammonia used in this process was researched; the results of this study are discussed herein. Finally, PNS's fluorescent light bulb waste stream was analyzed and less hazardous alternatives were researched; the results of this study are also presented in this Technical Report.

BACKGROUND

PNS, like all Naval installations, must comply with the policies and procedures set forth in EO 12856, SECNAVINST 5000.2A, and OPNAVINST 5090.1B to select and use the least hazardous materials to meet mission, operations, and maintenance needs. The ideal approach for achieving such compliance is through the up-front reduction or elimination of the procurement and use of hazardous materials.

AFMA performed feasibility analyses on 17 hazardous material uses surveyed at PNS. AFMA utilized PNS's HSMS, and carried out market availability studies, economic analyses, and risk analyses, and identified 183 feasible pollution prevention alternatives for the status quo materials observed on-site. The 76 most promising substitutes were further analyzed using the PPPN Analysis. AFMA then applied the BCR analyses to the 41 pollution prevention alternatives with the lowest PPPNs, thereby identifying the 17 most cost-effective, environmentally-sound substitute materials. Furthermore, less hazardous alternatives for gaseous ammonia and fluorescent light bulbs were researched and analyzed. AFMA's recommendations are provided in this report.

RESULTS IN BRIEF

AFMA conducted site surveys at PNS and collected baseline information for several processes and hazardous material uses observed while on-site. AFMA then identified several feasible pollution prevention alternatives for comparison to this baseline situation, and analyzed each using a number of pollution prevention management tools. Figure ES-1 presents the 17 most cost-effective, environmentally-sound alternatives, which are recommended in this Technical Report as the optimum value pollution prevention alternatives for PNS.

CONCLUSIONS AND RECOMMENDATIONS

The optimum value pollution prevention alternatives identified within this Technical Report should be considered viable substitutes for PNS that are more cost-

effective and environmentally-sound than the status quo materials analyzed on-site. AFMA strongly believes that implementation of these alternatives will aid the Navy in its mission to prevent pollution, protect the environment, and protect natural resources by eliminating or reducing pollution at the source.

Bldg	Alternative	Product	Manufacturer	HMSF	UAC ($)	Initial Cost ($)	PPPN	Direct Cost Benefit
240	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43	203.76	-	-	-
	Proposed	3M 90 High Strength Adhesive	3M	22	233.42	0.00	23	(29.66)
240	Status Quo	Neolube No.1 Graphite, Colloidal	Huron Industries Inc.	35	8,166.20	-	-	-
	Proposed	Lock-Ease	AGS Company	25	1,606.04	0.00	3	6,560.16
60	Status Quo	IB No 2652 Acrylic Lacquer Aerosol	Ill. Bronze Powder & Paint	41	45.36	-	-	-
	Proposed	DR038 Concentrate Aerosol Lacquer	Devoe & Raynolds Co., Inc	29	61.44	0.00	40.5	(16.08)
60	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43	530.88	-	-	-
	Proposed	3M 90 High Strength Adhesive	3M	22	584.81	0.00	22	(53.93)
60	Status Quo	Dichloromethane, Technical	Ashland Chemical Co.	72	4,002.16	-	-	-
	Proposed	Pur-O-Shine Heavy Duty Cleaner	American Puro-Shine	12	822.25	0.00	1	3,179.91
64	Status Quo	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	44	79.83	-	-	-
	Proposed	Aerosol Coatings 01947, Lacquer 17178	Sprayon Products	34	78.66	0.00	28.5	1.17
92	Status Quo	Loctite Grade A Anaerobic Adhesive	Loctite Corp.	7	2,568.00	-	-	-
	Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	209.04	0.00	3	2,358.96
92	Status Quo	So-Sure Yellow Primer (84-331) Aerosol	LHB Industries	37	2,778.58	-	-	-
	Proposed	Zinc Chromate Primer GP-0004-1757	Seymour of Sycamore	17	2,745.60	0.00	28.5	32.98
92	Status Quo	01920 Black Lacquer 17038 Aerosol	Sprayon Products	50	53.76	-	-	-
	Proposed	306 Black 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	63.60	0.00	36	(9.84)
18	Status Quo	Omega 3812 SN 313-2 Paint Remover	Omega Chemical Corp.	59	6,204.20	-	-	-
	Proposed	TT-R-251J Type III Cl B Paint Remover	MSCI, Ltd.	13	789.46	0.00	1	5,414.74
18	Status Quo	T-10 Paint Thinner	Devoe Coatings Co.	41	2,871.36	-	-	-
	Proposed	Odorless Thin-X	Sterling-Clarke-Lurton	13	1,400.40	0.00	5	1,470.96
18	Status Quo	Devoe ABC #3 Red AF Paint	Devoe Marine Coatings	44	3,489.48	-	-	-
	Proposed	N-5564 Gloss Red Silicone Enamel 11105	Niles Chemical Paint Co.	36	2,873.60	0.00	24	615.88
300	Status Quo	Locquic Primer T	Loctite Corp.	36	128.76	-	-	-
	Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	127.59	0.00	19	1.17
300	Status Quo	So-Sure Lacquer Aerosol Red 11136	LHB Industries	44	32.11	-	-	-
	Proposed	301 Red 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	34.45	0.00	33	(2.34)
65	Status Quo	So-Sure Lacquer Aerosol Gray 16307	LHB Industries	44	258.38	-	-	-
	Proposed	361 Gray 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	318.00	0.00	37.5	(59.62)
158	Status Quo	Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	50	4,704.68	-	-	-
	Proposed	Enamel Orange 12246 TT-E-2784	Del Paint Corp.	11	3,527.76	0.00	7	1,176.92
158	Status Quo	Enamel Alkyd Air Drying Yellow 13538	Pratt and Lambert	49	3,378.68	-	-	-
	Proposed	TT-E-2784 Ultra Deep Tint Yellow 13538	Davlin Paint Co.	10	1,758.40	0.00	5	1,620.28
158	Status Quo	Enamel Deck Interior Gray 26231	Pratt & Lambert Industrial	34	3,709.68	-	-	-
	Proposed	97-482 Silicone Alkyd	PPG Industries	19	3,689.76	0.00	28.5	19.92

( ) denotes a negative value

Figure ES-1
The Most Promising Pollution Prevention Alternatives
Recommended for Implementation at Portsmouth Naval Shipyard

CHAPTER 1

INTRODUCTION AND BACKGROUND

1.0 INTRODUCTION

As described in this Technical Report, AFMA performed feasibility analyses at PNS to assist NAVSUP with its responsibilities for managing the supply aspects of pollution prevention, and for meeting the requirements of EO 12856, of August 1993. This EO emphasizes implementing aggressive actions to reduce the procurement and use of hazardous materials. In addition, these studies were designed to support NAVSUP with its responsibility for providing guidance on incorporating HMC&M into Navy supply system acquisition programs, as required by SECNAVINST 5000.2A and OPNAVINST 5090.1B. Finally, the feasibility analyses support the Department of Defense's (DoD's) and Congress' requirement for greater consideration for the use of commercially available materials and equipment.

1.1 Purpose of the Feasibility Analyses

The on-site value engineering studies were conducted on several processes and hazardous material uses surveyed on-site at PNS. AFMA utilized the market availability studies, the NAVFAC P-442 Economic Analysis Model, the HM Substitution Process, the P2 System, the PPPN Analysis and the BCR Analysis to conduct pollution prevention alternative assessments. These tools identified optimum value pollution prevention alternatives, which are recommended for implementation at PNS. This Technical Report provides the Navy with the results of these feasibility analyses, as called for in Task 2.5 of delivery order 0014 under Contract N00600-95-D-0290.

1.2 Rationale for Shops Selected

To conduct the on-site value engineering studies and feasibility analyses at PNS, AFMA analyzed 17 status quo hazardous material uses at eight shops during the week of 16 September 1996. The selection of the eight shops was based on the need to collect data representing the current baseline situation at the shipyard. This was determined by examining information contained in PNS's HSMS, which identified those shops at which large quantities of hazardous materials were used and/or stored. Additionally, AFMA collected baseline information pertaining to gaseous ammonia used in the aperture card reproduction process, as well as the fluorescent light bulb waste stream. The purpose of these studies was to research and identify less hazardous alternatives for each, where feasible.

The following list represents the shops at which AFMA conducted site surveys and collected baseline information for the 17 hazardous material uses, the aperture card reproduction process, and the fluorescent light bulb waste stream:

1. Building 240 - Hazardous Material Control Area 240:
    a. Neoprene N-11 Primer.
    b. Neolube No. 1 Graphite, Colloidal.
2. Building 60 - Hazardous Material Control Area 60:
    a. IB No 2652 Acrylic Lacquer Aerosol (Black).
    b. Neoprene N-11 Primer.
    c. Dichloromethane, Technical.
3. Building 64 - Varnish Shop - So Sure Lacquer, Aerosol Silver 17178.
4. Building 92 - Main Shop:
    a. Loctite Grade A Anaerobic Adhesive.
    b. So Sure Yellow Primer (84-331) Aerosol.
    c. 01920 Black Lacquer 17038 Aerosol.
5. Building 18 - Paint Shop:
    a. Omega 3812 SN 313-2 Paint Remover.
    b. T-10 Paint Thinner.
    c. Devoe ABC #3 Red Antifouling (AF) Paint.
6. Building 300 - Hazardous Material Control Area 300:
    a. Locquic Primer T.
    b. So Sure Lacquer Aerosol Red 11136.
7. Building 65 - Hazardous Material Control Area 65 - So Sure Lacquer Aerosol Gray 16307.
8. Building 158 - Crane Maintenance:
    a. Enamel Alkyd Low VOC Orange 12246.
    b. Enamel Alkyd Air Drying Yellow 13538.
    c. Enamel Deck Interior Gray 26231.
9. Building 29 - Gaseous Ammonia Use in the Aperture Card Reproduction Process.
10. Building 357 - Hazardous Waste Disposal Facility - Fluorescent Light Bulb Waste Stream.

1.3 Scope of Effort

This Technical Report provides the results of the feasibility analyses conducted by AFMA to identify optimum value pollution prevention alternatives for 17 status quo hazardous material uses, one process and one waste stream surveyed on-site at PNS. The shops listed above were designated as sites for the collection of baseline environmental, safety, health and economic information, which was compared to similar information collected for a number of feasible alternatives. The substitutes recommended for implementation in this Technical Report are considered to be viable alternatives that are more cost-effective and environmentally-sound than the current methodologies AFMA observed on-site at PNS.

This Technical Report also explains the methodology and approach AFMA used, the procedures utilized, and each individual analysis performed to identify the substitute materials described herein. Furthermore, the report describes the baseline information pertaining to each current methodology observed on-site, as well as the information

collected from a number of sources pertaining to the pollution prevention alternatives identified for each. AFMA also addresses the successes and problems associated with each portion of the feasibility analyses, and emphasizes several important issues identified while performing the analyses both on- and off-site. Finally, the optimum value pollution prevention alternatives recommended for implementation at PNS are provided.

CHAPTER 2

OVERVIEW OF THE TECHNICAL APPROACH USED TO CONDUCT THE SITE SURVEYS AT PORTSMOUTH NAVAL SHIPYARD

2.0 EFFORTS ON-SITE

AFMA performed on-site value engineering studies on 17 status quo hazardous material uses at PNS to identify optimum value solutions to pollution prevention alternatives for each. AFMA also carried out feasibility analyses on one process and one waste stream to research and analyze less hazardous or non-hazardous replacements for both. To select the hazardous material use(s), process(es), and waste stream(s) on which to perform these studies, AFMA initiated correspondence with PNS's Chemical Engineer, Mr. Timothy P. Dunn, prior to the site visit. AFMA briefed Mr. Dunn on the optimum value engineering study requirements. Based on these discussions, Mr. Dunn provided AFMA with an initial list of approximately ten hazardous materials, one process and one waste stream for which to collect baseline information while on-site.

AFMA then traveled to PNS and attended a kick-off meeting with Mr. Dunn and members of the Pollution Prevention Team on 16 September 1996. This meeting familiarized those in attendance with the objectives and goals of the contract requirements, as well as AFMA's approach for identifying optimum value pollution prevention alternatives. Additionally, the hazardous materials, process, and waste stream to be analyzed while on-site, as identified by Mr. Dunn, were discussed. These included paints, thinners, primers, adhesives, fluorescent light bulbs and gaseous ammonia.

AFMA then conducted site surveys with PNS employees and observed hazardous material uses and the fluorescent light bulb waste stream at shops located throughout the shipyard. AFMA interviewed shop personnel to collect the baseline information needed to perform the feasibility analyses. AFMA also collected literature pertaining to the process of gaseous ammonia use in aperture card reproduction.

AFMA evaluated this baseline information and selected 17 status quo hazardous material uses, as well as the process of gaseous ammonia use in aperture card reproduction and the fluorescent light bulb waste stream, for further analysis. AFMA collected additional information as needed, and used this data to perform the feasibility analyses and identify optimum value pollution prevention alternatives for current methodologies at PNS. The results of these analyses are presented in this Technical Report.

2.1 The Kick-Off Meeting

During the 16 September 1996 kick-off meeting, AFMA met with PNS's Chemical Engineer and members of the Pollution Prevention Team. At this meeting, AFMA

described similar pollution prevention efforts previously conducted for Naval District Washington and Naval Surface Warfare Center, Indian Head Division. Furthermore, AFMA explained the need to collect baseline information for current hazardous material uses, processes, and waste streams which use large quantities of hazardous materials and/or generate large quantities of hazardous waste. AFMA then described each of the tools to be used for conducting the feasibility analyses, and the process by which optimum value pollution prevention alternatives would be identified and recommended for implementation at PNS.

Additionally, the list of hazardous material uses, the process, and the waste stream identified by Mr. Dunn for AFMA's evaluation was discussed. Mr. Dunn and AFMA also utilized PNS's HSMS to identify several other hazardous materials for on-site analysis, based on information contained within the system. Finally, AFMA used the Hazardous Material Information System (HMIS) to collect a portion of the baseline information pertaining to the 17 status quo hazardous materials that were analyzed on-site at PNS.

2.2 The Site Surveys

AFMA conducted site surveys at PNS on 17 - 18 September 1996. The purpose of this field work was to evaluate hazardous material uses, processes, and waste streams and to collect information which portrayed the current baseline situation at PNS. While conducting these site surveys, AFMA identified and characterized existing processes, hazardous materials used and hazardous waste streams generated. AFMA utilized checklists to interview shop personnel while on-site. These checklists assisted with the collection of the baseline information necessary for inclusion in the market availability studies, the NAVFAC P-442 Economic Analysis Model, the HM Substitution Process, the P2 System, the PPPN Analysis and the BCR Analysis. The checklists were created from a number of sources, including the Environmental Protection Agency's (EPA's) Hazardous Waste Minimization Opportunity Assessment Manual, EPA's Guides to Pollution Prevention, and the Naval Energy and Environmental Support Activity's Comprehensive Hazardous Waste Minimization Survey. AFMA used these checklists to ensure that all relevant information was gathered. The completed checklists for each status quo material surveyed on-site are provided in Appendix A.

Upon completion of the site surveys, AFMA organized the key pieces of information gathered on-site at PNS for the 17 status quo hazardous materials into a chart for reference. This list highlights important data used to complete the feasibility analyses utilizing the market availability studies, the NAVFAC P-442 Economic Analysis, the HM Substitution Process, the P2 System, the PPPN Analysis and the BCR Analysis (see Table 1).

Table 1. List of the Major Hazardous Material Uses Identified On-Site at Portsmouth Naval Shipyard

	HAZARDOUS MATERIAL	MANUFACTURER	PROCESS	NSN	CAS NUMBER(S)	QUANTITY	EXPOSURE TIME
	Building 240 HMCA240						
1	Neoprene N-11 Primer	Haartz-Mason Inc.	Bonding neoprene rubber	8030-LL-L01-0010	1330-20-7; 84-74-2; 13463 67-7	0.25 gal / month	1 hour / week
2	Neolube No.1, Graphite, Colloidal	Huron Industries Inc.	Corrosion Inhibitor	9150-00-349-7443	67-63-0	2 gal / month	Not Known
	Building 60 HMCA60						
3	IB No 2652 Acrylic Lacquer Aerosol (Black)	Illinois Bronze Powder and Paint Co	Painting plaques and models	8010-00-582-5382	75-09-2; 108-88-3; 111-76-2	0.25 gal / month	5 hours / week
4	Neoprene N-11 Primer	Haartz-Mason Inc.	Bonding rubber box linings	8030-LL-L01-0010	1330-20-7; 84-74-2; 13463 67-7	0.63 gal / month	20 hours / week
5	Dichloromethane, Technical	Ashland Chemical Co	Stripping plastisol coatings	6810-00-616-9188	75-09-2	4.6 gal / month	10 hours / week
	Building 64 Varnish Shop						
6	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	Painting Hard Hats	8010-00-721-9751	8030-30-6; 108-88-3; 75-09-2; 67-64-1; 74-98-6; 75-28-5; 106-97-8	0.4 gal / month	0.25 hour / week
	Building 92 Main Shop						
7	Loctite Grade A Anaerobic Adhesive	Loctite Corp	Gluing rubber	8030-00-907-3961	Not Known	0.13 gal / month	20 hours / week
8	So Sure Yellow Primer (84-331) Aerosol	LHB Industries	Priming boat clamps	8010-00-297-0593	108-10-1; 13530-65-9; 67-64-1; 108-88-3; 110-82-7	13 gal / month	10 hours / week
9	01920 Black Lacquer 17037 Aerosol	Sprayon Products	Painting mounts on top of flanges	8010-00-290-6984	1330-20-7; 67-56-1; 67-64-1; 108-88-3; 78-93-3	0.25 gal / month	0.25 hour / week
	Building 18 Paint Shop						
10	Omega 3812 SN 313-2 Paint Remover	Omega Chemical Corp	Cleaning paint off surfaces	8010-00-160-5800	75-09-2; 108-95-2; 7775-11-3	5 gal / month	40 hours / week
11	T-10 Paint Thinner	Devoe Coatings Co	Cleaning paint brushes	8010-LL-DM1-0117	1330-20-7; 71-36-3; 110-43-0	30 gal / month	1 hour / week
12	Devoe ABC #3 Red AF Paint	Devoe Marine Coatings Co	Painting rubber tires	8010-01-221-4815	8047-99-2; 1314-13-2; 1330-20-7; 71-36-3	8.3 gal / month	1 hour / week

Table 1. List of the Major Hazardous Material Uses Identified On-Site at Portsmouth Naval Shipyard

	HAZARDOUS MATERIAL	MANUFACTURER	PROCESS	NSN	CAS NUMBER(S)	QUANTITY	EXPOSURE TIME
	Building 300 HMCA300						
13	Locquic Primer T	Loctite Corp	Applied to studs and bolts	8030-LL-DM1-0156	71-55-6; 67-63-0; 75-65-0; 99-97-8; 109-87-5; 149-30-4	0.09 gal / month	Nominal
14	So-Sure Lacquer Aerosol Red 11136	LHB Industries	Miscellaneous applications	8010-00-141-2952	108-88-3; 67-64-1; 78-93-3; 71-36-3; 74-98-6; 106-97-8; 75-28-5; 84540-57-8	0.13 gal / month	Nominal
	Building 65 HMCA65						
15	So-Sure Lacquer Aerosol Gray 16307	LHB Industries	Miscellaneous applications	8010-00-721-9750	1330-20-7; 108-88-3; 67-64-1; 100-41-4; 74-98-6; 75-28-5; 106-97-8	1.26 gal / month	Not Known
	Building 158 Crane Maintenance						
16	Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	Miscellaneous applications	8010-00-527-3201	123-86-4; 1330-20-7; 110-12-3; 8052-41-3; 64475-85-0; 78-93-3	Not Known	Not Known
17	Enamel Alkyd Air Drying Yellow 13538	Pratt and Lambert	Miscellaneous applications	8010-00-286-7758	7758-97-6; 8032-32-4; 64475-85-0; 7439-92-1; 108-65-6	Not Known	Not Known
18	Enamel Deck Interior Gray 26231	Pratt and Lambert, Industrial Coatings Div	Miscellaneous applications	8010-00-285-4870	64742-88-7; 13463-67-7; 14807-96-6	Not Known	Not Known

2.3 Description of the Hazardous Material Uses, Processes, and Waste Streams Identified On-Site

AFMA gathered baseline information at eight shops and at the Hazardous Waste Disposal Facility pertaining to several hazardous materials, processes and waste streams observed at PNS. AFMA also collected literature describing a previous analysis of the aperture card reproduction process. This study is provided in Appendix B. After evaluating all of the information collected on-site, AFMA selected 17 hazardous material uses, one process, and one waste stream on which to perform the feasibility analyses. These current methodologies are described briefly below.

At Hazardous Material Control Area 240, AFMA identified two hazardous material uses. Neoprene N-11 Primer is used for bonding neoprene rubber together and protecting it from salt water; and Neolube No. 1 Graphite, Colloidal is applied to nuclear riggers as a corrosion inhibitor. At Hazardous Material Control Area 60, AFMA identified three hazardous material uses. IB No 2652 Acrylic Lacquer Aerosol (Black) is used for painting plaques and models; Neoprene N-11 Primer is used for bonding rubber linings and covering box interiors to protect them from salt water; and Dichloromethane, Technical is used for stripping plastisol coatings from ships.

At Building 64, the Varnish Shop, AFMA identified So-Sure Lacquer, Aerosol Silver 17178, which is used for painting hard hats. AFMA identified three hazardous material uses at Building 92, the Main Shop. Loctite Grade A Anaerobic Adhesive is used for gluing rubber together; So Sure Yellow Primer (84-331) Aerosol is applied to boat clamps; and 01920 Black Lacquer 17038 Aerosol is used for spray painting the mounts on top of flanges. At Building 18, the Paint Shop, AFMA also identified three hazardous material uses. Omega 3812 SN 313-2 Paint Remover is used for cleaning paint off of various types of surfaces; T-10 Paint Thinner is used for cleaning paint brushes; and Devoe ABC #3 AF Paint is used for painting tires on submarines.

At Hazardous Material Control Area 300, AFMA identified two hazardous material uses. Locquic Primer T is used on studs and bolts before the application of a sealing compound; and So-Sure Lacquer Aerosol Red 11136 is used for touch-up painting and other miscellaneous applications. At Hazardous Material Control Area 65, AFMA identified So-Sure Lacquer Aerosol Gray 16307, which is used for touch-up painting and other miscellaneous applications. AFMA identified three hazardous material uses at Building 158, Crane Maintenance. Enamel Alkyd Low VOC Orange 12246, Enamel Alkyd Air Drying Yellow 13538, and Enamel Deck Interior Gray 26231 are all used for touch-up painting and other miscellaneous applications.

Additionally, at Building 29, gaseous ammonia is used in the process of aperture card reproduction for hull, mechanical and electrical (HM&E) drawings for all ships and submarines. Although the Navy plans to phase out the use of aperture cards completely at an undisclosed date, PNS is seeking a less hazardous or non-hazardous processing fluid to replace the gaseous ammonia in the meantime. Finally, two types of hazardous fluorescent

light bulbs are used in buildings located throughout the shipyard. These light bulbs contain heavy metals, and the ballasts contain polychlorinated biphenols (PCBs). Thus, PNS is seeking to replace their fluorescent light bulbs with bulbs that are less hazardous or non-hazardous.

CHAPTER 3

OVERVIEW OF THE TOOLS UTILIZED TO CONDUCT THE FEASIBILITY ANALYSES AT PORTSMOUTH NAVAL SHIPYARD

3.0 SUMMARY OF FINDINGS

This chapter describes in greater detail the pollution prevention management tools highlighted in Chapter 1. In addition, this chapter discusses the extent to which each tool contributed to the identification of the optimum value pollution prevention alternatives recommended herein for implementation at PNS. Finally, this chapter provides an overview of the aperture card reproduction process and the fluorescent light bulb waste stream.

3.1 The Hazardous Substance Management System (HSMS)

AFMA was tasked with utilizing the HSMS, a Windows compliant, menu-based application, to perform a portion of the feasibility analyses. This system tracked hazardous materials and hazardous wastes and their chemical constituents within base operations from cradle-to-grave. The HSMS also excelled in reporting accuracy and provided chemical usage and process data in support of reduced process and product costs.

The primary objective of the HSMS was to provide AFMA with environmental, safety and health information pertaining to the status quo materials identified on-site at PNS. The P2 System features an automatic data upload utility which transfers this NSN, Manufacturer, and MSDS data from the HSMS into the P2 System for incorporation into the economic and risk analyses. This utility precludes entering and maintaining two sets of identical data for the status quo materials.

3.2 The Market Availability Studies

AFMA performed the market availability studies to identify, and then determine the availability and associated costs of, feasible pollution prevention alternatives to replace the status quo materials surveyed at PNS. These alternatives were identified utilizing a number of Government resources, including the HMIS, the US General Services Administration (GSA) Spring 1996 Supply Catalog (the Fall 1996 Supply Catalog was not available at the time of analysis), and the Defense Logistics Agency (DLA) December 1995 Environmental Products Catalog. AFMA contacted the manufacturers and distributors of hundreds of potential pollution prevention alternatives to carry out this portion of the feasibility analyses. These sources provided the environmental, safety, health and economic information needed to perform the economic and risk analyses. Additionally, AFMA discussed each status quo material's specifications and process applications with technical representatives, to ensure that the alternatives identified would

meet PNS's process requirements. This information provided additional guidance for ranking the pollution prevention alternatives for further analysis.

3.3 The NAVFAC P-442 Economic Analysis Model

AFMA applied the NAVFAC P-442 Economic Analysis Model to the status quo and substitute materials from within the P2 System (see Section 3.5). This analytical tool assisted with the investment decision-making process by qualifying and quantifying the circumstances affecting an investment decision at PNS. The Model systematically investigated and related all life cycle cost (LCC) and benefit implications in achieving an objective(s). It also assisted in determining the most benefits or outputs for the least resources or inputs to be expended, to identify the most cost-effective pollution prevention alternatives. The impacts of alternative actions were clarified by exploring all reasonable means to satisfy an objective, documenting all costs and benefits, and testing the uncertainties.

The NAVFAC P-442 Economic Analysis Model is a multi-step procedure used to evaluate pollution prevention alternatives that meet an objective. AFMA completed each of the following key steps:

a. Defined the objective by determining what was to be investigated;
b. Generated alternatives by defining all feasible alternative methods of meeting the objective, while considering all realistic alternatives;
c. Formulated assumptions, or explicit statements used to describe the present and future environments in order to reduce complex situations to problems that were manageable;
d. Determined the costs and benefits associated with the feasible alternatives, which required the determination of what data was needed, how this data was to be collected and documented, and when this data was sufficiently reliable to be used in the economic analysis; this required an investigation of each alternative to determine all costs and benefits occurring during the entire project life, which is called the life cycle costing;
e. Compared costs and benefits and ranked alternatives, which required three criteria to distinguish between alternatives: least cost for a given level of effectiveness, most effectiveness for a given constraint, and largest ratio of effectiveness to cost; and
f. Performed a sensitivity analysis, which provided feedback within the economic analysis process by indicating that alternatives, estimates and assumptions were in need of further refinement.

To use the NAVFAC P-442 Economic Analysis Model and perform the economic analysis, AFMA followed a Type II economic analysis format, which was appropriate when considering material substitutions. The Type II economic analysis format determined which of the feasible pollution prevention alternatives identified would most economically satisfy an unmet need or a deficiency, and did not concern itself with the justification of the requirement. There were three methods of comparison available to use when performing the Type II economic analysis format. AFMA utilized the Net Present

Value (NPV) Comparison because the pollution prevention alternatives being considered for implementation at PNS had the same economic lives and equal or no lead times. Lead time is the period between the initial investment for a project and the time it becomes operational. The purpose of this economic analysis was to determine if the pollution prevention alternatives identified were economically feasible for consideration at PNS.

3.4 The Hazardous Material (HM) Substitution Process

AFMA applied the HM Substitution Process from within the P2 System to perform a risk analysis on the status quo and substitute materials (see Section 3.5). This methodology consisted of a Substitution Algorithm, which assigned numerical points to the status quo and substitute materials for such factors as toxicity, duration of expected exposure to the material, medical effects, and a limited assessment of environmental control and impact. Information reported on the Material Safety Data Sheets (MSDSs) collected on-site, provided by the manufacturers and distributors of the substitute materials being considered for implementation at PNS, and obtained from the HMIS, was entered into the Substitution Algorithm.

AFMA used the Substitution Algorithm as a screening device for ranking the status quo and substitute materials based on their properties affecting the environment and human safety and health. A precise interpretation of the MSDSs obtained from the manufacturers and distributors was essential for accurately using the Algorithm as a tool in the material substitution process. Furthermore, the National Institute for Occupational Safety and Health Pocket Guide to Chemical Hazards, and EPA's Title III List of Lists, provided additional information needed to complete the risk analysis.

The Substitution Algorithm computed the Hazardous Material Selection Factor (HMSF) for each status quo hazardous material use observed on-site, as well as for each pollution prevention alternative identified. The HMSF represented the final and most important indicator of a material's environmental, safety and health effects. AFMA then prioritized those cost-effective pollution prevention alternatives with the lowest HMSFs to determine which substitutes would be considered for further analysis. AFMA's goal in using the HM Substitution Algorithm was to identify the least hazardous, most technically-acceptable material(s) by comparing two or more potential alternatives.

3.5 The Pollution Prevention (P2) System

The P2 System was the principal tool by which AFMA performed the pollution prevention alternative assessments. This system represented the integration of the HSMS, the NAVFAC P-442 Economic Analysis Model and the HM Substitution Process into one unique pollution prevention management tool. The system proved essential for conducting the most significant portion of the feasibility analyses, the economic and risk analyses. AFMA utilized the P2 System to determine which of the pollution prevention alternatives developed would be further analyzed using the PPPN and BCR Analyses, based on the results the system generated.

The P2 System consisted of two modules. The System Information Module allowed for the entry of the pollution prevention alternatives' environmental, safety and health information, including National Stock Numbers (NSNs), manufacturer names and their Commercial and Government Entity numbers, and MSDS-related information such as item and trade names, safety and health information, physical properties and chemical constituents. The P2 System stored this information, which was utilized for comparison to the status quo materials while carrying out the economic and risk analyses.

The Run Analyses Module applied the information entered into the System Information Module to the NAVFAC P-442 Economic Analysis Model, Type I and Type II formats, and the HM Substitution Process, for incorporation into the economic and risk analyses. Specific information pertaining to the status quo and substitute materials was entered into a limited subset of required fields, after which the economic and/or risk analyses were performed. The resulting output reports generated a comparison of a status quo material with a suitable pollution prevention alternative, thereby assisting in the identification of the most cost-effective, environmentally-sound materials for further analysis.

To perform the economic analysis through utilization of the NAVFAC P-442 Economic Analysis Model, Type II NPV economic analysis format, AFMA first selected a status quo material by selecting its NSN. AFMA then entered into the P2 System its material annual costs, personal protective equipment (PPE) costs and number of shop employees. AFMA selected a pollution prevention alternative by selecting its NSN, and also entered its material annual costs, PPE costs, number of shop employees. The system generated an output report for each economic analysis performed. This worksheet identified the more cost-effective material of the two analyzed based on the discounted costs, or NPV costs, obtained. These steps were repeated to carry out the economic analysis for several potential substitute materials against the same or different status quo materials.

To perform the risk analysis through utilization of the HM Substitution Process, AFMA first selected a status quo material by selecting its NSN. Next, AFMA entered into the P2 System the weekly length of employee exposure, identified that material's chemical constituent with the lowest listed Permissible Exposure Limit (PEL) or Threshold Limit Value (TLV), and acknowledged whether this constituent was subject to reporting requirements. Finally, AFMA selected a pollution prevention alternative by identifying its NSN, and entered similar information into the P2 System for it. The system generated an output report for each risk analysis performed. This worksheet identified the more environmentally-sound material of the two analyzed, based on the HMSFs obtained. These steps were repeated to carry out the risk analysis on several potential substitute materials against the same or different status quo materials.

3.6 The Pollution Prevention Priority Number (PPPN) Analysis

The PPPN Analysis provided a pollution prevention per dollar analysis, thereby further analyzing the environmental, safety, health and economic benefits associated with the pollution prevention alternatives identified. This analysis allowed AFMA to prioritize the 76 most promising pollution prevention alternatives identified for the status quo materials surveyed on-site, as determined by the outputs generated by the P2 System. The PPPN Analysis was utilized as a screening device for assisting with the selection of the least hazardous materials, where economically and technically feasible. The PPPN Analysis ensured that the pollution prevention alternatives with the greatest environmental, safety, health and economic benefits received the highest priority for implementation at PNS. Clearly, an alternative that offered more pollution prevention per dollar was seriously considered as a viable substitute. The individual components of the PPPN Analysis are described in the following sections.

3.6.1 Hazardous Material Selection Factor (HMSF)

Using the P2 System, AFMA computed the HMSF for the status quo and substitute materials to identify the most promising pollution prevention alternatives. The HMSF was the principal element used to rank the alternatives for further analysis. The HMSF was incorporated into the calculations of each alternative's ICF, as described in the following section.

3.6.2 Investment Cost Factor (ICF)

The ICF represented the initial financing required to implement a pollution prevention alternative, relative to the increase in environmental protection and/or safety. The ICF was computed for each alternative by first calculating the difference between the substitute material's and the status quo material's HMSFs. Then the pollution prevention alternative's initial cost ($0.00 in all cases) was taken into consideration. Using these parameters, an ICF was assigned to each pollution prevention alternative, as shown in the following example:

Example: Plastisol Stripping Agent

Step 1: Status Quo: Dichloromethane, Technical
HMSF[2]: **72**

Step 2: Proposed: Pur-O-Shine Heavy Duty Cleaner
HMSF[1]: **12**

Step 3: $HMSF = HMSF^2 - HMSF^1$
$HMSF = 72 - 12 = \underline{60}$

Step 4: Initial cost of implementing the pollution prevention alternative = **$0.00**

Step 5: Using Appendix C, Figure C-1, Table A, the ICF is **10**

3.6.3 Uniform Annual Cost Factor (UACF)

The UACF represented the percent change in uniform annual cost (UAC) anticipated as a result of implementing a pollution prevention alternative. The UACF was computed for each alternative, and depended upon the percent change in the UAC of each status quo material and each substitute material. It should be noted that a negative (positive) percent change in the UAC represents a percent change increase (decrease). Using this information, a UACF was assigned to each pollution prevention alternative, as shown in the following example:

Example: Plastisol Stripping Agent

Step 1: Status Quo: Dichloromethane, Technical
UAC[2]: **$4,002.16**

Step 2: Proposed: Pur-O-Shine Heavy Duty Cleaner
UAC[1]: **$822.25**

Step 3: Percentage change in the UAC = $[(UAC^2 - UAC^1) / UAC^2] * 100$
Percentage change in the UAC = **[($4,002.16 - $822.25) / $4,002.16] * 100**
Percentage change in the UAC = **79.45%**

Step 4: Because the UAC decreases, Appendix C, Figure C-1, Table C, was used. The UACF is **0.10**

3.6.4 Weight Factor (WF)

The WF represented the percent change in the weight of hazardous materials anticipated as a result of implementing a pollution prevention alternative. This value was used in conjunction with Tables B and C from Appendix C, Figure C-1. A negative (positive) percent change in the WF represented a percent change increase (decrease) for the factor being considered. For the purposes of the PPPN Analysis conducted for PNS, AFMA assigned a value of one to the WF, as AFMA assumed that the percent change in the weight of hazardous materials anticipated as a result of implementing a recommended pollution prevention alternative will not change significantly (see Section 4.3).

3.6.5 Population Factor (PF)

The PF represented the percent change in the number of people exposed to hazardous materials as a result of implementing a pollution prevention alternative. This value was used in conjunction with Tables B and C from Appendix C, Figure C-1. A negative (positive) percent change in the PF represented a percent change increase

(decrease) for the factor being considered. For the purposes of the PPPN Analysis conducted for PNS, AFMA assigned a value of one to the PF, as the percent change in the number of people exposed to hazardous materials as a result of implementing recommended pollution prevention alternative will not change significantly.

PPPN = ICF x UACF x WF x PF

3.7 The Benefit/Cost Ratio (BCR) Analysis

The BCR Analysis was the final tool by which AFMA analyzed the most promising pollution prevention alternatives. Based on the results of the PPPN Analysis, AFMA selected 41 cost-effective, environmentally-sound substitute materials with the lowest PPPNs and performed a BCR Analysis on them. This analysis rated the pollution prevention alternatives in benefits versus cost terms, and required that AFMA identify all relevant inputs and outputs for translation into quantifiable costs. Costs were defined as the resources or inputs necessary to implement an alternative, and benefits were defined as the results or outputs subsequent to implementation of an alternative. AFMA initially considered all types of benefits in the BCR Analysis. These included the following:

a. Direct Cost Savings - described by one of two types:
   1. A Reduced Budget - a real cost savings, usually in the form of a reduction of recurring expenses during the projected economic life of an alternative.
   2. Self-Amortization Investment - demonstrated by a savings to investment ratio greater than one.
b. Efficiency/Productivity Outputs - represents an increase in productivity that can be measured in dollars but does not result in a reduction of the budget.
c. Other Quantifiable Outputs - stated goals defined in terms of quantifiable levels of output produced, such as productivity, quality and reliability.
d. Non-Quantifiable Outputs - benefits that are not quantifiable, but can be described qualitatively.

Finally, non-quantifiable benefits, or externalities, were accounted for to complete the BCR Analysis. Externalities are defined as outputs involuntarily received or imposed on a person or a group as a result of an action by another and over which the recipient has no control. While this type of benefit could not be quantified, the externalities did contribute positively to the BCR Analysis and were taken into consideration. Thus, the 17 pollution prevention alternatives that provided the most results or outputs for the least resources or inputs are recommended in this Technical Report as the optimum value pollution prevention alternatives for implementation at PNS.

3.8 Gaseous Ammonia Use in the Aperture Card Reproduction Process

The Naval Engineering Drawing Support Activity (NEDSA) at PNS reproduces aperture cards for HM&E drawings for all ships and submarines. This process uses gaseous ammonia, which is fed through outside piping to two 3M card duplicators located

in Building 29. Many aperture cards have been digitized and converted to the Joint Engineering Data Management Information and Control System (JEDMICS). In JEDMICS, drawings are digitally formatted on laser disks and are directly accessible for printing from dry format printers. This conversion has resulted in a significant decline in aperture card reproduction and consequently gaseous ammonia use. However, this process is still utilized to a degree at the shipyard; therefore, PNS requested that AFMA identify a less hazardous processing fluid to replace the gaseous ammonia currently used in the aperture card reproduction process.

3.9 Fluorescent Light Bulb Waste Stream

PNS currently uses two types of hazardous fluorescent light bulbs, Philips Model Number F40CWRSEW2 and Sylvania Model Number F40CWRSSS, in buildings located throughout the shipyard. Both models are identical in terms of price, energy efficiency and hazardous material content. The light bulbs both have a color rendering index (CRI) of 62, are 34 watts, and are priced from $0.87 to $1.00 each. Broken and spent bulbs are stored at the Hazardous Waste Disposal Facility. These bulbs contain heavy metals such as mercury and cadmium and will not pass a toxicity characteristic leaching procedure (TCLP) test for mercury; further, broken bulbs cannot be recycled and must be disposed of as hazardous waste. Additionally, the ballasts contain PCBs and must also be disposed of as hazardous waste. Thus, PNS is seeking a less hazardous or non-hazardous alternative to replace their fluorescent light bulbs.

CHAPTER 4

SUMMARY OF FINDINGS, RESULTS, AND ASSUMPTIONS

4.0 SUMMARY OF FINDINGS

This chapter presents AFMA's findings based on performing the feasibility analyses both on- and off-site to identify and analyze substitute materials for the status quo hazardous materials surveyed at PNS; and to research and analyze pollution prevention alternatives for the aperture card reproduction process and the fluorescent light bulb waste stream. Additionally, the results obtained upon completing each portion of the analyses are provided, and includes a critical evaluation of the tools utilized. Finally, this chapter documents the assumptions AFMA made and the problem areas encountered while performing the feasibility analyses to identify the optimum value pollution prevention alternatives recommended in this Technical Report for implementation at PNS.

4.1 The Hazardous Substance Management System (HSMS)

AFMA was tasked with utilizing the HSMS to assist with the pollution prevention alternative assessments. This was to be accomplished from within the P2 System, which was designed to transfer environmental, safety and health information for the status quo materials from the HSMS for incorporation into the economic and risk analyses. However, AFMA's attempt to extract this data from PNS's HSMS was unsuccessful, and AFMA instead obtained MSDSs for the status quo materials from the HMIS and from PNS's Occupational Safety and Health office. AFMA then manually entered the necessary information reported on the MSDSs into the P2 System in preparation for the economic and risk analyses. Thus, the HSMS did not contribute to the results of the feasibility analyses performed to identify optimum value pollution prevention alternatives for PNS.

Additionally, the HSMS maintained MSDSs for the status quo materials observed on-site at PNS; however, the majority of the data entry fields contained no information, and therefore the HSMS provided incomplete and unusable environmental, safety and health data. Had AFMA relied solely on the HSMS to obtain MSDSs for the status quo materials surveyed on-site, it would not have been possible to perform the feasibility analyses.

Finally, AFMA ascertained that PNS's HSMS does not reflect the current baseline situation at the shipyard. PNS provided AFMA with a list generated by the HSMS identifying several shops which use and/or store large quantities of hazardous materials. While in the field, AFMA recognized that this was often not the case. Many of the status quo materials surveyed were not used and/or stored in the shops visited, as had been indicated by the HSMS.

4.2 The Market Availability Studies

The market availability studies provided AFMA with an effective mechanism for identifying feasible pollution prevention alternatives for the status quo materials surveyed on-site at PNS. These studies also allowed AFMA to determine the availability and associated costs of these material substitutes, and provided additional guidance for ranking the pollution prevention alternatives. Furthermore, this tool ensured that the pollution prevention alternatives identified would meet the applicable specifications and process requirements while performing as well, if not better than, the status quo materials.

However, the fundamental guidance necessary for performing the market availability studies is not currently available. There are no instructions governing the number of manufacturers and distributors to contact, the type of information to collect from them, and the number of feasible pollution prevention alternatives to identify for each status quo material analyzed on-site. AFMA identified as many potential alternatives as feasible given the allotted resources and time constraints. As a result, AFMA performed a first-order level of effort on costs. Thus, while AFMA determined that the market availability studies contributed to the feasibility analyses, proper guidance must be developed to accurately perform these studies in the future.

4.3 Assumptions Made While Performing the NAVFAC P-442 Economic Analysis Model, Type II Economic Analysis Format

While on-site, AFMA requested that all relevant cost data pertaining to the 17 status quo materials be provided to perform the economic analysis; however, a limited amount of information was collected from representatives at PNS. Thus, to effectively utilize the NAVFAC P-442 Economic Analysis Model, Type II economic analysis format, AFMA formed a number of assumptions. These assumptions ultimately affected the discounted costs, or NPV costs, generated by the economic analysis and should be noted when considering the overall results. However, the analysis was performed uniformly for each status quo and substitute material and therefore the results are consistently accurate. The assumptions AFMA made while utilizing the NAVFAC P-442 Economic Analysis Model, Type II economic analysis format included the following:

a. The economic life of all materials was assumed to be five years and the standard risk-free interest rate was assumed to be 5.00%.
b. When calculating PPE costs, AFMA did not factor the price of hats, boots and impervious or protective clothing, except when tyvek suits were specifically reported on the MSDS, into the total costs because this was standard clothing worn by all employees at the shops AFMA visited.
c. When calculating PPE costs, AFMA factored respirator costs into the total costs only when required, because all of the shops AFMA visited were unconfined areas that were well ventilated.
d. When determining PPE assumptions and costs (see Appendix D, Figure D-1), the total PPE costs were calculated for one person for one year; although most of the shops

AFMA visited employed more than one worker, only one worker at time handled the materials analyzed, as a general rule.

e. AFMA assumed that labor costs would essentially remain unchanged, with one exception; when respirators were required PPE for a particular material, additional labor was factored into the annual PPE costs to account for the issue and return of the respirators, based on weekly exposure time to the material. This added PPE cost was incorporated into the analysis as follows:

    1. 1 - 8 hours of exposure per week - 1 hour per week for the issue and return of PPE.
    2. 9 - 16 hours of exposure per week - 2 hours per week for the issue and return of PPE.
    3. 17 - 24 hours of exposure per week - 3 hours per week for the issue and return of PPE.
    4. 25 - 32 hours of exposure per week - 4 hours per week for the issue and return of PPE.
    5. 33 - 40 hours of exposure per week - 5 hours per week for the issue and return of PPE.

f. AFMA used the standard labor rate provided for PNS paint shop employees in all PPE calculations. This rate was consistently used because the labor rates for the other shops AFMA visited vary only slightly, and these discrepancies should not affect the overall results of the analysis to a significant degree.

g. Due to the capabilities of the P2 System, shipping and hazardous material fees, where applicable, were factored into the material annual costs.

h. Due to the capabilities of the P2 System, the additional PPE cost discussed in (e) above was factored into the annual PPE costs as a PPE item.

i. AFMA assumed that training costs would essentially remain unchanged.

j. Because no PPE costs were provided by PNS, with the exception of respirators ($120.26 each) and safety glasses ($2.56 each), AFMA incorporated PPE prices listed in the 1996 Global Occupational Safety Catalog into the economic analysis.

k. AFMA did not factor hazardous waste disposal costs into the economic analysis. While disposal costs in dollars per pound were provided by PNS, the weight of materials and contaminated PPE disposed of were not. Because the disposal costs are relatively nominal, this omission of data should not affect the results of the analysis to a significant degree.

l. Annual material usage quantities for the three paints analyzed at Building 158, Crane Maintenance, were not provided by the shop's point of contact (POC). To collect cost data from manufacturers and distributors and perform the economic analysis, AFMA assumed that the annual material usage quantities were 100 gallons for each paint.

m. Because material annual costs were not provided by PNS, AFMA contacted the manufacturers of the status quo materials analyzed on-site in an attempt to collect this information. The following results were obtained:

    1. Some of PNS's cost data was collected.

2. Some of the manufacturers had no information pertaining to the purchase of their materials by PNS.
3. Some of the materials were purchased through distributors, the names of which were unknown by the manufacturers.
4. One of the manufacturers is no longer in business.
5. One of the status quo materials has not been manufactured since 1993 and cost data was therefore not available.
6. One of the status quo materials was replaced by another material and cost data was therefore not available.
7. One of the manufacturers would not release cost information.
8. Some of the manufacturers did not return AFMA's repeated telephone calls.

To bypass this problem, AFMA utilized the prices for the status quo materials as listed in the GSA Spring 1996 Supply Catalog, with two exceptions. Dichloromethane, Technical, and Enamel Deck Interior Gray 26231 are not available through GSA. To perform the economic analysis in these cases, AFMA used the highest material annual costs for the appropriate pollution prevention alternatives as the material annual costs for these status quo materials.

n. AFMA assumed that the quantity of materials currently used at PNS would not change on an annual basis upon implementation of the pollution prevention alternatives, and the Volatile Organic Content (VOC) of the status quo and substitute materials was not incorporated into the economic analysis. VOC content was not typically reported on the MSDSs of the materials analyzed, and it was not economically feasible for AFMA to collect this information from the manufacturers and distributors of the materials.

4.4 The NAVFAC P-442 Economic Analysis Model, Type II Net Present Value Economic Analysis Format

AFMA incorporated material annual costs, shipping costs and hazardous material fees collected from manufacturers, distributors, the GSA 1996 Supply Catalog, and the DLA December 1995 Environmental Products Catalog for the status quo and substitute materials into the Type II economic analysis format. The other factor included in the economic analysis was the total price of PPE required for each material, as reported on the MSDSs. Appendix D, Figure D-1 lists the PPE requirements for the status quo and substitute materials, and outlines the assumptions AFMA made to determine the quantity of PPE to be worn by one employee for one year, along with the associated costs. This chart was effectively used to compare the PPE costs of the status quo materials used at PNS with the PPE costs of the pollution prevention alternatives identified to replace them.

With this cost information, AFMA utilized the P2 System to perform a Type II economic analysis. This system incorporated a 4.13905 discount factor into the calculation of each material's discounted cost, or NPV cost. This figure was obtained from the tables in Appendix C of the NAVFAC P-442 Economic Analysis Handbook, and takes into account the aforementioned 5.00% interest rate and five year economic life.

The results of the NAVFAC P-442 Economic Analysis Model, Type II NPV economic analysis format are presented in Appendix D, Figure D-2.

It should be noted that because a limited amount of cost data was obtained from PNS, the NAVFAC P-442 Economic Analysis Model provided a very basic comparison of the economic changes that would result from implementation of the proposed alternatives. However, AFMA did receive economic data from reliable sources, with two exceptions (Dichloromethane, Technical, and Enamel Deck Interior Gray 26231), and feels confident that the material substitutes will result in an annual cost savings at PNS. The status quo materials' and the pollution prevention alternatives' discounted costs, or NPV costs, are considered to be sufficiently accurate; these costs were used to identify the most cost-effective alternatives for further analysis.

4.5 Assumptions Made While Using the HM Substitution Process to Perform the Risk Analysis

AFMA formed a number of assumptions to utilize the HM Substitution Process for performing the risk analysis from within the P2 System. These assumptions ultimately affected the HMSF scores calculated for each of the materials analyzed and should be noted when considering the overall results. However, the analysis for each material was performed uniformly and therefore the results are consistently accurate. The assumptions AFMA made while utilizing the HM Substitution Process included the following:

a. The chemical constituents of non-hazardous materials typically did not have exposure restrictions and should have been assigned a score of zero on the Substitution Algorithm worksheet; however, the P2 System interpreted no exposure restriction instead as representing a zero parts per million (ppm) exposure restriction, thereby assigning the material a score of 16. To minimize this problem, AFMA designated an exposure restriction of 2000 ppm to the chemical constituents of non-hazardous materials, and the P2 System assigned the material a score of two instead of 16. (The HMSFs for these non-hazardous materials are accurately noted in Appendix F).
b. AFMA only factored PPE that was required, not recommended, into the calculation of the HMSF.
c. When a range for flash point and/or boiling point was reported on the MSDSs, AFMA selected the highest temperature to calculate the HMSF.
d. When the flash point, boiling point, and/or vapor pressure of a material was not reported on the MSDS, AFMA entered the flash point, boiling point, and/or vapor pressure of the most hazardous chemical constituent into the P2 System for incorporation into the risk analysis. Thus, this flammable/combustible liquids evaluation was accurately completed for all but a small number of the status quo and substitute materials. In the cases where "N/L" appears in the rows designated for flash point, boiling point, and/or vapor pressure, this generally indicates that these components of the Substitution Algorithm were not relevant or not applicable to the material or the most hazardous chemical constituent.

e. PNS is permitted as an entire base, and therefore individual processes are not subject to permitting. If a new hazardous air pollutant (HAP) is introduced into the waste stream, the base is notified and the permit is modified accordingly. It is not anticipated that new HAPs will be introduced into the waste stream upon implementation of the recommended pollution prevention alternatives. Therefore, "No" appears on the Substitution Algorithm worksheets in the row designated for Federal/State permit requirements for Material B. Additionally, "No" appears for Material A because specific permit information for the status quo materials was not available.

4.6 The Hazardous Material (HM) Substitution Process

To perform the risk analysis, AFMA completed HM Substitution Algorithm Worksheets from within the P2 System to compare the pollution prevention alternatives to the status quo materials at PNS. These worksheets are provided in Appendix E. Each sheet compares a status quo material, Material A, to an applicable pollution prevention alternative, Material B. The points for each were totaled at the bottom of each worksheet, and the material with the lower score was recognized as more environmentally-sound for that particular analysis.

The HM Substitution Process proved to be an effective tool for conducting the feasibility analyses to identify optimum value pollution prevention alternatives for PNS. This Process successfully evaluated the status quo and substitute materials, providing both a comprehensive and a useful mechanism for comparing one material with another. Minimal information was entered into the P2 System's Substitute Analysis screens and the HMSFs were calculated. Despite the assumptions made to perform the risk analysis, AFMA is confident that the HMSFs provided an accurate representation of the environmental, safety and health benefits associated with the status quo and substitute materials, and identified the most environmentally-sound alternatives for further analysis.

4.7 The Pollution Prevention (P2) System

The P2 System proved to be the most valuable tool by which the feasibility analyses were performed to identify the most promising pollution prevention alternatives for further analysis. AFMA used the P2 System to carry out economic and risk analyses on the status quo and substitute materials, and in doing so, determined that the system generally provided accurate results and saved a considerable amount of time by eliminating the need for manual calculations. The P2 System reduced the original list of 183 pollution prevention alternatives identified for the status quo materials to the 76 most cost-effective, environmentally-sound substitutes, which were further analyzed using the PPPN Analysis. The principal results generated for the 183 alternatives analyzed using the P2 System, along with supplementary information, are presented in Appendix F.

4.8 Assumptions Made While Performing the Pollution Prevention Priority Number (PPPN) Analysis

AFMA formed a number of assumptions to perform the PPPN Analysis on the most promising pollution prevention alternatives as indicated by the results of the economic and risk analyses generated by the P2 System. These assumptions ultimately affected the calculation of the PPPN for each material analyzed and should be noted when considering the overall results. However, the analysis was performed uniformly and therefore the results are consistently accurate. The assumptions AFMA made while performing the PPPN Analysis included the following:

a. There are no investment costs to consider for material substitutions, per the NAVFAC P-442 Economic Analysis Handbook.
b. When calculating the ICF for some of the pollution prevention alternatives identified, AFMA calculated a negative change in HMSFs. Because there is no ICF value correlating to a negative change in HMSFs, AFMA assigned an ICF value of 40 to the pollution prevention alternatives in these instances. This was necessary for considering the worst case scenario ICF for a situation in which there is $0.00 investment cost.
c. The WF was assumed to be one for all alternatives. This is based on the fact that all of the recommended pollution prevention alternatives are material substitutions and that the amount of materials used on an annual basis will remain unchanged (see Section 4.3).
d. The PF was assumed to be one for all alternatives because the number of employees exposed to the recommended pollution prevention alternatives is not expected to change.

4.9 The Pollution Prevention Priority Number (PPPN) Analysis

AFMA utilized the PPPN Analysis to further analyze the environmental, safety, health and economic benefits associated with those cost-effective pollution prevention alternatives having the lowest HMSFs. The PPPN Analysis was a useful screening tool which assigned numeric values to the most promising materials based on each one's HMSF, discount cost, percentile changes in investment cost and UAC, population exposed, and the weight of the material used (see Section 3.6). AFMA computed each material's PPPN and gave highest priority to those products with the lowest scores. The PPPN Analysis was a straightforward mechanism by which the 76 least hazardous and most economically feasible alternatives being considered for implementation at PNS were prioritized for further analysis. It should be noted that as a general rule, although not exclusively, a material with a lower PPPN was prioritized over a material with a higher PPPN. The methodology by which AFMA computed the PPPNs for the most promising pollution prevention alternatives is presented in Appendix G.

4.10 The Benefit/Cost Ratio (BCR) Analysis

The BCR Analysis provided an unbiased representation of the benefits versus cost implications of the 41 most promising pollution prevention alternatives identified by the PPPN Analysis. This analysis provided a final evaluation of each pollution prevention alternative's associated costs and benefits and determined which materials will provide the most results or outputs for the least resources or inputs to be expended. As shown in this Technical Report however, the results of a BCR Analysis did not always support the recommendation of a proposed alternative.

Because the recurring costs associated with the pollution prevention alternatives were quantifiable, AFMA computed a Direct Cost Savings - Benefit Analysis. This type of quantifiable benefit was represented by a reduced annual budget. A positive value represented a real cost savings. In this study, a real cost savings further supported the recommendation of a pollution prevention alternative in place of a status quo material. The three other types of benefits were not applicable to this analysis because the pollution prevention alternatives did not demonstrate Efficiency/Productivity Increases, Other Quantifiable Outputs or Non-Quantifiable Outputs.

Finally, AFMA accounted for the externalities, or environmental merits associated with the pollution prevention alternatives. When comparing two or more pollution prevention alternatives, a low HMSF was considered a benefit because it represented a more environmentally-sound product. On the other hand, a high HMSF was considered a disbenefit because it represented a less environmentally-sound product. This method of assessing the benefits contributed positively to the analysis. Even though this approach was non-economical, it did add value to the BCR Analysis and eased the decision-making process.

4.11 Gaseous Ammonia Use in the Aperture Card Reproduction Process

AFMA was provided with literature documenting a study previously performed at PNS to identify a viable alternative for the gaseous ammonia used in the aperture card reproduction process. 3M was contacted, and stated that there is no longer a market for the card duplicators, and they are therefore no longer manufactured. Alternatives for the gaseous ammonia have been thoroughly researched; however, no viable substitutes were identified. Additionally, the Navy is completely phasing out the aperture card reproduction process and converting to JEDMICS. Thus, it is not economically feasible to replace the small amount of gaseous ammonia currently used at PNS for aperture card reproduction.

4.12 Fluorescent Light Bulb Waste Stream

PNS is currently using two types of hazardous fluorescent light bulbs at the buildings located throughout the shipyard. AFMA contacted the Defense Supply Center (DSC) in Richmond, VA to obtain information regarding these status quo bulbs (see

Section 3.9). DSC also provided AFMA with information pertaining to potential replacement light bulbs. Philips Model Number F40T12CWRS EW ALTO, known as the "T12" or "Alto," is a viable alternative. This bulb would replace the bulbs currently used and would not require the installation of new ballasts. The T12 bulb has a CRI of 62 to 73, is 34 watts, is priced at $1.20 per bulb, and will pass a TCLP test for mercury. PNS should consider this fluorescent light bulb if nominal funding is available and the ballasts cannot be replaced, as this bulb is only slightly more expensive than those currently used at the shipyard.

Another viable alternative, the "T8," will be available for purchase as of January 1997. This fluorescent light bulb will be manufactured by Philips, General Electric and Sylvania. The T8 has a CRI of 75 to 80, is 32 watts, and will pass a TCLP test for mercury; the cost of the bulbs was not available at the time of this analysis. However, the T8 light bulb would require the installation of electric ballasts. These ballasts do not contain PCBs, are 12% to 30% more efficient than the ballasts now in place at PNS, and will eliminate flickering and noise. Thus, PNS should consider this fluorescent light bulb if adequate funding is available, as the environmental benefits to be achieved upon implementation will be greater than those of the status quo bulbs or the T12 bulbs.

CHAPTER 5

RECOMMENDATIONS AND CONCLUSIONS

5.0 SUMMARY OF FINDINGS

This chapter summarizes the results of the market availability studies, the economic and risk analyses performed from within the P2 System, the PPPN Analysis and the BCR Analysis, which AFMA utilized to conduct the feasibility analyses and identify cost-effective, environmentally-sound substitute materials. Figure 1 displays the optimum value pollution prevention alternatives recommended for implementation at PNS, based on the results of these feasibility analyses. Finally, this chapter addresses a number of important issues identified while performing the feasibility analyses both on- and off-site; the process and waste stream analyzed on-site; and the effectiveness of the tools utilized to identify the pollution prevention alternatives described in this Technical Report.

5.1 Findings and Recommendations

AFMA identified 183 pollution prevention alternatives for the 17 status quo hazardous material uses surveyed on-site at PNS. These alternatives were critically evaluated and the most promising ones were selected for implementation based on the results of the feasibility analyses conducted. While performing the economic and risk analyses from within the P2 System, AFMA acknowledged that HMSFs took priority over costs in all comparisons. Materials with relatively high costs and relatively low HMSFs were carefully considered against materials with low to moderate costs and moderate to high HMSFs. That is, materials were not blindly selected for their low HMSFs. AFMA then applied the PPPN Analysis to further analyze 76 cost-effective alternatives having the lowest HMSFs for their environmental, safety, health and economic benefits (see Table 2). Finally, AFMA utilized the BCR Analysis as a final mechanism for determining which of the 41 pollution prevention alternatives with the lowest PPPNs will offer the most results or outputs for the least resources or inputs (see Table 3). The following paragraphs briefly describe the 17 status quo materials, and the principal results of the feasibility analyses performed on each to identify the optimum value pollution prevention alternatives recommended for implementation at PNS. Also discussed are AFMA's findings and recommendations as they pertain to the aperture card reproduction process and the fluorescent light bulb waste stream.

5.1.1 Neoprene Primer

Building 240 uses Neoprene N-11 Primer, manufactured by Haartz-Mason Inc., for bonding neoprene rubber. AFMA conducted the feasibility analyses on the status quo material and on thirteen pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 4 (Anaerobic Solventless Primer) to 66 (Pliobond 20 Adhesive). The discounted costs, or NPV costs,

ranged from $586.09 (Neoprene Adhesive N-1051) to $28,083.62 (Black Max Black Tough Adhesive). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 20 (Anaerobic Solventless Primer) to 60 (Blue Resin Solution - G7526F and EF Primer 49). Based on these results, AFMA utilized the BCR Analysis to further analyze Anaerobic Solventless Primer, manufactured by Saf-T-Lok Chemical Corporation, 3M 90 High Strength Adhesive, manufactured by 3M, and 3M Spray 80 Neoprene Contact Adhesive, also manufactured by 3M. AFMA recommends 3M 90 High Strength Adhesive for implementation at PNS.

Bldg	Alternative	Product	Manufacturer	HMSF	UAC ($)	Initial Cost ($)	PPPN	Direct Cost Benefit ($)
240	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43	203.76	-	-	-
	Proposed	3M 90 High Strength Adhesive	3M	22	233.42	0.00	23	(29.66)
240	Status Quo	Neolube No.1 Graphite, Colloidal	Huron Industries Inc.	35	8,166.20	-	-	-
	Proposed	Lock-Ease	AGS Company	25	1,606.04	0.00	3	6,560.16
60	Status Quo	IB No 2652 Acrylic Lacquer Aerosol	Ill. Bronze Powder & Paint	41	45.36	-	-	-
	Proposed	DR038 Concentrate Aerosol Lacquer	Devoe & Raynolds Co., Inc	29	61.44	0.00	40.5	(16.08)
60	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43	530.88	-	-	-
	Proposed	3M 90 High Strength Adhesive	3M	22	584.81	0.00	22	(53.93)
60	Status Quo	Dichloromethane, Technical	Ashland Chemical Co.	72	4,002.16	-	-	-
	Proposed	Pur-O-Shine Heavy Duty Cleaner	American Puro-Shine	12	822.25	0.00	1	3,179.91
64	Status Quo	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	44	79.83	-	-	-
	Proposed	Aerosol Coatings 01947, Lacquer 17178	Sprayon Products	34	78.66	0.00	28.5	1.17
92	Status Quo	Loctite Grade A Anaerobic Adhesive	Loctite Corp.	7	2,568.00	-	-	-
	Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	209.04	0.00	3	2,358.96
92	Status Quo	So-Sure Yellow Primer (84-331) Aerosol	LHB Industries	37	2,778.58	-	-	-
	Proposed	Zinc Chromate Primer GP-0004-1757	Seymour of Sycamore	17	2,745.60	0.00	28.5	32.98
92	Status Quo	01920 Black Lacquer 17038 Aerosol	Sprayon Products	50	53.76	-	-	-
	Proposed	306 Black 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	63.60	0.00	36	(9.84)
18	Status Quo	Omega 3812 SN 313-2 Paint Remover	Omega Chemical Corp.	59	6,204.20	-	-	-
	Proposed	TT-R-251J Type III Cl B Paint Remover	MSCI, Ltd.	13	789.46	0.00	1	5,414.74
18	Status Quo	T-10 Paint Thinner	Devoe Coatings Co.	41	2,871.36	-	-	-
	Proposed	Odorless Thin-X	Sterling-Clarke-Lurton	13	1,400.40	0.00	5	1,470.96
18	Status Quo	Devoe ABC #3 Red AF Paint	Devoe Marine Coatings	44	3,489.48	-	-	-
	Proposed	N-5564 Gloss Red Silicone Enamel 11105	Niles Chemical Paint Co.	36	2,873.60	0.00	24	615.88
300	Status Quo	Locquic Primer T	Loctite Corp.	36	128.76	-	-	-
	Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	127.59	0.00	19	1.17
300	Status Quo	So-Sure Lacquer Aerosol Red 11136	LHB Industries	44	32.11	-	-	-
	Proposed	301 Red 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	34.45	0.00	33	(2.34)
65	Status Quo	So-Sure Lacquer Aerosol Gray 16307	LHB Industries	44	258.38	-	-	-
	Proposed	361 Gray 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	318.00	0.00	37.5	(59.62)
158	Status Quo	Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	50	4,704.68	-	-	-
	Proposed	Enamel Orange 12246 TT-E-2784	Del Paint Corp.	11	3,527.76	0.00	7	1,176.92
158	Status Quo	Enamel Alkyd Air Drying Yellow 13538	Pratt and Lambert	49	3,378.68	-	-	-
	Proposed	TT-E-2784 Ultra Deep Tint Yellow 13538	Davlin Paint Co.	10	1,758.40	0.00	5	1,620.28
158	Status Quo	Enamel Deck Interior Gray 26231	Pratt & Lambert Industrial	34	3,709.68	-	-	-
	Proposed	97-482 Silicone Alkyd	PPG Industries	19	3,689.76	0.00	28.5	19.92

( ) denotes a negative value

Figure 1
The Most Promising Pollution Prevention Alternatives
Recommended for Implementation at Portsmouth Naval Shipyard

Table 2. List of Most Promising Pollution Prevention Alternatives at Portsmouth Naval Shipyard

	HAZARDOUS MATERIAL	BLDG	Alternative	PRODUCT	MANUFACTURER	HMSF	DISCOUNTED COST ($)
1	Neoprene Primer	240	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43	843.37
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	7,867.51
			Proposed	EF Primer 49	Hernon Manufacturing	31	4,451.63
			Proposed	Blue Resin Solution - G7526F	Glyptal, Inc.	31	1,932.11
			Proposed	3M 90 High Strength Adhesive	3M	22	966.14
			Proposed	3M Spray 80 Neoprene Contact Adhesive	3M	24	982.49
2	Corrosion Inhibitor	240	Status Quo	Neolube No.1 Graphite, Colloidal	Huron Industries Inc.	35	33,800.31
			Proposed	DAG 156 Graphite, Colloidal	Acheson Colloids Co	28	35,968.47
			Proposed	Pelco Colloidal Graphite, 16053	Ted Pella Inc.	25	66,443.96
			Proposed	Lock-Ease	AGS Company	25	6,647.48
			Proposed	Siloxirane 2032	Advance Polymer Sciences	33	24,558.80
3	Black Paint	60	Status Quo	IB No 2652 Acrylic Lacquer Aerosol	Illinois Bronze Powder & Pain	41	187.75
			Proposed	DR038 Concentrate Aerosol Lacquer	Devoe & Raynolds Co, Inc.	29	254.30
			Proposed	A-4100 Acrylic Aerosol Black	Cardninal Industrial Finishes	30	861.34
4	Neoprene Primer	60	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43	2,197.34
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	19,812.18
			Proposed	EF Primer 49	Hernon Manufacturing	31	11,229.08
			Proposed	Blue Resin Solution - G7526F	Glyptal, Inc.	31	4,910.78
			Proposed	3M 90 High Strength Adhesive	3M	22	2,420.56
			Proposed	3M Spray 80 Neoprene Contact Adhesive	3M	24	2,460.95
5	Dichloromethane	60	Status Quo	Dichloromethane, Technical	Ashland Chemical Company	72	16,565.14*
			Proposed	Safety Strip HT Cleaning Compound	Brulin and Co., Inc.	12	10,482.23
			Proposed	Envirosolve 654CR	Fine Organics Corp	16	7,047.02
			Proposed	Teksol EP Cleaning Compound	Inland Technology	15	10,587.65
			Proposed	Citra Soak, FC058	Inland Technology	15	6,769.00
			Proposed	Pur-O-Shine Heavy Duty Cleaner	merican Puro-Shine Industrie	12	3,403.33
6	Silver Paint	64	Status Quo	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	44	330.42
			Proposed	Aerosol Coatings 01947, Lacquer 17178	Sprayon Products	34	325.58

Discounted Cost = Annual Cost * Discount Factor
HMSF = Hazardous Material Selection Factor
* Due to a lack of data provided, the highest alternative price was used as the status quo price

Table 2. List of Most Promising Pollution Prevention Alternatives at Portsmouth Naval Shipyard

	HAZARDOUS MATERIAL	BLDG	Alternative	PRODUCT	MANUFACTURER	HMSF	DISCOUNTED COST ($)
6	Silver Paint	64	Status Quo	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	44	330.42
	CONTINUED		Proposed	310 Silver 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	427.77
			Proposed	A-2000 Lacquer Aerosol Silver 17178	Cardinal Industrial Finishes	30	1,292.63
7	Anaerobic Adhesive	92	Status Quo	Loctite Grade A Anaerobic Adhesive	Loctite Corp	7	10,629.08
			Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	865.23
			Proposed	Anaerobic Adhesive/Sealant	Saf-T-Lok Chemical Corp	7	2,266.21
			Proposed	TB 1361A Sealing Compound	Three Bond of America, Inc.	11	1,553.14
			Proposed	Grade A Red Sealing Compound	Three Bond of America, Inc.	11	2,486.00
			Proposed	Sealant Grade A 8831	Loctite Corp	16	1,575.74
8	Yellow Primer	92	Status Quo	So-Sure Yellow Primer (84-331) Aerosol	LHB Industries	37	11,500.68
			Proposed	TT-P-1757A VOC Compliant Primer	Kop-Coat Inc.	33	12,829.65
			Proposed	P-441A Zinc Chromate Primer	Koppers Co., Inc.	29	11,500.68
			Proposed	Zinc Chromate Primer P-441P	Koppers Co., Inc.	33	11,897.62
			Proposed	Zinc Chromate Primer GP-0004-1757	Seymour of Sycamore	17	11,364.18
			Proposed	6-204 Zinc Chromate Metal Primer	PPG Industries	21	13,864.00
9	Black Paint	92	Status Quo	01920 Black Lacquer 17038 Aerosol	Sprayon Products	50	222.52
			Proposed	So Sure Lacquer Gloss Black 17038	LHB Industries	35	227.36
			Proposed	Eco-Sure Black 17038 Enamel	LHB Industries	32	557.16
			Proposed	Lacquer, Aerosol Black 17038	Seymour of Sycamore	37	190.73
			Proposed	306 Black 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	263.24
			Proposed	A-2000 Series Lacquer Black 17038	Cardinal Industrial Finishes	30	824.71
10	Paint Remover	18	Status Quo	Omega 3812 SN 313-2 Paint Remover	Omega Chemical Corp.	59	25,679.49
			Proposed	Paint Remover	Chemical Commodities Agenc	38	9,651.85
			Proposed	Intex 8573 Paint Remover	Eze Products Inc.	32	24,920.81
			Proposed	TT-R-251J Type III Cl B Paint Remover	MSCI, Ltd	13	3,267.61
			Proposed	Paint Remover, 400063 Nonflammable	W.M. Barr & Co	44	3,299.24
			Proposed	Organic Paint Remover	4-Tek Industries, Inc.	40	8,056.74

Discounted Cost = Annual Cost * Discount Factor
HMSF = Hazardous Material Selection Factor
* Due to a lack of data provided, the highest alternative price was used as the status quo price

Table 2. List of Most Promising Pollution Prevention Alternatives at Portsmouth Naval Shipyard

	HAZARDOUS MATERIAL	BLDG	Alternative	PRODUCT	MANUFACTURER	HMSF	DISCOUNTED COST ($)
11	Paint Thinner	18	Status Quo	T-10 Paint Thinner	Devoe Coatings Co	41	11,884.70
			Proposed	Standard 350H TT-T-291 Thinner	Chevron Solvents & Chemical	30	9,357.23
			Proposed	Paint Thinner	Home Oil Company	29	3,841.87
			Proposed	TT-T-291F Paint Thinner	Stic-Adhesive Products Co.	16	3,841.87
			Proposed	Odorless Mineral Spirits	Shell Oil Co	15	5,799.51
			Proposed	Odorless Thin-X	Sterling-Clarke-Lurton	13	5,796.33
12	Antifouling Paint	18	Status Quo	Devoe ABC #3 Red AF Paint	Devoe Marine Coatings Co	44	14,443.13
			Proposed	N-5564 Gloss Red Silicone Enamel 11105	Niles Chemical Paint Co	36	11,893.97
			Proposed	888 Series Water Base AF Paint	Pro-Line Paint Co	25	23,317.75
			Proposed	F-121 Vinyl AF Red Paint	Seagrave Coatings Corp	33	23,664.77
			Proposed	Interclene AF Red, BRA540	International/Courtaulds	36	15,779.71
			Proposed	MIL-P-15931F Red AF, Type I Cl 1 4050	International Paint Co., Inc	25	24,672.88
13	Primer	300	Status Quo	Locquic Primer T	Loctite Corp	36	532.94
			Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	528.10
			Proposed	Nuts N' Bolts 227	Heron Manufacturing Inc	20	1,459.59
			Proposed	Sealant Grade A 8831	Loctite Corp	16	894.53
			Proposed	Nuts N' Bolts 223	Heron Manufacturing Inc	22	1,459.59
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	2,622.50
14	Red Paint	300	Status Quo	So-Sure Lacquer Aerosol Red 11136	LHB Industries	44	132.90
			Proposed	Fixall Brite Red 11136 (444-1304)	Chase Products Co	25	299.17
			Proposed	Eco Sure Spray Paint Red 11136	LHB Industries	36	366.43
			Proposed	Enamel, Low VOC Water-Based Red	LHB Industries	36	281.25
			Proposed	301 Red 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	142.59
			Proposed	A-2000 Aerosol Lacquer Red 11136	Cardinal Industrial Finishes	30	455.30
15	Gray Paint	65	Status Quo	So-Sure Lacquer Aerosol Gray 16307	LHB Industries	44	1,069.45
			Proposed	Enamel Low VOC Water-Based Gray 16307	LHB Industries	40	2,653.88
			Proposed	Eco Sure Gray 16307 VOC Compliant	LHB Industries	39	3,239.97
			Proposed	361 Gray 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	1,316.22
			Proposed	A-2000 Aerosol Lacquer Gray 16307	Cardinal Industrial Finishes	30	4,013.64

Discounted Cost = Annual Cost * Discount Factor
HMSF = Hazardous Material Selection Factor
* Due to a lack of data provided, the highest alternative price was used as the status quo price

Table 2. List of Most Promising Pollution Prevention Alternatives at Portsmouth Naval Shipyard

	HAZARDOUS MATERIAL	BLDG	Alternative	PRODUCT	MANUFACTURER	HMSF	DISCOUNTED COST ($)
16	Orange Paint	158	Status Quo	Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	50	19,472.91
			Proposed	Enamel Orange 12246 TT-E-2784	Del Paint Corp	11	14,601.58
			Proposed	Exterior Trim Enamel Orange 12246	Farwest Paint Mfg Co	15	9,899.45
			Proposed	Enamel, Orange, TT-E-2784, 495-12246	Scotch Paint	21	14,603.73
			Proposed	305 Orange 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	8,774.79
			Proposed	6-282 Speedhide Int / Ext Gloss Enamel	PPG Industries	31	6,662.88
17	Yellow Paint	158	Status Quo	Enamel Alkyd Air Drying Yellow 13538	Pratt and Lambert	49	13,984.53
			Proposed	TT-E-2784 Enamel Yellow 13538	Del Paint Mfg	14	11,886.36
			Proposed	TT-E-2784 Ultra Deep Tint Yellow 13538	Davlin Paint Co	10	7,278.11
			Proposed	Exterior Trim Enamel Yellow 13538	Farwest Paint Mfg Co	16	7,262.71
			Proposed	Enamel Gloss Yellow 13538, TT-E-489	Randolph Products Co	9	16,063.65
			Proposed	Enamel Yellow 13538	Scotch Paint	22	11,888.51
18	Gray Paint	158	Status Quo	Enamel Deck Interior Gray 26231	Pratt & Lambert Industrial	34	15,354.55*
			Proposed	MIL-E-24635A Enamel Gray 26231	Davlin Paint Co., Inc.	29	8,536.38
			Proposed	N-5356 Silicone Alkyd Enamel Gray 26231	Niles Chemical Paint Co	32	7,174.63
			Proposed	97-482 Silicone Alkyd	PPG Industries	19	15,272.10

Discounted Cost = Annual Cost * Discount Factor
HMSF = Hazardous Material Selection Factor
* Due to a lack of data provided, the highest alternative price was used as the status quo price

Table 3. The Benefit/Cost Ratio Analysis

Bld	Alternative	Product	Manufacturer	HMSF	UAC ($)	Initial Cost	PPPN	Direct Cost Benefit
240	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43	203.76	-	-	-
	Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	1,900.80	0.00	20	(1,697.04)
	Proposed	3M 90 High Strength Adhesive	3M	22	233.42	0.00	23	(29.66)
	Proposed	3M Spray 80 Neoprene Contact Adhesive	3M	24	237.37	0.00	36	(33.61)
240	Status Quo	Neolube No.1 Graphite, Colloidal	Huron Industries Inc.	35	8,166.20	-	-	-
	Proposed	Lock-Ease	AGS Company	25	8,690.03	0.00	3	(523.83)
	Proposed	Siloxirane 2032	Advance Polymer Sciences	33	5,933.44	0.00	21	2,232.76
	Proposed	DAG 156 Graphite, Colloidal	Acheson Colloids Co	28	16,052.95	0.00	33	(7,886.75)
60	Status Quo	IB No 2652 Acrylic Lacquer Aerosol	Ill Bronze Powder & Paint	41	45.36	-	-	-
	Proposed	DR038 Concentrate Aerosol Lacquer	Devoe & Raynolds Co, Inc.	29	61.44	0.00	40.5	(16.08)
60	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43	530.88	-	-	-
	Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	4,786.65	0.00	20	(4,255.77)
	Proposed	3M 90 High Strength Adhesive	3M	22	584.81	0.00	22	(53.93)
	Proposed	3M Spray 80 Neoprene Contact Adhesive	3M	24	594.57	0.00	34.5	(63.69)
60	Status Quo	Dichloromethane, Technical	Ashland Chemical Co	72	4,002.16	-	-	-
	Proposed	Pur-O-Shine Heavy Duty Cleaner	American Puro-Shine	12	822.25	0.00	1	3,179.91
	Proposed	Citra Soak, FC058	Inland Technology	15	1,635.40	0.00	2.5	2,366.76
	Proposed	Envirosolve 654CR	Fine Organics Corp	16	1,702.57	0.00	2.5	2,299.59
64	Status Quo	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	44	79.83	-	-	-
	Proposed	Aerosol Coatings 01947, Lacquer 17178	Sprayon Products	34	78.66	0.00	28.5	1.17
	Proposed	310 Silver 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	103.35	0.00	39	(23.52)
92	Status Quo	Loctite Grade A Anaerobic Adhesive	Loctite Corp	7	2,568.00	-	-	-
	Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	209.04	0.00	3	2,358.96
	Proposed	Anaerobic Adhesive/Sealant	Saf-T-Lok Chemical Corp	7	547.52	0.00	3	2,020.48
92	Status Quo	So-Sure Yellow Primer (84-331) Aerosol	LHB Industries	37	11,500.68	-	-	-
	Proposed	Zinc Chromate Primer GP-0004-1757	Seymour of Sycamore	17	11,364.18	0.00	28.5	136.51
	Proposed	P-441A Zinc Chromate Primer	Koppers Co., Inc.	29	11,500.68	0.00	30	0.00
	Proposed	Zinc Chromate Primer P-441P	Koppers Co., Inc.	33	11,897.62	0.00	31.5	(396.93)
92	Status Quo	01920 Black Lacquer 17038 Aerosol	Sprayon Products	50	53.76	-	-	-
	Proposed	Lacquer, Aerosol Black 17038	Seymour of Sycamore	37	46.08	0.00	25.5	7.68
	Proposed	So Sure Lacquer Gloss Black 17038	LHB Industries	35	54.93	0.00	31.5	(1.17)
	Proposed	306 Black 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	63.60	0.00	36	(9.84)
18	Status Quo	Omega 3812 SN 313-2 Paint Remover	Omega Chemical Corp.	59	5,549.84	-	-	-
	Proposed	TT-R-251J Type III Cl B Paint Remover	MSCI, Ltd	13	789.46	0.00	1	4,760.38
	Proposed	Paint Remover	Chem Commodities Agency	38	1,086.88	0.00	2	4,462.96
	Proposed	Paint Remover, 400063 Nonflammable	W.M. Barr & Co	44	797.10	0.00	3	4,752.74

( ) denotes a negative value
HMSF=Hazardous Material Selection Factor
UAC=Uniform Annual Cost
PPPN=Pollution Prevention Priority Number

Table 3. The Benefit/Cost Ratio Analysis

Bldg	Alternative	Product	Manufacturer	HMSF	UAC ($)	Initial Cost	PPPN	Direct Cost Benefit
18	Status Quo	T-10 Paint Thinner	Devoe Coatings Co	41	2,871.36	-	-	-
	Proposed	Odorless Thin-X	Sterling-Clarke-Lurton	13	1,400.40	0.00	5	1,470.96
	Proposed	Odorless Mineral Spirits	Shell Oil Co	15	1,401.17	0.00	5	1,470.19
	Proposed	TT-T-291F Paint Thinner	Stic-Adhesive Products Co.	16	928.20	0.00	5	1,943.16
18	Status Quo	Devoe ABC #3 Red AF Paint	Devoe Marine Coatings	44	3,489.48	-	-	-
	Proposed	N-5564 Gloss Red Silicone Enamel 11105	Niles Chemical Paint Co	36	2,873.60	0.00	24	615.88
	Proposed	Interclene AF Red, BRA540	International/Courtaulds	36	3,812.40	0.00	33	(322.92)
300	Status Quo	Locquic Primer T	Loctite Corp	36	128.76	-	-	-
	Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	127.59	0.00	19	1.17
	Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	633.60	0.00	40	(504.84)
300	Status Quo	So-Sure Lacquer Aerosol Red 11136	LHB Industries	44	32.11	-	-	-
	Proposed	301 Red 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	34.45	0.00	33	(2.34)
65	Status Quo	So-Sure Lacquer Aerosol Gray 16307	LHB Industries	44	258.38	-	-	-
	Proposed	361 Gray 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	318.00	0.00	37.5	(59.62)
158	Status Quo	Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	50	4,704.68	-	-	-
	Proposed	Enamel Orange 12246 TT-E-2784	Del Paint Corp	11	3,364.17	0.00	7	1,340.51
	Proposed	6-282 Speedhide Int / Ext Gloss Enamel	PPG Industries	31	1,609.76	0.00	7.5	3,094.92
	Proposed	305 Orange 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	2,120.00	0.00	7.5	2,584.68
158	Status Quo	Enamel Alkyd Air Drying Yellow 13538	Pratt and Lambert	49	3,378.68	-	-	-
	Proposed	TT-E-2784 Ultra Deep Tint Yellow 13538	Davlin Paint Co	10	1,758.40	0.00	5	1,620.28
	Proposed	Exterior Trim Enamel Yellow 13538	Farwest Paint Mfg Co	16	1,754.68	0.00	10	1,624.00
	Proposed	Enamel Gloss Yellow 13538, TT-E-489	Randolph Products Co	9	3,881.00	0.00	11.5	(502.32)
158	Status Quo	Enamel Deck Interior Gray 26231	Pratt & Lambert Industrial	34	3,709.68	-	-	-
	Proposed	N-5356 Silicone Alkyd Enamel Gray 26231	Niles Chemical Paint Co	32	1,733.40	0.00	7.5	1,976.28
	Proposed	MIL-E-24635A Enamel Gray 26231	Davlin Paint Co., Inc.	29	2,062.40	0.00	16.5	1,647.28
	Proposed	97-482 Silicone Alkyd	PPG Industries	19	3,689.76	0.00	28.5	19.92

( ) denotes a negative value
HMSF=Hazardous Material Selection Factor
UAC=Uniform Annual Cost
PPPN=Pollution Prevention Priority Number

5.1.2 Corrosion Inhibitor

Building 240 uses Neolube No. 1 Graphite, Colloidal, manufactured by Huron Industries Inc., as a corrosion inhibitor on nuclear riggers. AFMA conducted the feasibility analyses on the status quo material and on four pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 25 (Pelco Colloidal Graphite, 16053 and Lock-Ease) to 43 ((55A) 591 Cosmoline). The discounted costs, or NPV costs, ranged from $1,995.93 ((55A) 591 Cosmoline) to $66,443.96 (Pelco Colloidal Graphite, 16053). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the four most promising pollution prevention alternatives. The PPPNs ranged from 3 (Lock-Ease) to 60 (Pelco Colloidal Graphite, 16053). Based on these results, AFMA utilized the BCR Analysis to further analyze Lock-Ease, manufactured by American Grease Stick Company, Siloxirane 2032, manufactured by Advanced Polymer Sciences, and DAG 156 Graphite, Colloidal, manufactured by Acheson Colloids Company. AFMA recommends Lock-Ease for implementation at PNS.

5.1.3 Black Paint

Building 60 uses IB No 2652 Acrylic Lacquer Aerosol, manufactured by Illinois Bronze Powder and Paint Company, for painting plaques and models. AFMA conducted the feasibility analyses on the status quo material and on two pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 29 (DR038 Concentrate Aerosol Lacquer) to 41 (IB No 2652 Acrylic Lacquer Aerosol). The discounted costs, or NPV costs, ranged from $187.75 (IB No 2652 Acrylic Lacquer Aerosol) to $861.34 (A-4100 Acrylic Aerosol Black). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the two pollution prevention alternatives identified. The PPPNs were 40.5 (DR038 Concentrate Aerosol Lacquer) and 60 (A-4100 Acrylic Aerosol Black). Based on these results, AFMA utilized the BCR Analysis to further analyze DR038 Concentrate Aerosol Lacquer, manufactured by Devoe and Raynolds Company, Inc. AFMA recommends DR038 Concentrate Aerosol Lacquer for implementation at PNS.

5.1.4 Neoprene Primer

Building 60 uses Neoprene N-11 Primer, manufactured by Haartz-Mason Inc., for bonding rubber box linings. AFMA conducted the feasibility analyses on the status quo material and on thirteen pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 4 (Anaerobic Solventless Primer) to 66 (Pliobond 20 Adhesive). The discounted costs, or NPV costs, ranged from $1,518.78 (Neoprene Adhesive N-1051) to $70,774.11 (Black Max Black Tough Adhesive). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 20 (Anaerobic Solventless Primer) to 60 (Blue Resin Solution - G7526F and EF Primer 49). Based on these results, AFMA utilized the BCR Analysis to

further analyze Anaerobic Solventless Primer, manufactured by Saf-T-Lok Chemical Corporation, 3M 90 High Strength Adhesive, manufactured by 3M, and 3M Spray 80 Neoprene Contact Adhesive, also manufactured by 3M. AFMA recommends 3M 90 High Strength Adhesive for implementation at PNS.

5.1.5 Dichloromethane, Technical

Building 60 uses Dichloromethane, Technical, manufactured by Ashland Chemical Company, for stripping plastisol coatings from ships. AFMA conducted the feasibility analyses on the status quo material and on 20 pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 12 (Safety Strip HT Cleaning Compound and Pur-O-Shine Heavy Duty Cleaner) to 72 (Dichloromethane, Technical). The discounted costs, or NPV costs, ranged from $1,314.15 (Alfa Kleen AK-037) to $16,565.14 (Dichloromethane, Technical). It should be noted that the NPV cost of Dichloromethane, Technical, is based on an assumption AFMA made to perform the economic analysis (see Section 4.3). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 1 (Pur-O-Shine Heavy Duty Cleaner) to 6 (Safety Strip HT Cleaning Compound and Teksol EP Cleaning Compound). Based on these results, AFMA utilized the BCR Analysis to further analyze Pur-O-Shine Heavy Duty Cleaner, manufactured by American Puro-Shine Industries, Citra Soak, FC058, manufactured by Inland Technology, Inc., and Envirosolve 654CR, manufactured by Fine Organics Corporation. AFMA recommends Pur-O-Shine Heavy Duty Cleaner for implementation at PNS.

5.1.6 Silver Paint

Building 64 uses So-Sure Lacquer, Aerosol Silver 17178, manufactured by LHB Industries, for painting hard hats. AFMA conducted the feasibility analyses on the status quo material and on four pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 30 (A-2000 Lacquer Aerosol Silver 17178) to 48 (GP-0001-7178, Silver Lacquer). The discounted costs, or NPV costs, ranged from $325.58 (GP-0001-7178, Silver Lacquer and Aerosol Coatings 01947, Lacquer 17178) to $1,292.63 (A-2000 Lacquer Aerosol Silver 17178). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the three most promising pollution prevention alternatives. The PPPNs ranged from 28.5 (Aerosol Coatings 01947, Lacquer 17178) to 60 (A-2000 Lacquer Aerosol Silver 17178). Based on these results, AFMA utilized the BCR Analysis to further analyze Aerosol Coatings 01947, Lacquer 17178, manufactured by Sprayon Products, and 310 Silver 11A Rustproof Paint, manufactured by Aervoe-Pacific Company, Inc. AFMA recommends Aerosol Coatings 01947, Lacquer 17178 for implementation at PNS.

5.1.7 Anaerobic Adhesive

Building 92 uses Loctite Grade A Anaerobic Adhesive, manufactured by Loctite Corporation, for gluing rubber together. AFMA conducted the feasibility analyses on the status quo material and on fifteen pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 7 (Loctite Grade A Anaerobic Adhesive, Accrabond Grade A MIL-S-22473 and Anaerobic Adhesive / Sealant) to 66 (Pliobond 20 Adhesive). The discounted costs, or NPV costs, ranged from $385.10 (Neoprene Adhesive N-1051) to $10,629.08 (Loctite Grade A Anaerobic Adhesive). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 3 (Accrabond Grade A MIL-S-22473 and Anaerobic Adhesive / Sealant) to 4 (TB 1361A Sealing Compound, Grade A Red Sealing Compound and Sealant Grade A 8831). Based on these results, AFMA utilized the BCR Analysis to further analyze Accrabond Grade A MIL-S-22473, manufactured by Accrabond Inc., and Anaerobic Adhesive / Sealant, manufactured by Saf-T-Lok Chemical Corporation. AFMA recommends Accrabond Grade A MIL-S-22473 for implementation at PNS.

5.1.8 Yellow Primer

Building 92 uses So-Sure Yellow Primer (84-331) Aerosol, manufactured by LHB Industries, for priming boat clamps. AFMA conducted the feasibility analyses on the status quo material and on 18 pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 17 (Zinc Chromate Primer GP-0004-1757) to 52 (Formula 84 H2-017 Primer Yellow 33793). The discounted costs, or NPV costs, ranged from $11,364.18 (Zinc Chromate Primer GP-0004-1757) to $86,569.06 (TT-P-645B Alkyd Yellow Primer). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 28.5 (Zinc Chromate Primer GP-0004-1757) to 37.5 (6-204 Zinc Chromate Metal Primer). Based on these results, AFMA utilized the BCR Analysis to further analyze Zinc Chromate Primer GP-0004-1757, manufactured by Seymour of Sycamore, P-441A Zinc Chromate Primer, manufactured by Koppers Company, Inc., and Zinc Chromate Primer P-441P, also manufactured by Koppers Company, Inc. AFMA recommends Zinc Chromate Primer GP-0004-1757 for implementation at PNS.

5.1.9 Black Paint

Building 92 uses 01920 Black Lacquer 17038 Aerosol, manufactured by Sprayon Products, for painting the mounts on top of flanges. AFMA conducted the feasibility analyses on the status quo material and on seven pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 30 (A-2000 Series Lacquer Black 17038) to 50 (01920 Black Lacquer 17038 Aerosol). The discounted costs, or NPV costs, ranged from $190.73 (Lacquer, Aerosol Black

17038) to $824.71 (A-2000 Series Lacquer Black 17038). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 25.5 (Lacquer, Aerosol Black 17038) to 60 (A-2000 Series Lacquer Black 17038 and Eco-Sure Black 17038 Enamel). Based on these results, AFMA utilized the BCR Analysis to further analyze Lacquer, Aerosol Black 17038, manufactured by Seymour of Sycamore, So-Sure Lacquer Gloss Black 17038, manufactured by LHB Industries, and 306 Black 11A Rustproof Paint, manufactured by Aervoe-Pacific Company, Inc. AFMA recommends 306 Black 11A Rustproof Paint for implementation at PNS.

5.1.10 Paint Remover

Building 18 uses Omega 3812 SN 313-2 Paint Remover, manufactured by Omega Chemical Corporation, for cleaning paint off of various types of surfaces. AFMA conducted the feasibility analyses on the status quo material and on eight pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 13 (TT-R-251J Type III Class B Paint Remover) to 59 (Omega 3812 SN 313-2 Paint Remover). The discounted costs, or NPV costs, ranged from $3,267.61 (TT-R-251J Type III Class B Paint Remover) to $25,607.47 (Crest Paint Stripper #29A). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 1 (TT-R-251J Type III Class B Paint Remover) to 19 (Intex 8573 Paint Remover). Based on these results, AFMA utilized the BCR Analysis to further analyze TT-R-251J Type III Class B Paint Remover, manufactured by MSCI, Limited, Paint Remover, manufactured by Chemical Commodities Agency, and Paint Remover, 400063, manufactured by W.M. Barr & Company. AFMA recommends TT-R-251J Type III Class B Paint Remover for implementation at PNS.

5.1.11 Paint Thinner

Building 18 uses T-10 Paint Thinner, manufactured by Devoe Coatings Company, for cleaning paint brushes. AFMA conducted the feasibility analyses on the status quo material and on 22 pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 13 (Odorless Thin-X) to 50 (266D Thinner, Dope and Lacquer). The discounted costs, or NPV costs, ranged from $3,773.82 (Regular Mineral Spirits, Thinner) to $19,338.01 (Paint Thinner / Mineral Spirits). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 5 (Odorless Thin-X, Odorless Mineral Spirits and TT-T-291F Paint Thinner) to 21 (Standard 350H TT-T-291 Thinner). Based on these results, AFMA utilized the BCR Analysis to further analyze Odorless Thin-X, manufactured by Sterling-Clarke-Lurton Corporation, Odorless Mineral Spirits, manufactured by Shell Oil Company, and TT-T-291F Paint Thinner, manufactured by Stic-Adhesive Products Company. AFMA recommends Odorless Thin-X for implementation at PNS.

5.1.12 Antifouling Paint

Building 18 uses Devoe ABC #3 Red AF Paint, manufactured by Devoe Marine Coatings Company, for painting tires on submarines. AFMA conducted the feasibility analyses on the status quo material and on 16 pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 25 (888 Series Water Base AF Paint and MIL-P-15931F Red AF, Type I Class I 4050) to 46 (AF Paint, 76600-50300 Light Red). The discounted costs, or NPV costs, ranged from $11,893.97 (N-5564 Gloss Red Silicone Enamel 11105) to $49,381.85 (1670 ACP-50 Red). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 24 (N-5564 Gloss Red Silicone Enamel 11105) to 60 (888 Series Water Base AF Paint, MIL-P-15931F Red AF, Type I Class I 4050 and F-121 Vinyl AF Red Paint). Based on these results, AFMA utilized the BCR Analysis to further analyze N-5564 Gloss Red Silicone Enamel 11105, manufactured by Niles Chemical Paint Company, and Interclene AF Red, BRA540, manufactured by International / Courtaulds Coatings. AFMA recommends N-5564 Gloss Red Silicone Enamel 11105 for implementation at PNS.

5.1.13 Primer

Building 300 uses Locquic Primer T, manufactured by Loctite Corporation, for application to studs and bolts prior to application of a sealing compound. AFMA conducted the feasibility analyses on the status quo material and on eight pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 4 (Anaerobic Solventless Primer) to 42 (EF Primer 50). The discounted costs, or NPV costs, ranged from $528.10 (Accrabond Grade A MIL-S-22473) to $2,694.69 (Locquic Primer T 7471). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 19 (Accrabond Grade A MIL-S-22473) to 60 (Sealant Grade A 8831, Nuts N' Bolts 227, and Nuts N' Bolts 223). Based on these results, AFMA utilized the BCR Analysis to further analyze Accrabond Grade A MIL-S-22473, manufactured by Accrabond, Inc., and Anaerobic Solventless Primer, manufactured by Saf-T-Lok Chemical Corporation. AFMA recommends Accrabond Grade A MIL-S-22473 for implementation at PNS.

5.1.14 Red Paint

Building 300 uses So-Sure Lacquer Aerosol Red 11136, manufactured by LHB Industries, for touch-up painting and other miscellaneous applications. AFMA conducted the feasibility analyses on the status quo material and on eight pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 25 (Fixall Brite Red 11136 (444-1304)) to 56 (GP-0001-1670 Red 11136). The discounted costs, or NPV costs, ranged from $111.92 (GP-0001-1670 Red 11136) to $3,672.66 (11136 Red). After careful consideration of the results obtained,

AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 33 (301 Red 11A Rustproof Paint) to 60 (Fixall Brite Red 11136 (444-1304), A-2000 Aerosol Lacquer Red 11136, Eco Sure Spray Paint Red 11136, and Enamel, Low VOC Water-Based Red). Based on these results, AFMA utilized the BCR Analysis to further analyze 301 Red 11A Rustproof Paint, manufactured by Aervoe-Pacific Company, Inc. AFMA recommends 301 Red 11A Rustproof Paint for implementation at PNS.

5.1.15 Gray Paint

Building 65 uses So-Sure Lacquer Aerosol Gray 16307, manufactured by LHB Industries, for touch-up painting and other miscellaneous applications. AFMA conducted the feasibility analyses on the status quo material and on four pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 30 (A-2000 Aerosol Lacquer Gray 16307) to 44 (So-Sure Lacquer Aerosol Gray 16307). The discounted costs, or NPV costs, ranged from $1,069.45 (So-Sure Lacquer Aerosol Gray 16307) to $4,013.64 (A-2000 Aerosol Lacquer Gray 16307). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on all four pollution prevention alternatives. The PPPNs ranged from 37.5 (361 Gray 11A Rustproof Paint) to 60 (A-2000 Aerosol Lacquer Gray 16307, Eco Sure Gray 16307 VOC Compliant, and Enamel Low VOC Water-Based Gray 16307). Based on these results, AFMA utilized the BCR Analysis to further analyze 361 Gray 11A Rustproof Paint, manufactured by Aervoe-Pacific Company, Inc. AFMA recommends 361 Gray 11A Rustproof Paint for implementation at PNS.

5.1.16 Orange Paint

Building 158 uses Enamel Alkyd Low VOC Orange 12246, manufactured by Pratt and Lambert, for touch-up painting and other miscellaneous applications. AFMA conducted the feasibility analyses on the status quo material and on nine pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 11 (Enamel Orange 12246 TT-E-2784) to 50 (Enamel Alkyd Low VOC Orange 12246). The discounted costs, or NPV costs, ranged from $6,662.88 (6-282 Speedhide Int / Ext Gloss Enamel) to $31,236.25 (Enamel, VOC Compliant Orange 12246). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 7 (Enamel Orange 12246 TT-E-2784) to 14 (Enamel, Orange, TT-E-2784, 495-12246). Based on these results, AFMA utilized the BCR Analysis to further analyze Enamel Orange 12246 TT-E-2784, manufactured by Del Paint Corporation, 6-282 Speedhide Int / Ext Gloss Enamel, manufactured by PPG Industries, and 305 Orange 11A Rustproof Paint, manufactured by Aervoe-Pacific Company, Inc. AFMA recommends Enamel Orange 12246 TT-E-2784 for implementation at PNS.

5.1.17 Yellow Paint

Building 158 uses Enamel Alkyd Air Drying Yellow 13538, manufactured by Pratt and Lambert, for touch-up painting and other miscellaneous applications. AFMA conducted the feasibility analyses on the status quo material and on 20 pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 9 (Enamel Gloss Yellow 13538, TT-E-489) to 49 (Enamel Alkyd Air Drying Yellow 13538 and So Sure Enamel ID 44-130-P Yellow 13538). The discounted costs, or NPV costs, ranged from $7,262.71 (Exterior Trim Enamel Yellow 13538) to $23,512.78 (TT-E-489 Type I 13538 Yellow Paint). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the five most promising pollution prevention alternatives. The PPPNs ranged from 5 (TT-E-2784 Ultra Deep Tint Yellow 13538) to 16 (TT-E-2784 Enamel Yellow 13538 and Enamel Yellow 13538). Based on these results, AFMA utilized the BCR Analysis to further analyze TT-E-2784 Ultra Deep Tint Yellow 13538, manufactured by Davlin Paint Company, Exterior Trim Enamel Yellow 13538, manufactured by Farwest Paint Manufacturing Company, and Enamel Gloss Yellow 13538, TT-E-489, manufactured by Randolph Products Company. AFMA recommends TT-E-2784 Ultra Deep Tint Yellow 13538 for implementation at PNS.

5.1.18 Gray Paint

Building 158 uses Enamel Deck Interior Gray 26231, manufactured by Pratt and Lambert Industrial Coatings, for touch-up painting and other miscellaneous applications. AFMA conducted the feasibility analyses on the status quo material and on four pollution prevention alternatives. Based on the results of the analyses performed utilizing the P2 System, the HMSFs ranged from 19 (97-482 Silicone Alkyd) to 37 (Enamel Gray 26231). The discounted costs, or NPV costs, ranged from $7,174.63 (N-5356 Silicone Alkyd Enamel Gray 26231) to $15,354.55 (Enamel Deck Interior Gray 26231). It should be noted that the NPV cost of Enamel Deck Interior Gray 26231 is based on an assumption AFMA made to perform the economic analysis (see Section 4.3). After careful consideration of the results obtained, AFMA performed the PPPN Analysis on the three most promising pollution prevention alternatives. The PPPNs ranged from 7.5 (N-5356 Silicone Alkyd Enamel Gray 26231) to 28.5 (97-482 Silicone Alkyd). Based on these results, AFMA utilized the BCR Analysis to further analyze N-5356 Silicone Alkyd Enamel Gray 26231, manufactured by Niles Chemical Paint Company, MIL-E-24635A Enamel Gray 26231, manufactured by Davlin Paint Company, and 97-482 Silicone Alkyd, manufactured by PPG Industries. AFMA recommends 97-482 Silicone Alkyd for implementation at PNS.

5.1.19 Gaseous Ammonia Use in the Aperture Card Reproduction Process

Building 29 uses gaseous ammonia in the aperture card reproduction process. Based on AFMA's research, it was determined that replacing the ammonia with a less hazardous processing fluid prior to converting to JEDMICS is not economically feasible.

This finding is supported by the fact that PNS does not use a large quantity of gaseous ammonia for aperture card reproduction (less than 40 pounds annually), which might otherwise warrant the identification of a pollution prevention alternative for the hazardous material. AFMA also verified with a shop POC that the duplicators currently used in this process require gaseous ammonia to operate properly; PNS would therefore be required to purchase new duplicating equipment to replace the ammonia as a processing fluid. Thus, AFMA recommends that aperture cards be altogether eliminated at the shipyard, and that PNS convert to the digital format as soon as such conversion is funded by Naval Sea Systems Command.

5.1.20 Fluorescent Light Bulb Waste Stream

AFMA collected baseline information pertaining to two types of hazardous fluorescent light bulbs used in buildings throughout the shipyard. AFMA performed market availability studies and identified two viable pollution prevention alternatives; however, recommending one light bulb over the other within this Technical Report is premature because a full-scale analysis of PNS's entire lighting system must first be performed. Based solely on the information obtained from the manufacturers contacted, AFMA recommends that PNS implement the T8 fluorescent light bulbs for several reasons. The T8 bulbs are more energy efficient and have a higher CRI, they will pass a TCLP for mercury, and the required electronic ballasts do not contain PCBs and are more efficient than the ballasts now in place at PNS.

The T8 fluorescent light bulbs require that electronic ballasts be installed to replace the ballasts in the current lighting system, which could be costly. However, AFMA believes that the environmental benefits to be achieved upon implementation of this light bulb will outweigh the initial investment costs. Additionally, it is anticipated that retrofitting the lighting system for electronic ballasts will have to be accomplished at some point in the future, as EPA may begin regulating PCB ballasts. Should PNS implement the T8 bulbs now, the shipyard will attain immediate energy savings and reduced disposal costs. AFMA recommends that an entire building's lighting system be retrofitted at one time, so as to minimize down time, labor costs, and hazardous waste disposal fees.

5.2 Conclusions

AFMA performed on-site value engineering studies on 17 status quo hazardous materials identified at PNS. In doing so, AFMA performed the market availability studies, conducted economic and risk analyses from within the P2 System, and performed the PPPN Analysis and the BCR Analysis on the status quo materials and on the pollution prevention alternatives identified for each. The most cost-effective, environmentally-sound substitute materials described in this Technical Report are recommended as the optimum value pollution prevention alternatives for implementation at PNS. Finally, AFMA performed a separate analysis on one process and one waste stream identified at PNS, and determined that it is not economically feasible for PNS to eliminate gaseous ammonia in the aperture card reproduction process prior to converting to JEDMICS; and

that two types of less hazardous fluorescent light bulbs are available for implementation at PNS.

It is important to emphasize several important issues AFMA noted while performing the feasibility analyses both on- and off-site to identify the optimum value pollution prevention alternatives described within this Technical Report. AFMA determined that the HSMS did not provide accurate data representing PNS's current baseline situation. Thus, AFMA often visited shops which did not use and/or store the hazardous materials originally identified by PNS for AFMA to survey. AFMA therefore collected baseline information pertaining to hazardous materials that are utilized in smaller quantities than previously anticipated. However, the most significant problem with the inaccurate data contained in PNS's HSMS is that the Federal environmental reports generated by the system each year are not accurate, thereby misrepresenting the quantities of toxic chemicals used and disposed of annually. AFMA strongly recommends that the HSMS be updated to reflect the current baseline situation at PNS.

In some cases, it was difficult to identify feasible pollution prevention alternatives for certain status quo materials surveyed on-site at PNS, and ensure that the substitutes would meet the specifications and perform as well, if not better than, the status quo materials. For example, the manufacturer of IB No 2652 Acrylic Lacquer Aerosol (Black) is no longer in business. The applicable specification is TT-L-50, for which few feasible pollution prevention alternatives were identified. Considering the application, AFMA recommends that PNS replace this specification with Commercial Item Description A-A-665 and utilize the optimum value pollution prevention alternative identified herein as a viable substitute for 01920 Black Lacquer 17038 Aerosol. This streamlining of materials will also result in greater cost savings to be achieved at PNS.

Additionally, the applicable specification for Dichloromethane, Technical, is MIL-D-6998, which has since been superseded by ASTM-D4701. This specification covers technical grade methylene chloride. AFMA recommends that PNS eliminate this specification because methylene chloride is a hazardous material located on EPA's Title III List of Lists. AFMA identified several pollution prevention alternatives for Dichloromethane, Technical, all of which are viable substitutes for methylene chloride and will perform as well as the status quo material, per the manufacturers' technical support representatives. Further, AFMA recommends that PNS standardize solvent use throughout the base to the greatest extent feasible. Such an effort will prove beneficial by simplifying solvent tracking within the HSMS; reducing the risk of cross-contamination; easing waste handling; and promoting the potential for downgrading or recycling of waste solvents to reduce overall solvent consumption and waste production at PNS.

The effectiveness of the tools utilized to perform the feasibility analyses and identify the optimum value pollution prevention alternatives presented in this Technical Report should also be addressed. The HSMS did not assist with the pollution prevention alternative assessments, as AFMA's attempt to extract the status quo materials' environmental, safety and health information from PNS's system was unsuccessful. The

market availability studies proved to be a viable tool for identifying, and collecting environmental, safety, health and economic data for, feasible pollution prevention alternatives.

The NAVFAC P-442 Economic Analysis Model provided a very basic analysis of the status quo and substitute materials because a limited amount of cost data was collected from PNS. The HM Substitution Process allowed for the simple and straightforward calculation of the HMSF, which was the most important indicator of each status quo material's and each substitute material's environmental, safety and health benefits. The P2 System proved to be the most valuable tool for conducting the feasibility analyses. The results of the economic and risk analyses generated by the system provided the strongest evidence to support further analysis of 76 of the 183 pollution prevention alternatives initially identified for PNS.

The PPPN Analysis prioritized these 76 most promising pollution prevention alternatives based on their environmental, safety, health and economic benefits, to identify the 41 materials that offered more pollution prevention per dollar. Finally, the BCR Analysis identified the 17 optimum value pollution prevention alternatives which will yield the most beneficial resource allocation upon implementation at PNS.

Finally, it should be noted that the most cost-effective alternative(s), as identified by the P2 System, was not always analyzed using the PPPN Analysis and/or the BCR Analysis. This was at times the case because a material's HMSF took priority over its discounted cost, or NPV cost. Additionally, when interpreting the results of the economic analysis, the fact that AFMA did not receive material annual cost information from PNS must be considered.

Based on the results of the feasibility analyses, AFMA recommends 17 optimum value pollution prevention alternatives for implementation at PNS. MSDSs and product information collected from the manufacturers and distributors of these substitute materials are provided in Appendix H. Figure 2 displays an annual cost savings of $22,281.58, or 51.57%, to be achieved at PNS upon implementation. These materials are considered to be feasible substitutes that are cost-effective and environmentally-sound. AFMA believes implementing these alternatives will aid the Navy in its mission to prevent pollution, protect the environment, and protect natural resources by preventing or reducing pollution at the source.

Product	Manufacturer	Bldg	Alternative	UAC ($)	Direct Cost Benefit ($)
Neoprene N-11 Primer	Haartz-Mason Inc.	240	Status Quo	203.76	-
3M 90 High Strength Adhesive	3M		Proposed	233.42	(29.66)
Neolube No.1 Graphite, Colloidal	Huron Industries Inc.	240	Status Quo	8,166.20	-
Lock-Ease	AGS Company		Proposed	1,606.04	6,560.16
IB No 2652 Acrylic Lacquer Aerosol	Ill. Bronze Powder & Paint	60	Status Quo	45.36	-
DR038 Concentrate Aerosol Lacquer	Devoe & Raynolds Co., Inc.		Proposed	61.44	(16.08)
Neoprene N-11 Primer	Haartz-Mason Inc.	60	Status Quo	530.88	-
3M 90 High Strength Adhesive	3M		Proposed	584.81	(53.93)
Dichloromethane, Technical	Ashland Chemical Co.	60	Status Quo	4,002.16	-
Pur-O-Shine Heavy Duty Cleaner	American Puro-Shine		Proposed	822.25	3,179.91
So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	64	Status Quo	79.83	-
Aerosol Coatings 01947, Lacquer 17178	Sprayon Products		Proposed	78.66	1.17
Loctite Grade A Anaerobic Adhesive	Loctite Corp.	92	Status Quo	2,568.00	-
Accrabond Grade A MIL-S-22473	Accrabond, Inc.		Proposed	209.04	2,358.96
So-Sure Yellow Primer (84-331) Aerosol	LHB Industries	92	Status Quo	2,778.58	-
Zinc Chromate Primer GP-0004-1757	Seymour of Sycamore		Proposed	2,745.60	32.98
01920 Black Lacquer 17038 Aerosol	Sprayon Products	92	Status Quo	53.76	-
306 Black 11A Rustproof Paint	Aervoe-Pacific Co., Inc.		Proposed	63.60	(9.84)
Omega 3812 SN 313-2 Paint Remover	Omega Chemical Corp.	18	Status Quo	6,204.20	-
TT-R-251J Type III Cl B Paint Remover	MSCI, Ltd.		Proposed	789.46	5,414.74
T-10 Paint Thinner	Devoe Coatings Co.	18	Status Quo	2,871.36	-
Odorless Thin-X	Sterling-Clarke-Lurton		Proposed	1,400.40	1,470.96
Devoe ABC #3 Red AF Paint	Devoe Marine Coatings	18	Status Quo	3,489.48	-
N-5564 Gloss Red Silicone Enamel 11105	Niles Chemical Paint Co.		Proposed	2,873.60	615.88
Locquic Primer T	Loctite Corp.	300	Status Quo	128.76	-
Accrabond Grade A MIL-S-22473	Accrabond, Inc.		Proposed	127.59	1.17
So-Sure Lacquer Aerosol Red 11136	LHB Industries	300	Status Quo	32.11	-
301 Red 11A Rustproof Paint	Aervoe-Pacific Co., Inc.		Proposed	34.45	(2.34)
So-Sure Lacquer Aerosol Gray 16307	LHB Industries	65	Status Quo	258.38	-
361 Gray 11A Rustproof Paint	Aervoe-Pacific Co., Inc.		Proposed	318.00	(59.62)
Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	158	Status Quo	4,704.68	-
Enamel Orange 12246 TT-E-2784	Del Paint Corp		Proposed	3,527.76	1,176.92
Enamel Alkyd Air Drying Yellow 13538	Pratt and Lambert	158	Status Quo	3,378.68	-
TT-E-2784 Ultra Deep Tint Yellow 13538	Davlin Paint Co.		Proposed	1,758.40	1,620.28
Enamel Deck Interior Gray 26231	Pratt & Lambert Industrial	158	Status Quo	3,709.68	-
97-482 Silicone Alkyd	PPG Industries		Proposed	3,689.76	19.92

( ) denotes a negative value

TOTAL ANNUAL SAVINGS **$22,281.5**

Figure 2
Annual Cost Savings Pending Implementation of the Optimum Value Pollution Prevention Alternatives at Portsmouth Naval Shipyard

APPENDIX A

SITE SURVEY CHECKLISTS

Site Survey Checklist

1. **Building Number:** 240 - Hazardous Material Control Area 240
2. **Point of Contact:** Gene Gregory
3. **Phone:** (207) 438 - 1785
4. **Date:** 17 September 1996
5. **Process/HM:** Neoprene N-11 Primer
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for bonding neoprene rubber
8. **Manufacturer:** Haartz-Mason Inc.
9. **NSN:** 8030-LL-L01-0010
10. **Chemical Constituents and CAS #:** Xylol - 1330-20-7; Dibutyl Phthalate - 84-74-2; Hydrocarbon Resins - Mixture; Titanium Dioxide - 13463-67-7; Chlorinated Rubber - Mixture
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** NAAAAE
13. **Quantity/Amount used per month:** 0.25 gallons
14. **Exposure time to HM/HW:** 1 hour per week
15. **Number of employees:** 12
16. **Where and how much HM is stored?** Stored in the hazardous material control area
17. **Describe how the HW is disposed of:** The hazardous waste accumulation area collects the waste and disposes of it accordingly
18. **Is PPE worn?** (YES) NO
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	1 hour per week for distribution of respirators
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$0.54 per pound

21. Shelf Life: 1 year

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
MIL-C-43454B (per the manufacturers technical representative, it is MIL-R-a5058G, MIL-C-21067, or MIL-S-2912D)

Site Survey Checklist

1. **Building Number:** 240 - Hazardous Material Control Area 240
2. **Point of Contact:** Gene Gregory
3. **Phone:** (207) 438 - 1785
4. **Date:** 17 September 1996
5. **Process/HM:** Neolube No. 1, Graphite, Colloidal
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used on nuclear riggers as a corrosion inhibitor
8. **Manufacturer:** Huron Industries, Inc.
9. **NSN:** 9150-00-349-7443
10. **Chemical Constituents and CAS #:** Isopropyl Alcohol - 67-63-0; Pigments - N/K
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PBDWYW
13. **Quantity/Amount used per month:** 2 gallons
14. **Exposure time to HM/HW:** N/K
15. **Number of employees:** 20
16. **Where and how much HM is stored?** Stored in the hazardous material control area
17. **Describe how the HW is disposed of:** The hazardous waste accumulation area collects the waste and disposes of it accordingly
18. **Is PPE worn?** YES (NO)
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	Not Provided
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$0.21 per pound

21. Shelf Life: N/A - non-shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
MIL-L-24131B

Site Survey Checklist

1. **Building Number:** 60 - Hazardous Material Control Area 60
2. **Point of Contact:** Gary Dumais
3. **Phone:** (207) 438 - 2725
4. **Date:** 17 September 1996
5. **Process/HM:** IB No 2652 Acrylic Lacquer Aerosol (Black)
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for painting plaques and models
8. **Manufacturer:** Illinois Bronze Powder and Paint Company
9. **NSN:** 8010-00-582-5382
10. **Chemical Constituents and CAS #:** Methylene Chloride - 75-09-2; Toluene - 108-88-3; 2-Butoxyethanol - 111-76-2
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PAALMZ
13. **Quantity/Amount used per month:** 0.25 gallons
14. **Exposure time to HM/HW:** 5 hours per week
15. **Number of employees:** 2
16. **Where and how much HM is stored?** Stored in the hazardous material storage area
17. **Describe how the HW is disposed of:** As hazardous aerosol cans
18. **Is PPE worn?** (YES) NO
19. **Is PPE required?** YES (NO)

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	2 hours per week for distribution of respirators
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$1.35 per pound

21. Shelf Life: 1 Year

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
TT-L-50

Site Survey Checklist

1. **Building Number:** 60 - Hazardous Material Control Area 60
2. **Point of Contact:** Gary Dumais
3. **Phone:** (207) 438 - 2725
4. **Date:** 17 September 1996
5. **Process/HM:** Neoprene N-11 Primer
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for rubber linings and to cover box interiors; salt water does not attack it
8. **Manufacturer:** Haartz-Mason Inc.
9. **NSN:** 8030-LL-L01-0010
10. **Chemical Constituents and CAS #:** Xylol - 1330-20-7; Dibutyl Phthalate - 84-74-2; Hydrocarbon Resins - Mixture; Titanium Dioxide - 13463-67-7; Chlorinated Rubber - Mixture
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** NAAAAE
13. **Quantity/Amount used per month:** 0.63 gallons
14. **Exposure time to HM/HW:** 20 hours per week
15. **Number of employees:** 2
16. **Where and how much HM is stored?** Stored in limited quantities in a refrigerator
17. **Describe how the HW is disposed of:** As hazardous material through the Hazardous Material Coordinator
18. **Is PPE worn?** (YES) NO
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	3 hours per week for distribution of respirators
Maintenance and Repair:	Not Provided
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$0.54 per pound

21. Shelf Life: 1 Year

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
MIL-C-21067

Site Survey Checklist

1. **Building Number:** 60 - Hazardous Material Control Area 60
2. **Point of Contact:** Gary Dumais
3. **Phone:** (207) 438 - 2725
4. **Date:** 17 September 1996
5. **Process/HM:** Dichloromethane, Technical
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used to strip Plastisol coatings
8. **Manufacturer:** Ashland Chemical Company
9. **NSN:** 6810-00-616-9188
10. **Chemical Constituents and CAS #:** Methylene Chloride - 75-09-2
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PAAEEX
13. **Quantity/Amount used per month:** 4.6 gallons
14. **Exposure time to HM/HW:** 10 hours per week
15. **Number of employees:** 2
16. **Where and how much HM is stored?** Stored in large tanks that are covered and ventilated
17. **Describe how the HW is disposed of:** As hazardous material through the Hazardous Material Coordinator
18. **Is PPE worn?** (YES) NO
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	3 hours for distribution of respirators
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$0.54 per pound

21. Shelf Life: None

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
MIL-D-6998 - cancelled, superceded by ASTM-D4701

Site Survey Checklist

1. **Building Number:** Building 64 - Varnish Shop
2. **Point of Contact:** Larry Kilbourne
3. **Phone:** (207) 438-1874
4. **Date:** 18 September 1996
5. **Process/HM:** So-Sure Lacquer, Aerosol Silver 17178
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for painting hard hats
8. **Manufacturer:** LHB Industries
9. **NSN:** 8010-00-721-9751
10. **Chemical Constituents and CAS #:** VM&P Naphtha - 8030-03-6; Toluene - 108-88-3; Methylene Chloride - 75-09-2; Acetone - 67-64-1; Propane - 74-98-6; Isobutane - 75-28-5; Butane - 106-97-8
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PAADLI
13. **Quantity/Amount used per month:** 0.4 gallons
14. **Exposure time to HM/HW:** 0.25 hours per week
15. **Number of employees:** 1
16. **Where and how much HM is stored?** Stored in flammable lockers
17. **Describe how the HW is disposed of:** Disposed of as hazardous waste
18. **Is PPE worn?** (YES) NO
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	1 hour for distribution of respirators
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$1.35 per pound

21. Shelf Life: N/A - non-shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
CID-A-A-665

Site Survey Checklist

1. **Building Number:** Building 92 - Main Shop
2. **Point of Contact:** Dick Kingsbury
3. **Phone:** (207) 438-2185
4. **Date:** 18 September 1996
5. **Process/HM:** Loctite Grade A, Anaerobic Adhesive
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for gluing rubber together
8. **Manufacturer:** Loctite Corporation
9. **NSN:** 8030-00-907-3961
10. **Chemical Constituents and CAS #:** Dimethacrylate Esters - N/K; Tertiary Amine - N/K; Catalyst - N/K
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PBFVYT
13. **Quantity/Amount used per month:** 0.13 gallons
14. **Exposure time to HM/HW:** 20 hours per week
15. **Number of employees:** 1
16. **Where and how much HM is stored?** Stored in flammable lockers
17. **Describe how the HW is disposed of:** Empty bottles are placed in a bucket in the hazardous waste area
18. **Is PPE worn?** YES (NO)
19. **Is PPE required?** YES (NO)

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs: Not Provided

Supplies: Not Provided

Transportation and Shipping: Not Provided

Handling: Not Provided

Storage and Issue of Supplies: 5 hours per week for distribution of respirators

HM fees: Not Provided

Labor: $15.25 per hour

Disposal: $0.54 per pound

21. Shelf Life: 1 year

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
MIL-S-22473

Site Survey Checklist

1. **Building Number:** Building 92 - Main Shop
2. **Point of Contact:** Dick Kingsbury
3. **Phone:** (207) 438-2185
4. **Date:** 18 September 1996
5. **Process/HM:** So Sure Yellow Primer (84-331) Aerosol
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used on boat clamps
8. **Manufacturer:** LHB Industries
9. **NSN:** 8010-00-297-0593
10. **Chemical Constituents and CAS #:** Methyl Isobutyl Ketone - 108-10-1; Zinc Chromate - 13530-65-9; Acetone - 67-64-1; Toluene - 108-88-3; Cyclohexane - 110-82-7
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PAGMKM
13. **Quantity/Amount used per month:** 13 gallons
14. **Exposure time to HM/HW:** 10 hours per week
15. **Number of employees:** 1
16. **Where and how much HM is stored?** Stored in flammable lockers
17. **Describe how the HW is disposed of:** Empty cans are placed in a barrel in the hazardous waste area
18. **Is PPE worn?** YES (NO)
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	Not Provided
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$1.35 per pound

21. Shelf Life: N/A - non-shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
TT-P-1757

Site Survey Checklist

1. **Building Number:** Building 92 - Main Shop
2. **Point of Contact:** Dick Kingsbury
3. **Phone:** (207) 438-2185
4. **Date:** 18 September 1996
5. **Process/HM:** 01920 Black Lacquer 17038 Aerosol
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for spray painting mounts on top of flanges
8. **Manufacturer:** Sprayon Products
9. **NSN:** 8010-00-290-6984
10. **Chemical Constituents and CAS #:** Xylene - 1330-20-7; Methanol - 67-56-1; Acetone - 67-64-1; Toluene - 108-88-3; Methyl Ethyl Ketone - 78-93-3
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** NAAAGA
13. **Quantity/Amount used per month:** 0.25 gallons
14. **Exposure time to HM/HW:** 0.25 hours per week
15. **Number of employees:** 1
16. **Where and how much HM is stored?** Stored in flammable lockers
17. **Describe how the HW is disposed of:** Empty cans are placed in a barrel in the hazardous waste area
18. **Is PPE worn?** YES (NO)
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	Not Provided
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$1.35 per pound

21. Shelf Life: N/A - non-shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
A-A-665

Site Survey Checklist

1. **Building Number:** Building 18 - Paint Shop
2. **Point of Contact:** Leo Machelle
3. **Phone:** (207) 438-3648
4. **Date:** 18 September 1996
5. **Process/HM:** Omega 3812 SN 313-2 Paint Remover
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used to clean paint off surfaces
8. **Manufacturer:** Omega Chemical Corporation
9. **NSN:** 8010-00-160-5800
10. **Chemical Constituents and CAS #:** Methylene Chloride - 75-09-2; Phenol - 108-95-2; Sodium Chromate - 7775-11-3
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PBKZWS
13. **Quantity/Amount used per month:** 5 gallons
14. **Exposure time to HM/HW:** 40 hours per week
15. **Number of employees:** 6
16. **Where and how much HM is stored?** Stored in a fire locker in the CHRIMP area
17. **Describe how the HW is disposed of:** Waste is primarily on used rags; rags and paint sludge are disposed of through the paint hazardous waste center
18. **Is PPE worn?** (YES) NO
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	5 hours per week for distribution of respirators
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$0.54 per pound

21. Shelf Life: 1 year

22. MIL- STDs, MIL-SPECS, other criteria governing the process/HM use:
TT-R-251

Site Survey Checklist

1. **Building Number:** Building 18 - Paint Shop
2. **Point of Contact:** Leo Machelle
3. **Phone:** (207) 438-3648
4. **Date:** 18 September 1996
5. **Process/HM:** T-10 Paint Thinner
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for cleaning paint brushes
8. **Manufacturer:** Devoe Coatings Company
9. **NSN:** 8010-LL-DM1-0117
10. **Chemical Constituents and CAS #:** Xylene - 1330-20-7; N-Butyl Alcohol - 71-36-3; Methyl Normal Amyl Ketone - 110-43-0
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PAABCD
13. **Quantity/Amount used per month:** 30 gallons per month
14. **Exposure time to HM/HW:** 1 hour per week
15. **Number of employees:** 6
16. **Where and how much HM is stored?** Stored in a fire locker in the CHRIMP area
17. **Describe how the HW is disposed of:** Waste is stored in 55 gallon drums and taken to Building 357 for disposal
18. **Is PPE worn?** (YES) NO
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	1 hour per week for distribution of respirators
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$0.54 per pound

21. Shelf Life: 1 year

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
N/K (as per MSDS on HMIS)

Site Survey Checklist

1. **Building Number:** Building 18 - Paint Shop
2. **Point of Contact:** Leo Machelle
3. **Phone:** (207) 438-3648
4. **Date:** 18 September 1996
5. **Process/HM:** Devoe ABC #3 Red AF Paint
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for spray applications on rubber tires
8. **Manufacturer:** Devoe Marine Coatings Company
9. **NSN:** 8010-01-221-4815
10. **Chemical Constituents and CAS #:** Polymeric Amido Resin - N/A; Organic Sulfonamide Salt - 8047-99-2; Tricyclic Carboxylic Acid - N/E; Cuprous Oxide - N/E; Zinc Oxide - 1314-13-2; Xylene - 1330-20-7; N-Butyl Alcohol - 71-36-3
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PAADCB
13. **Quantity/Amount used per month:** 8.3 gallons
14. **Exposure time to HM/HW:** 1 hour per week
15. **Number of employees:** 20
16. **Where and how much HM is stored?** Stored in a fire locker in the CHRIMP area
17. **Describe how the HW is disposed of:** Waste is stored in 55 gallon drums and taken to Building 357 for disposal
18. **Is PPE worn?** (YES) NO
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	1 hour per week for distribution of respirators
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$0.54 per pound

21. Shelf Life: N/A - non-shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
N/K

Site Survey Checklist

1. **Building Number:** 300 - Hazardous Material Control Area 300
2. **Point of Contact:** Ron Costella
3. **Phone:** (207) 438 - 4931
4. **Date:** 18 September 1996
5. **Process/HM:** Locquic Primer T
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used on studs and bolts before application of sealing compound
8. **Manufacturer:** Loctite Corporation
9. **NSN:** 8030-LL-DM1-0156
10. **Chemical Constituents and CAS #:** 1,1,1-Trichloroethane - 71-55-6; Isopropyl Alcohol - 67-63-0; tert-Butyl Alcohol - 75-65-0; N,N-Dialkyltoluidine - 99-97-8; Dimethoxymethane - 109-87-5; 2-Mercaptobenzothiazole - 149-30-4
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PAAFAZ
13. **Quantity/Amount used per month:** 0.09 gallons
14. **Exposure time to HM/HW:** Nominal
15. **Number of employees:** 12
16. **Where and how much HM is stored?** Stored in flammable lockers
17. **Describe how the HW is disposed of:** Empty cans are placed into barrels located in the building; the barrel is taken to Building 240 for disposal when full
18. **Is PPE worn?** YES (NO)
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	Not Provided
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$0.54 per pound

21. Shelf Life: N/A - non-shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
MIL-S-22473

Site Survey Checklist

1. **Building Number:** 300 - Hazardous Material Control Area 300
2. **Point of Contact:** Ron Costella
3. **Phone:** (207) 438 - 4931
4. **Date:** 18 September 1996
5. **Process/HM:** So-Sure Lacquer Aerosol Red 11136
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for miscellaneous spray paint operations
8. **Manufacturer:** LHB Industries
9. **NSN:** 8010-00-141-2952
10. **Chemical Constituents and CAS #:** Toluene - 108-88-3; Acetone - 67-64-1; Methyl Ethyl Ketone - 78-93-3; N-Butyl Alcohol - 71-36-3; Propane -74-98-6; Butane - 106-97-8; Isobutane - 75-28-5; PM Acetate - 84540-57-8
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PAALAI
13. **Quantity/Amount used per month:** 0.13 gallons
14. **Exposure time to HM/HW:** Nominal
15. **Number of employees:** Several
16. **Where and how much HM is stored?** Stored in flammable lockers
17. **Describe how the HW is disposed of:** Empty cans are placed into barrels located in the building; the barrel is taken to Building 240 for disposal when full
18. **Is PPE worn?** YES (NO)
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	Not Provided
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$1.35 per pound

21. Shelf Life: None - non-shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
CID-A-A-665C

Site Survey Checklist

1. **Building Number:** 65 - Hazardous Material Control Area 65
2. **Point of Contact:** Roger Morrisett
3. **Phone:** (207) 439 - 1247
4. **Date:** 18 September 1996
5. **Process/HM:** SoSure Lacquer Aerosol Gray 16307 (14-182)
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for touch-up painting and other miscellaneous painting operations
8. **Manufacturer:** LHB Industries
9. **NSN:** 8010-00-721-9750
10. **Chemical Constituents and CAS #:** Xylene - 1330-20-7; Toluene - 108-88-3; Acetone - 67-64-1; Ethylbenzene - 100-41-4; Propane - 74-98-6; Isobutane - 75-28-5; N-Butane - 106-97-8
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PAALUP
13. **Quantity/Amount used per month:** 1.26 gallons
14. **Exposure time to HM/HW:** N/K
15. **Number of employees:** N/K
16. **Where and how much HM is stored?** Stored in an aerosol locker
17. **Describe how the HW is disposed of:** Empty cans are placed in an aerosol bin, which is disposed of when full
18. **Is PPE worn?** YES (NO)
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	Not Provided
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$1.35 per pound

21. Shelf Life: N/A - non shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
A-A-665D

Site Survey Checklist

1. **Building Number:** 158 - Crane Maintenance
2. **Point of Contact:** Bruce Allen/John Harvey
3. **Phone:** (207) 438 - 5553/5560
4. **Date:** 18 September 1996
5. **Process/HM:** Enamel, Alkyd, Low VOC Orange 12246
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for miscellaneous painting operations
8. **Manufacturer:** Pratt and Lambert
9. **NSN:** 8010-00-527-3201
10. **Chemical Constituents and CAS #:** N-Butyl Acetate - 123-86-4; Xylene - 1330-20-7; Methyl Isoamyl Ketone - 110-12-3; Stoddard Solvent - 8052-41-3; Mineral Spirits - 64475-85-0; Methyl Ethyl Ketone - 78-93-3
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PBVBBC
13. **Quantity/Amount used per month:** Varies
14. **Exposure time to HM/HW:** Varies
15. **Number of employees:** 14
16. **Where and how much HM is stored?** Stored in flammable lockers
17. **Describe how the HW is disposed of:** Empty cans are discarded into a plastic barrel, which is taken to the hazardous waste area when full
18. **Is PPE worn?** (YES) NO
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	3 hours per week for distribution of respirators
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$0.54 per pound

21. Shelf Life: N/A - non-shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
TT-E-489H

Site Survey Checklist

1. **Building Number:** 158 - Crane Maintenance
2. **Point of Contact:** Bruce Allen/John Harvey
3. **Phone:** (207) 438 - 5553/5560
4. **Date:** 18 September 1996
5. **Process/HM:** Enamel Alkyd Air Drying Yellow 13538
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for miscellaneous painting operations
8. **Manufacturer:** Pratt and Lambert
9. **NSN:** 8010-00-286-7758
10. **Chemical Constituents and CAS #:** Lead Chromate - 7758-97-6; VM&P Naphtha - 8032-32-4; Mineral Spirits - 64475-85-0; Lead - 7439-92-1; Propylene Glycol Methyl Ether Acetate - 108-65-6; Volatile Organic Compound - N/K
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PBHCND
13. **Quantity/Amount used per month:** Varies
14. **Exposure time to HM/HW:** Varies
15. **Number of employees:** 14
16. **Where and how much HM is stored?** Stored in flammable lockers
17. **Describe how the HW is disposed of:** Empty cans are discarded into a plastic barrel, which is taken to the hazardous waste area when full
18. **Is PPE worn?** (YES) NO
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs: Not Provided

Supplies: Not Provided

Transportation and Shipping: Not Provided

Handling: Not Provided

Storage and Issue of Supplies: 3 hours per week for distribution of respirators

HM fees: Not Provided

Labor: $15.25 per hour

Disposal: $1.35 per pound

21. Shelf Life: N/A - non-shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
TTE-489G A1

Site Survey Checklist

1. **Building Number:** 158 - Crane Maintenance
2. **Point of Contact:** Bruce Allen/John Harvey
3. **Phone:** (207) 438 - 5553/5560
4. **Date:** 18 September 1996
5. **Process/HM:** Enamel Deck Interior Gray 26231
6. **Is the HM on the AUL?** (YES) NO
7. **Operational use:** Used for miscellaneous painting operations
8. **Manufacturer:** Pratt and Lambert, Industrial Coatings Division
9. **NSN:** 8010-00-285-4870
10. **Chemical Constituents and CAS #:** Mineral Spirits - 64742-88-7; Titanium Dioxide - 13463-67-7; Talc - 14807-96-6; VOC 3.27 LB/GL Less Water and NPRS - N/K; VOC 6.58 LB/Gal Solids - N/K
11. **Are MSDSs available?** (YES) NO
12. **MSDS Number:** PBKLJL
13. **Quantity/Amount used per month:** Varies
14. **Exposure time to HM/HW:** Varies
15. **Number of employees:** 14
16. **Where and how much HM is stored?** Stored in flammable lockers
17. **Describe how the HW is disposed of:** Empty cans are discarded into a plastic barrel, which is taken to the hazardous waste area when full
18. **Is PPE worn?** (YES) NO
19. **Is PPE required?** (YES) NO

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	3 hours per week for distribution of respirators
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$1.35 per pound

21. Shelf Life: N/A - non-shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
DOD-E-700A

Site Survey Checklist

20. COST INFORMATION (Annual)

Material Costs:	Not Provided
Supplies:	Not Provided
Transportation and Shipping:	Not Provided
Handling:	Not Provided
Storage and Issue of Supplies:	3 hours per week for distribution of respirators
HM fees:	Not Provided
Labor:	$15.25 per hour
Disposal:	$1.35 per pound

21. Shelf Life: N/A - non-shipboard use

22. MIL-STDs, MIL-SPECS, other criteria governing the process/HM use:
DOD-E-700A

APPENDIX B

APERTURE CARD REPRODUCTION PROCESS

Ammonia use in Building 29 for Aperture Card Reproduction
CDR W. Hendrickson

3/5/96 - Met with Larry Auger, Code 280.6, to discuss the use of ammonia in the aperture card reproduction process. Some relevant facts:

- Gaseous ammonia is currently purchased and stored in 150-lb cylinders outside the center entrance to Building 29. The ammonia gas is fed through permanently installed piping to two 3M model 968 card duplicators and a single Ozlid reel reproducer on the first floor of the building. Residual gas from film processing is vented to the exterior of the building.
- Aperture card reproduction is done by the Naval Engineering Drawing Support Activity (NEDSA), a NAVSEA-funded activity with the responsibility for reproducing aperture cards for HM&E drawings for all ships and submarines. In addition, PNSY retains the planning yard responsibility for the SSN-637 class. In the past, these responsibilities have resulted in a substantial amount of aperture card reproduction work for destinations outside the shipyard. At its peak, NEDSA was reproducing over 20 million aperture cards per year.
- Many of the aperture cards are now obsolete, and many have been digitized from their aperture cards and converted to JEDMICS, the Joint Engineering Data Management Information and Control System. All drawings for the SSN-688 class, for example, have been and converted to JEDMICS. In JEDMICS, the drawings reside in digital format on laser disks, and are directly accessible for printing from dry-format (i.e. laser or ink-jet) printers distributed throughout the shipyard.
- With the conversion to JEDMICS and the obsolescence of older ships, the aperture card reproduction workload has dropped dramatically. NEDSA now reproduces only about 1 million cards per year.
- Because of this drop in workload, the amount of ammonia used is now relatively small. A 150-lb cylinder lasts about a year.
- A phone call was placed to 3M (Mr. Ken Cayer, the 3M service technician @ 800-548-6977, ext. 7622) and to the 3M Document Systems division @ 800-247-8516 to determine whether there is any alternative to the use of ammonia gas in the duplicating process. Mr. Cayer said that 3M no longer builds the duplicating machines (no market) and, although they have looked for alternatives in the past, none were found.
- According to Mr. Auger, the Navy intends to phase out the use of aperture cards completely, but has not announced a schedule to accomplish this. Conversion of the SSN-637 class drawings to JEDMICS would be a major step in this direction.
- Recommendations:
    - Based on the intended phase-out of aperture cards and the reduced number being reproduced, recommend that no changes be implemented in the existing ammonia-based card reproduction system. No alternatives to ammonia for the processing fluid were identified in discussions with 3M.
    - The clearest path to eliminating the use of aperture cards is to eliminate the use of aperture cards. Recommend that the shipyard continue to press NAVSEA to fund the conversion of remaining drawings, notably those of the SSN-637 class, to JEDMICS.

APPENDIX C

POLLUTION PREVENTION PRIORITY NUMBER CALCULATION CHARTS

HMSF CHANGE	TABLE A INVESTMENT COST FACTOR													
46+	10	10	10	20	30	30	40	50	60	70	80	80	90	90
41-45	10	10	10	20	30	30	40	50	60	70	80	80	90	90
36-40	10	10	10	20	30	40	40	50	60	70	80	80	90	90
31-35	20	20	20	20	30	40	50	60	60	70	80	90	90	100
26-30	20	30	30	30	30	40	50	60	70	70	80	90	90	100
21-25	20	30	30	30	40	40	50	60	70	80	80	90	100	100
16-20	30	30	30	30	40	50	50	60	70	80	90	90	100	100
11-15	30	30	40	40	40	50	50	60	70	80	90	100	100	110
6-10	30	30	40	40	50	50	60	60	70	80	90	100	110	110
0-5	30	40	40	50	50	50	60	70	70	80	90	100	110	110
	0-5	6-10	11-25	26-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	401-450	451-500	500+
	INVESTMENT COST IN $K (ROUNDED TO NEAREST $1K)													

	TABLE B ADJUSTMENT FACTORS FOR INCREASES IN UAC/WEIGHT/POPULATION											
% INCREASE	0	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	>50
ADJ. FACTOR	1.0	1.05	1.1	1.15	1.2	1.25	1.3	1.35	1.4	1.45	1.5	2

	TABLE C ADJUSTMENT FACTORS FOR DECREASES IN UAC/WEIGHT/POPULATION												
% DECREASE	0	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	50-75	>75
ADJ. FACTOR	1.0	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.25	.1

ICF = Investment Cost Factor (from Table A)
UACF = Uniform Annual Cost Factor (from Table B or C)
WF = Weight Factor (from Table B or C)
PF = Population Factor (from Table B or C)

APPENDIX D

THE NAVFAC P-442 ECONOMIC ANALYSIS MODEL

PERSONAL PROTECTIVE EQUIPMENT COSTS

GLOVES:	Price Each ($)
Polyvinyl Alcohol Gloves	4.60
Nitrile Gloves	1.58
Rubber Gloves	0.08
Neoprene Gloves	4.60
Plastic Gloves	0.08
RESPIRATORS:	
Half Mask Cartridge Respirator	17.78
Cartridges	35.00
Dust/Mist Pre-Filters	5.65
Paint Spray Pre-Filters	12.59
Respirator	120.26
EYE/FACE PROTECTION:	
Safety Glasses	2.56
Chemical Splash Goggles	1.37
Face Shields	13.50
OTHER:	
Aprons	0.90
Tyvek Suits	4.40

Figure D-1
Personal Protective Equipment Assumptions and Costs

PRIMER

Building 240 - Hazardous Material Control Area

Quantity Used - 3 gallons per year
Exposure Time - 52 hours per year

Status Quo Material: Neoprene N-11 Primer	
6 pairs of polyvinyl alcohol gloves	27.60
6 pairs of safety glasses	15.36
Total Price	**42.96**
Alternative Material: N-700A-Black Corrosion Preventive Compound	
2 half mask cartridge respirators	35.56
4 cartridges	140.00
4 dust/mist pre-filters	22.60
6 pairs of nitrile gloves	9.48
6 pairs of safety glasses	15.36
Total Price	**223.00**
Alternative Material: N-700-A Gray Neoprene Maintenance Coating	
6 pairs of polyvinyl alcohol gloves	27.60
6 pairs of safety glasses	15.36
Total Price	**42.96**
Alternative Material: Pliobond 20 Adhesive	
52 pairs of rubber gloves	4.16
6 pairs of safety glasses	15.36
Total Price	**19.52**
Alternative Material: Anaerobic Solventless Primer	
None Required	
Total Price	**0.00**
Alternative Material: EF Primer 49	
52 pairs of rubber gloves	4.16
6 pairs of safety glasses	15.36
Total Price	**19.52**
Alternative Material: EF Primer 50	
52 pairs of rubber gloves	4.16
6 pairs of safety glasses	15.36
Total Price	**19.52**
Alternative Material: Blue Resin Solution - G7526F	
None Required	
Total Price	**0.00**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: Neoprene Adhesive N-1051	
6 pairs of safety glasses	15.36
Total Price	**15.36**
Alternative Material: Black Max Black Tough Adhesive	
6 pairs of safety glasses	15.36
6 pairs of nitrile gloves	9.48
2 aprons	1.80
Total Price	**26.64**
Alternative Material: 3M 90 High Strength Adhesive	
6 pairs of safety glasses	15.36
Total Price	**15.36**
Alternative Material: 3M Brand Spray 80 Neoprene Contact Adhesive	
6 pairs of safety glasses	15.36
Total Price	**15.36**
Alternative Material: 2141 Rubber and Gasket Adhesive	
6 pairs of nitrile gloves	9.48
6 pairs of chemical splash goggles	8.22
Total Price	**17.70**
Alternative Material: Scotch-Grip 1300 Rubber and Gasket Adhesive	
6 pairs of polyvinyl alcohol gloves	27.60
6 pairs of chemical splash goggles	8.22
Total Price	**35.82**

CORROSION INHIBITOR

Building 240 - Hazardous Material Control Area

Quantity Used - 24 gallons per year
Exposure Time - Not Known

Status Quo Material: Neolube No. 1 Graphite, Colloidal	
6 pairs of nitrile gloves	9.48
6 pairs of chemical splash goggles	8.22
Total Price	**17.70**
Alternative Material: DAG 156 Graphite, Colloidal	
24 pairs of rubber gloves	1.92
6 pairs of safety glasses	15.36
Total Price	**17.28**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: (55A) 591 Cosmoline	
6 pairs of nitrile gloves	9.48
6 pairs of chemical splash goggles	8.22
2 aprons	1.80
Total Price	**19.50**
Alternative Material: Pelco Colloidal Graphite, 16053	
6 pairs of nitrile gloves	9.48
6 pairs of chemical splash goggles	8.22
Total Price	**17.70**
Alternative Material: Lock-Ease	
24 pairs of rubber gloves	1.92
6 pairs of safety glasses	15.36
2 half mask cartridge respirators	35.56
4 cartridges	140.00
4 dust/mist pre-filters	22.60
Total Price	**215.44**
Alternative Material: Siloxirane 2032	
24 pairs of rubber gloves	1.92
6 pairs of safety glasses	15.36
2 half mask cartridge respirators	35.56
4 cartridges	140.00
4 dust/mist pre-filters	22.60
Total Price	**215.44**

BLACK PAINT

Building 60 - Hazardous Material Control Area

Quantity Used - 3 gallons per year
Exposure Time - 260 hours per year

Status Quo Material: Acrylic Lacquer Aerosol (Black) IB NO 2652	
None Required	
Total Price	**0.00**
Alternative Material: DR038 Concentrate, Aerosol Lacquer Black	
6 pairs of safety glasses	15.36
Total Price	**15.36**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: A-4100 Aerosol Black 17038 TT-L-50	
6 pairs of nitrile gloves	9.48
6 pairs of chemical splash goggles	8.22
Total Price	**17.70**

PRIMER

Building 60 - Hazardous Material Control Area

Quantity Used - 7.56 gallons per year
Exposure Time - 1040 hours per year

Status Quo Material: Neoprene N-11 Primer	
18 pairs of polyvinyl alcohol gloves	82.80
18 pairs of safety glasses	46.08
Total Price	**128.88**
Alternative Material: N-700A-Black Corrosion Preventive Compound	
6 half mask cartridge respirators	106.68
12 cartridges	420.00
12 dust/mist pre-filters	67.80
18 pairs of nitrile gloves	28.44
18 pairs of safety glasses	46.08
Total Price	**669.00**
Alternative Material: N-700-A Gray Neoprene Maintenance Coating	
18 pairs of polyvinyl alcohol gloves	82.80
18 pairs of safety glasses	46.08
Total Price	**128.88**
Alternative Material: Pliobond 20 Adhesive	
156 pairs of rubber gloves	12.48
18 pairs of safety glasses	46.08
Total Price	**58.56**
Alternative Material: Anaerobic Solventless Primer	
None Required	
Total Price	**0.00**
Alternative Material: EF Primer 49	
156 pairs of rubber gloves	12.48
18 pairs of safety glasses	46.08
Total Price	**58.56**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: EF Primer 50	
156 pairs of rubber gloves	12.48
18 pairs of safety glasses	46.08
Total Price	**58.56**
Alternative Material: Blue Resin Solution - G7526F	
None Required	
Total Price	**0.00**
Alternative Material: Neoprene Adhesive N-1051	
18 pairs of safety glasses	46.08
Total Price	**46.08**
Alternative Material: Black Max Black Tough Adhesive	
18 pairs of safety glasses	46.08
18 pairs of nitrile gloves	28.44
6 aprons	5.40
Total Price	**79.92**
Alternative Material: 3M 90 High Strength Adhesive	
18 pairs of safety glasses	46.08
Total Price	**46.08**
Alternative Material: 3M Brand Spray 80 Neoprene Contact Adhesive	
18 pairs of safety glasses	46.08
Total Price	**46.08**
Alternative Material: 2141 Rubber and Gasket Adhesive	
18 pairs of nitrile gloves	28.44
18 pairs of chemical splash goggles	24.66
Total Price	**53.10**
Alternative Material: Scotch-Grip 1300 Rubber and Gasket Adhesive	
18 pairs of polyvinyl alcohol gloves	82.80
18 pairs of chemical splash goggles	24.66
Total Price	**107.46**

DICHLOROMETHANE

Building 60 - Hazardous Material Control Area

Quantity Used - 55 gallons per year
Exposure Time - 520 hours per year

Figure D-1
Personal Protective Equipment Assumptions and Costs

Status Quo Material: Dichloromethane, Technical	
12 pairs of polyvinyl alcohol gloves	55.20
12 pairs of chemical splash goggles	16.44
Total Price	**71.64**
Alternative Material: Ardrox 5300-W Hot Tank Stripper	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: Bio T 200A Cleaning Compound, Solvent	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: Bio T Max Cleaning Compound, Solvent	
12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**
Alternative Material: Brulin SD 1291 Cleaning Compound, Solvent	
12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**
Alternative Material: Safety Strip HT Cleaning Compound, Solvent	
12 pairs of neoprene gloves	55.20
12 pairs of chemical splash goggles	16.44
Total Price	**71.64**
Alternative Material: Nature-Sol 100	
104 pairs of rubber gloves	8.32
12 pairs of chemical splash goggles	16.44
Total Price	**24.76**
Alternative Material: Safe-Strip Cleaning Compound, Solvent	
None Required	
Total Price	**0.00**
Alternative Material: Envirosolv CRX	
12 pairs of neoprene gloves	55.20
12 pairs of safety glasses	30.72
Total Price	**85.92**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: Envirosolve 654CR	
104 pairs of rubber gloves	8.32
12 pairs of safety glasses	30.72
Total Price	**39.04**
Alternative Material: Teksol EP Cleaning Compound, Solvent	
12 pairs of chemical splash goggles	16.44
Total Price	**16.44**
Alternative Material: X-Caliber, FX153 Cleaning Compound, Solvent	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
12 face shields	162.00
Total Price	**197.40**
Alternative Material: Citrex EB, FC 154 Cleaning Compound, Solvent	
104 pairs of rubber gloves	8.32
Total Price	**8.32**
Alternative Material: Citrex, FC 153 Cleaning Compound, Solvent	
12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**
Alternative Material: FA009 Aero-Strip Cleaning Compound, Solvent	
12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**
Alternative Material: Citra Soak, FC058	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: Preprite Coating Remover	
12 pairs of chemical splash goggles	16.44
Total Price	**16.44**
Alternative Material: FoamFlush Urethane Remover	
12 pairs of neoprene gloves	55.20
12 pairs of chemical splash goggles	16.44
Total Price	**71.64**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: Ship Shape Resin Cleaner

12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**

Alternative Material: Pur-O-Shine Heavy Duty Cleaner

None Required	
Total Price	**0.00**

Alternative Material: Alfa Kleen AK-037

12 pairs of nitrile gloves	18.96
Total Price	**18.96**

SILVER PAINT

Building 64 - Varnish Shop

Quantity Used - 4.8 gallons per year
Exposure Time - 13 hours per year

Status Quo Material: So-Sure Lacquer Aerosol Silver 17178

3 pairs of nitrile gloves	4.74
3 pairs of chemical splash goggles	4.11
Total Price	**8.85**

Alternative Material: GP-0001-7178, Silver Lacquer

3 pairs of safety glasses	7.68
Total Price	**7.68**

Alternative Material: Aerosol Coatings 01947, Aluminum Lacquer 17178

3 pairs of safety glasses	7.68
Total Price	**7.68**

Alternative Material: 310 Silver 11A Rustproof Paint

None Required	
Total Price	**0.00**

Alternative Material: A-2000 Series Aerosol Lacquer Silver 17178

3 pairs of nitrile gloves	4.74
3 pairs of chemical splash goggles	4.11
Total Price	**8.85**

Figure D-1
Personal Protective Equipment Assumptions and Costs

ANAEROBIC ADHESIVE

Building 92 - Main Shop

Quantity Used - 1.56 gallons per year
Exposure Time - 1040 hours per year

Status Quo Material: Loctite Grade A Anaerobic Adhesive	
None Required	
Total Price	**0.00**
Alternative Material: Pliobond 20 Adhesive	
156 pairs of rubber gloves	12.48
18 pairs of chemical splash goggles	24.66
Total Price	**37.14**
Alternative Material: Accrabond Grade A MIL-S-22473	
156 pairs of plastic gloves	12.48
Total Price	**12.48**
Alternative Material: Nuts N' Bolts 223	
None Required	
Total Price	**0.00**
Alternative Material: Nuts N' Bolts 227	
None Required	
Total Price	**0.00**
Alternative Material: Sealant Grade A 8831	
156 pairs of rubber gloves	12.48
18 pairs of safety glasses	46.08
Total Price	**58.56**
Alternative Material: Anaerobic Adhesive / Sealant Grade A	
None Required	
Total Price	**0.00**
Alternative Material: Anaerobic Adhesive / Sealant	
None Required	
Total Price	**0.00**
Alternative Material: TB 1361A Sealing Compound	
18 pairs of nitrile gloves	28.44
18 pairs of chemical splash goggles	24.66
Total Price	**53.10**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: Grade A Red Sealing COmpound	
18 pairs of nitrile gloves	28.44
18 pairs of chemical splash goggles	24.66
Total Price	**53.10**
Alternative Material: Blue Resin Solution - G7526F	
None Required	
Total Price	**0.00**
Alternative Material: Neoprene Adhesive N-1051	
18 pairs of chemical splash goggles	24.66
Total Price	**24.66**
Alternative Material: 3M 90 High Strength Adhesive	
18 pairs of safety glasses	46.08
Total Price	**46.08**
Alternative Material: 3M Brand Spray 80 Neoprene Contact Adhesive	
18 pairs of safety glasses	46.08
Total Price	**46.08**
Alternative Material: 2141 Rubber and Gasket Adhesive	
18 pairs of nitrile gloves	28.44
18 pairs of chemical splash goggles	24.66
Total Price	**53.10**
Alternative Material: Scotch-Grip 1300 Rubber and Gasket Adhesive	
18 pairs of polyvinyl alcohol gloves	82.80
18 pairs of chemical splash goggles	24.66
Total Price	**107.46**

YELLOW PRIMER

Building 92 - Main Shop

Quantity Used - 156 gallons per year
Exposure Time - 520 hours per year

Status Quo Material: So Sure Yellow Primer (84-331) Aerosol	
104 pairs of rubber gloves	8.32
18 pairs of chemical splash goggles	24.66
Total Price	**32.98**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: 4560-30-F A/D Primer Yellow Chromate Free	
18 pairs of polyvinyl alcohol gloves	82.80
18 pairs of chemical splash goggles	24.66
Total Price	**107.46**
Alternative Material: TT-P-645B Primer, PC H2-016	
104 pairs of rubber gloves	8.32
18 pairs of safety glasses	46.08
Total Price	**54.40**
Alternative Material: Formula 84 H2-017 Primer Coating Yellow 33793	
104 pairs of rubber gloves	8.32
18 pairs of safety glasses	46.08
Total Price	**54.40**
Alternative Material: TT-P-1757A Type I Yellow Primer Coating	
18 pairs of nitrile gloves	28.44
18 pairs of chemical splash goggles	24.66
Total Price	**53.10**
Alternative Material: TT-P-645B Formula 84 No 33793	
18 pairs of nitrile gloves	28.44
18 pairs of chemical splash goggles	24.66
4 aprons	3.60
Total Price	**56.70**
Alternative Material: TT-P-1757A Type I Yellow P759A-66	
18 pairs of nitrile gloves	28.44
18 pairs of chemical splash goggles	24.66
4 aprons	3.60
Total Price	**56.70**
Alternative Material: TT-P-1757A Type I VOC Compliant Yellow Primer	
18 pairs of neoprene gloves	82.80
18 pairs of chemical splash goggles	24.66
18 face shields	243.00
4 aprons	3.60
Total Price	**354.06**
Alternative Material: P-441A Zinc Chromate Primer	
104 pairs of rubber gloves	8.32
18 pairs of chemical splash goggles	24.66
Total Price	**32.98**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: Zinc Chromate Primer P-441P	
18 pairs of neoprene gloves	82.80
18 pairs of safety glasses	46.08
Total Price	**128.88**
Alternative Material: TT-P-1757 Yellow Zinc Chromate Primer	
18 pairs of nitrile gloves	28.44
18 pairs of chemical splash goggles	24.66
Total Price	**53.10**
Alternative Material: Primer Coating Zinc Chromate Comp L	
4 half mask cartridge respirators	71.12
8 cartridges	280.00
8 paint spray pre-filters	100.72
18 pairs of chemical splash goggles	24.66
Total Price	**476.50**
Alternative Material: X-3917Y TT-P-1757 Yellow Zinc Chromate Primer	
18 pairs of nitrile gloves	28.44
18 pairs of chemical splash goggles	24.66
Total Price	**53.10**
Alternative Material: Zinc Chromate Primer GP-0004-1757	
None Required	
Total Price	**0.00**
Alternative Material: F-84 TT-P-645B Zinc Molybdate Alkyd Primer	
18 pairs of chemical splash goggles	24.66
Total Price	**24.66**
Alternative Material: 16A Primer, 119 Yellow	
18 pairs of nitrile gloves	28.44
18 pairs of safety glasses	46.08
Total Price	**74.52**
Alternative Material: TT-P-645B Primer, Zinc Chromate Alkyd Yellow	
4 half mask cartridge respirators	71.12
8 cartridges	280.00
8 paint spray pre-filters	100.72
18 pairs of neoprene gloves	82.80
18 pairs of safety glasses	46.08
18 face shields	243.00
4 aprons	3.60
Total Price	**827.32**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: 4560-30F Zinc Primer Yellow - Chromate Free	
18 pairs of polyvinyl alcohol gloves	82.80
18 pairs of chemical splash goggles	24.66
Total Price	**107.46**
Alternative Material: 6-204 Zinc Chromate Metal Primer	
18 pairs of nitrile gloves	28.44
18 pairs of safety glasses	46.08
18 aprons	16.20
Total Price	**90.72**

BLACK PAINT

Building 92 - Main Shop

Quantity Used - 3 gallons per year
Exposure Time - 13 hours per year

Status Quo Material: 01920 Black Lacquer 17038 Aerosol	
3 pairs of safety glasses	7.68
Total Price	**7.68**
Alternative Material: A-4308-17038 Aerosol Gloss Black	
3 pairs of polyvinyl alcohol gloves	13.80
3 pairs of chemical splash goggles	4.11
Total Price	**17.91**
Alternative Material: So Sure Lacquer Gloss Black 17038	
3 pairs of nitrile gloves	4.74
3 pairs of chemical splash goggles	4.11
Total Price	**8.85**
Alternative Material: Eco Sure Black 17038 Aerosol	
3 pairs of nitrile gloves	4.74
3 pairs of chemical splash goggles	4.11
Total Price	**8.85**
Alternative Material: Eco Sure Black 17038 Enamel	
3 pairs of nitrile gloves	4.74
3 pairs of chemical splash goggles	4.11
Total Price	**8.85**
Alternative Material: Lacquer, Aerosol Black 17038	
None Required	
Total Price	**0.00**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: 306 Black 11A Rustproof Paint

None Required	
Total Price	**0.00**

Alternative Material: A-2000 Series Aerosol Lacquer Black 17038

3 pairs of nitrile gloves	4.74
3 pairs of chemical splash goggles	4.11
Total Price	**8.85**

PAINT REMOVER

Building 18 - Paint Shop

Quantity Used - 60 gallons per year
Exposure Time - 2080 hours per year

Status Quo Material: Omega 3812 SN 313-2 Paint Remover

12 half mask cartridge respirators	213.36
24 cartridges	840.00
24 paint spray pre-filters	302.16
18 pairs of neoprene gloves	82.80
18 pairs of safety glasses	46.08
12 aprons	10.80
Total Price	**1495.20**

Alternative Material: Paint Remover

260 pairs of rubber gloves	20.80
18 pairs of safety glasses	46.08
Total Price	**66.88**

Alternative Material: Crest Paint Stripper #29A

12 respirators	1443.12
18 pairs of nitrile gloves	28.44
18 face shields	243.00
12 tyvek suits	52.80
12 aprons	10.80
Total Price	**1778.16**

Alternative Material: Intex 8573 Paint Remover

12 half mask cartridge respirators	213.36
24 cartridges	840.00
24 Pre-Filters	151.08
18 pairs of polyvinyl alcohol gloves	82.80
18 pairs of chemical splash goggles	24.66
Total Price	**1311.90**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: TT-R-251J Type III Class B Paint Remover	
260 pairs of rubber gloves	20.80
18 pairs of chemical splash goggles	24.66
Total Price	**45.46**
Alternative Material: Nonflammable Paint Remover	
18 pairs of neoprene gloves	82.80
18 pairs of chemical splash goggles	24.66
12 aprons	10.80
Total Price	**118.26**
Alternative Material: Paint Remover, 400063 Nonflammable	
18 pairs of nitrile gloves	28.44
18 pairs of chemical splash goggles	24.66
Total Price	**53.10**
Alternative Material: Paint Remover, High Viscosity	
12 half mask cartridge respirators	213.36
24 cartridges	840.00
24 paint spray pre-filters	302.16
18 pairs of nitrile gloves	28.44
18 pairs of chemical splash goggles	24.66
Total Price	**1408.62**
Alternative Material: Organic Paint Remover	
18 pairs of nitrile gloves	28.44
18 pairs of safety glasses	46.08
Total Price	**74.52**

PAINT THINNER

Building 18 - Paint Shop

Quantity Used - 360 gallons per year
Exposure Time - 52 hours per year

Status Quo Material: T-10 Paint Thinner	
None Required	
Total Price	**0.00**
Alternative Material: Mineral Spirits Odorless	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: Paint Thinner / Mineral Spirits	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**374.28**
Alternative Material: Chartersol 300-66 Petroleum Aliphatic Hydrocarbons	
12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**
Alternative Material: Paint Thinner	
52 pairs of rubber gloves	4.16
12 pairs of chemical splash goggles	16.44
Total Price	**20.60**
Alternative Material: Thinner Paint Type I Regular Mineral Spirits	
12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**
Alternative Material: Mineral Spirits, TT-T-291F Type I	
3 respirators	360.78
12 pairs of chemical splash goggles	16.44
3 aprons	2.70
Total Price	**379.92**
Alternative Material: Standard 350H TT-T-291E Type II Grade A Thinner	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
12 pairs of chemical splash goggles	16.44
Total Price	**355.32**
Alternative Material: Chevron Thinner 350H	
None Required	
Total Price	**0.00**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: 350B Paint Thinner, Mineral Spirits	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
52 pairs of rubber gloves	4.16
12 pairs of chemical splash goggles	16.44
Total Price	**359.48**
Alternative Material: Solvent S-66 Thinner, Paint Products	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: Paint Thinner	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: 266D Thinner, Dope and Lacquer	
12 pairs of chemical splash goggles	16.44
Total Price	**16.44**
Alternative Material: Mineral Spirits Klean-Strip, PN-GMS44	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: Thinner, Regular, Type I	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**374.28**
Alternative Material: Regular Mineral Spirits, Thinner	
12 pairs of nitrile gloves	18.96
Total Price	**18.96**
Alternative Material: TT-T-291F Paint Thinner	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: 291E Paint Thinner	
52 pairs of rubber gloves	4.16
12 pairs of chemical splash goggles	16.44
Total Price	**20.60**
Alternative Material: Thinner (4-068), GTA435	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
12 face shields	162.00
Total Price	**197.40**
Alternative Material: Odorless Mineral Spirits	
12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**
Alternative Material: Odorless Paint Thinner	
12 pairs of nitrile gloves	18.96
12 aprons	10.80
12 pairs of chemical splash goggles	16.44
Total Price	**46.20**
Alternative Material: Thin-X	
None Required	
Total Price	**0.00**
Alternative Material: Odorless Thin-X	
None Required	
Total Price	**0.00**

ANTIFOULING PAINT

Building 18 - Paint Shop

Quantity Used - 100 gallons per year
Exposure Time - 52 hours per year

Status Quo Material: Devoe ABC #3 Red Antifouling Paint	
12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: BRA640 Interviron Antifouling Paint	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
12 face shields	162.00
Total Price	**536.28**
Alternative Material: N-5564 Gloss Red Silicone Enamel 11105	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: 888 Series Water Base Antifouling Paint	
52 pairs of rubber gloves	4.16
12 pairs of chemical splash goggles	16.44
Total Price	**20.60**
Alternative Material: Antifouling Paint, 76600-51110 Red	
None Required	
Total Price	**0.00**
Alternative Material: Antifouling Paint, 76600-50300 Light Red	
None Required	
Total Price	**0.00**
Alternative Material: F-121 Vinyl Antifouling Red Paint	
12 pairs of chemical splash goggles	16.44
12 face shields	162.00
Total Price	**178.44**
Alternative Material: Vinyl Antifouling Red Paint	
3 respirators	360.78
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**396.18**
Alternative Material: Interclene Antifouling Red, BRA540	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: Super Bottomkote Red, 456	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
12 face shields	162.00
Total Price	**197.40**
Alternative Material: MIL-P-15931F Red Antifouling Type I Class I	
None Required	
Total Price	**0.00**
Alternative Material: Woolsey Vinelast 720 Permanent Red	
12 pairs of safety glasses	30.72
Total Price	**30.72**
Alternative Material: Woolsey Neptune II WB 551 Red	
12 pairs of safety glasses	30.72
Total Price	**30.72**
Alternative Material: 1675 Trinidad Red	
12 pairs of safety glasses	30.72
Total Price	**30.72**
Alternative Material: 1670 ACP-50 Red	
12 pairs of safety glasses	30.72
Total Price	**30.72**
Alternative Material: 1618 Unepoxy Plus Red	
12 pairs of safety glasses	30.72
Total Price	**30.72**
Alternative Material: Neptune 710A Royal Red Antifouling Paint	
12 pairs of neoprene gloves	55.20
12 pairs of chemical splash goggles	16.44
Total Price	**71.64**

PRIMER

Building 300 - Hazardous Material Control Area

Quantity Used - 1 gallon per year
Exposure Time - Nominal

Status Quo Material: Locquic Primer T	
12 pairs of rubber gloves	0.96
3 pairs of safety glasses	7.68
Total Price	**8.64**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: Accrabond Grade A MIL-S-22473	
3 pairs of nitrile gloves	4.74
Total Price	**4.74**
Alternative Material: Nuts N' Bolts 227	
None Required	
Total Price	**0.00**
Alternative Material: Sealant Grade A 8831	
12 pairs of rubber gloves	0.96
3 pairs of safety glasses	7.68
Total Price	**8.64**
Alternative Material: Nuts N' Bolts 223	
None Required	
Total Price	**0.00**
Alternative Material: Anaerobic Solventless Primer	
None Required	
Total Price	**0.00**
Alternative Material: EF Primer 49	
12 pairs of rubber gloves	0.96
3 pairs of safety glasses	7.68
Total Price	**8.64**
Alternative Material: EF Primer 50	
12 pairs of rubber gloves	0.96
3 pairs of safety glasses	7.68
Total Price	**8.64**
Alternative Material: Locquic Primer T 7471	
12 pairs of rubber gloves	0.96
3 pairs of safety glasses	7.68
Total Price	**8.64**

Figure D-1
Personal Protective Equipment Assumptions and Costs

RED PAINT

Building 300 - Hazardous Material Control Area

Quantity Used - 1.56 gallons per year
Exposure Time - Nominal

Status Quo Material: So-Sure Lacquer Aerosol Red 11136	
12 pairs of rubber gloves	0.96
3 pairs of chemical splash goggles	4.11
Total Price	**5.07**
Alternative Material: Fixall Brite Red 11136 (444-1304)	
3 pairs of nitrile gloves	4.74
3 face shields	40.50
Total Price	**45.24**
Alternative Material: Eco Sure Spray Paint Red 11136	
12 pairs of rubber gloves	0.96
3 pairs of chemical splash goggles	4.11
Total Price	**5.07**
Alternative Material: Enamel, Low VOC Water-Based Aerosol Red	
12 pairs of rubber gloves	0.96
3 pairs of chemical splash goggles	4.11
Total Price	**5.07**
Alternative Material: 11136 Red	
1 half mask cartridge respirator	17.78
2 cartridges	70.00
2 paint spray pre-filters	25.18
3 pairs of nitrile gloves	4.74
3 pairs of chemical splash goggles	4.11
Total Price	**121.81**
Alternative Material: Enamel Red 11136	
3 pairs of nitrile gloves	4.74
3 pairs of chemical splash goggles	4.11
3 aprons	2.70
Total Price	**11.55**
Alternative Material: GP-0001-1670 Red 11136	
None Required	
Total Price	**0.00**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: 301 Red 11A Rustproof Paint	
None Required	
Total Price	**0.00**
Alternative Material: A-2000 Series Aerosol Lacquer Red 11136	
3 pairs of nitrile gloves	4.74
3 pairs of chemical splash goggles	4.11
Total Price	**8.85**

GRAY PAINT

Building 65 - Hazardous Material Control Area

Quantity Used - 15 gallons per year
Exposure Time - Not Known

Status Quo Material: So-Sure Lacquer Aerosol Gray 16307	
52 pairs of rubber gloves	4.16
6 pairs of chemical splash goggles	8.22
Total Price	**12.38**
Alternative Material: Enamel Low VOC Water-Based Gray 16307	
52 pairs of rubber gloves	4.16
6 pairs of chemical splash goggles	8.22
Total Price	**12.38**
Alternative Material: Eco Sure Gray 16307 Gloss VOC Compliant	
52 pairs of rubber gloves	4.16
6 pairs of chemical splash goggles	8.22
Total Price	**12.38**
Alternative Material: 361 Gray 11A Rustproof Paint	
None Required	
Total Price	**0.00**
Alternative Material: A-2000 Series Aerosol Lacquer Gray 16307	
6 pairs of nitrile gloves	9.48
6 pairs of chemical splash goggles	8.22
Total Price	**17.70**

Figure D-1
Personal Protective Equipment Assumptions and Costs

ORANGE PAINT

Building 158 - Crane Maintenance

Quantity Used - Not Known (Assume 100 gallons per year)
Exposure Time - Not Known

Status Quo Material: Enamel Alkyd Gloss Low VOC Orange 12246	
12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**
Alternative Material: TT-E-489H Enamel Alkyd Gloss Low VOC Orange	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
12 pairs of neoprene gloves	55.20
12 face shields	162.00
Total Price	**556.08**
Alternative Material: Enamel 12246 Orange Alkyd Gloss	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
12 pairs of safety glasses	30.72
Total Price	**369.60**
Alternative Material: Enamel Orange 12246 TT-E-2784	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
52 pairs of rubber gloves	4.16
12 pairs of safety glasses	30.72
Total Price	**373.76**
Alternative Material: Exterior Trim Enamel Orange 12246	
12 pairs of safety glasses	30.72
Total Price	**30.72**
Alternative Material: Enamel, Orange, TT-E-2784, 495-12246	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**374.28**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: 305 Orange 11A Rustproof Paint	
None Required	
Total Price	**0.00**
Alternative Material: 6407-6409 Series Gloss High Solids	
12 pairs of chemical splash goggles	16.44
Total Price	**16.44**
Alternative Material: Enamel, VOC Compliant Orange 12246	
12 pairs of neoprene gloves	55.20
12 pairs of safety glasses	30.72
12 aprons	10.80
Total Price	**96.72**
Alternative Material: 6-282 Speedhide Int / Ext Gloss Enamel	
12 pairs of nitrile gloves	18.96
12 aprons	10.80
Total Price	**29.76**

YELLOW PAINT

Building 158 - Crane Maintenance

Quantity Used - Not Known (Assume 100 gallons per year)
Exposure Time - Not Known

Status Quo Material: Enamel Alkyd Gloss Air Drying Yellow 13538	
12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**
Alternative Material: TT-E-2784 Enamel Yellow 13538	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
52 pairs of rubber gloves	4.16
12 pairs of safety glasses	30.72
Total Price	**373.76**
Alternative Material: So Sure Enamel ID 44-130-P Yellow 13538	
12 pairs of safety glasses	30.72
Total Price	**30.72**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: 742-312 Enamel Alkyd Gloss Yellow 13538	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
Total Price	**338.88**
Alternative Material: 742-328 Enamel Alkyd Gloss Yellow 13538	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
Total Price	**338.88**
Alternative Material: TT-E-489G Yellow 13538 Enamel Alkyd Gloss	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
12 pairs of safety glasses	30.72
Total Price	**369.60**
Alternative Material: TT-E-2784 Ultra Deep Tint Base Enamel Yellow 13538	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: 600 Industrial Enamel 13538	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: Yellow Gloss Enamel Alkyd 13538	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**374.28**
Alternative Material: Enamel Alkyd Gloss Yellow 13538	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: Exterior Trim Enamel Yellow 13538	
12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**
Alternative Material: So Sure Yellow 13538	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: Eco Sure Yellow 13538 VOC Compliant Enamel	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: N5223 Yellow A/D Enamel 13538	
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**
Alternative Material: Industrial All Purpose Spray Enamel	
12 pairs of neoprene gloves	55.20
12 pairs of chemical splash goggles	16.44
Total Price	**71.64**
Alternative Material: Enamel Gloss Yellow 13538, TT-E-489	
None Required	
Total Price	**0.00**
Alternative Material: Enamel Yellow 13538	
3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**374.28**
Alternative Material: Enamel Alkyd Gloss Type II Yellow 13538 Aerosol	
None Required	
Total Price	**0.00**
Alternative Material: 302 Yellow 11A Rustproof Paint	
None Required	
Total Price	**0.00**

Figure D-1
Personal Protective Equipment Assumptions and Costs

Alternative Material: 6407-6409 Series Gloss High Solids

12 pairs of chemical splash goggles	16.44
Total Price	**16.44**

Alternative Material: TT-E-489G Type I 13538 Yellow Orange Paint / Coating

12 pairs of safety glasses	30.72
Total Price	**30.72**

GRAY PAINT

Building 158 - Crane Maintenance

Quantity Used - Not Known (Assume 100 gallons per year)
Exposure Time - Not Known

Status Quo Material: Enamel Deck Interior Gray 26231

12 pairs of nitrile gloves	18.96
12 pairs of safety glasses	30.72
Total Price	**49.68**

Alternative Material: Enamel Gray 26231

3 half mask cartridge respirators	53.34
6 cartridges	210.00
6 paint spray pre-filters	75.54
12 pairs of neoprene gloves	55.20
12 pairs of chemical splash goggles	16.44
12 tyvek suits	52.80
Total Price	**463.32**

Alternative Material: MIL-E-24635A Enamel Gray 26231

12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
12 aprons	10.80
Total Price	**46.20**

Alternative Material: N-5356 Silicone Alkyd Enamel Gray 26231

12 pairs of nitrile gloves	18.96
12 pairs of chemical splash goggles	16.44
Total Price	**35.40**

Alternative Material: 97-480 Silicone Alkyd

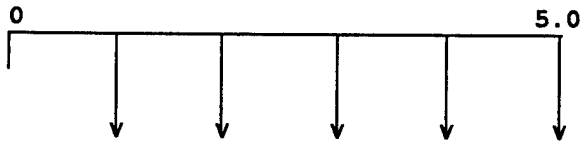
12 pairs of nitrile gloves	18.96
12 aprons	10.80
Total Price	**29.76**

Figure D-1
Personal Protective Equipment Assumptions and Costs

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

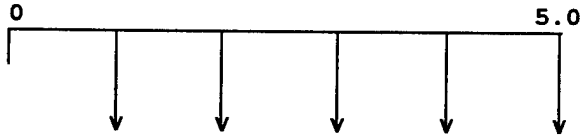


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: N-700A-BLACK CORRSION PREVENTIVE COMPOUND



Annual Cost = $1337.60

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$203.76	4.13905	$843.37

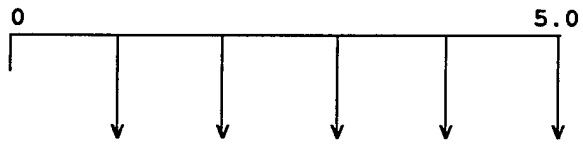
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1337.60	4.13905	$5536.39

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

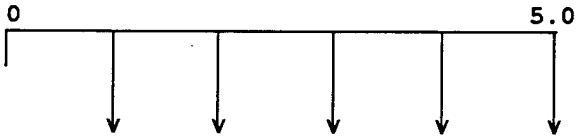


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: N-700-A GRAY NEOPRENE MAINTENANCE COATING



Annual Cost = $364.56

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$203.76	4.13905	$843.37

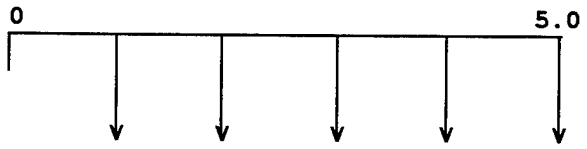
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$364.56	4.13905	$1508.93

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

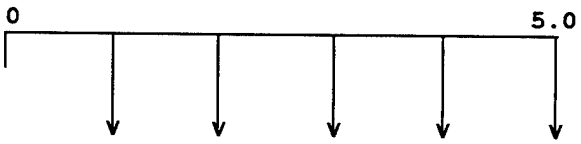


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PLIOBOND 20 ADHESIVE



Annual Cost = $192.44

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$203.76	4.13905	$843.37

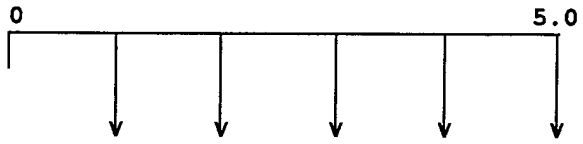
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$192.44	4.13905	$796.52

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

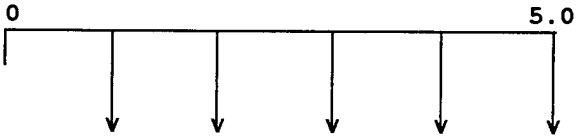


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ANAEROBIC SOLVENT LESS PRIMER



Annual Cost = $1900.80

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$203.76	4.13905	$843.37

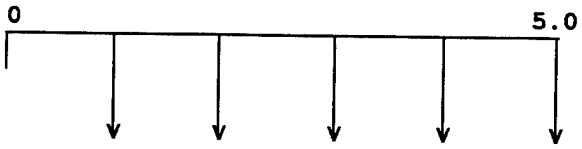
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$1900.80	4.13905	$7867.51

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

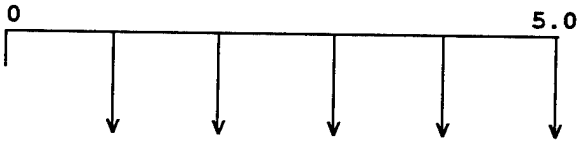


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: EF PRIMER 49



Annual Cost = $1075.52

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$203.76	4.13905	$843.37

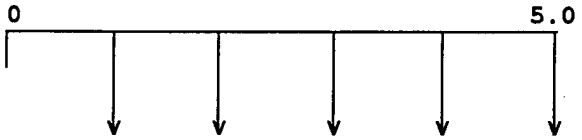
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1075.52	4.13905	$4451.63

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

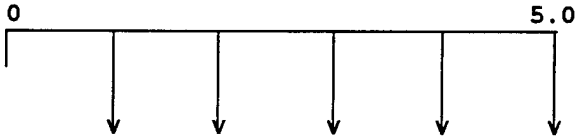


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: EF PRIMER 50



Annual Cost = $1075.52

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$203.76	4.13905	$843.37

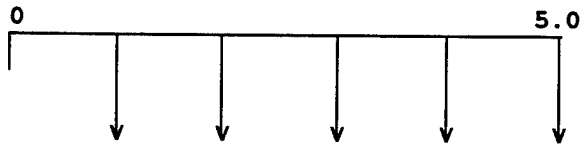
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$1075.52	4.13905	$4451.63

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

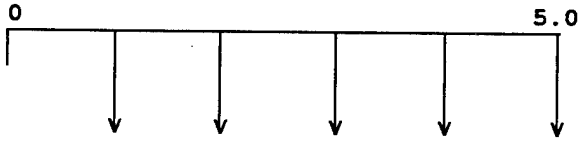


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: BLUE RESIN SOLUTION - G7526F



Annual Cost = $466.80

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$203.76	4.13905	$843.37

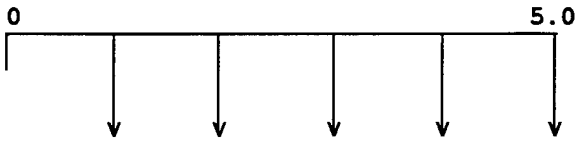
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$466.80	4.13905	$1932.11

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

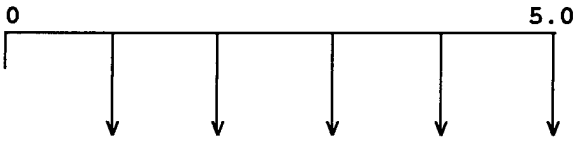


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: NEOPRENE ADHESIVE N-1051



Annual Cost = $141.60

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$203.76	4.13905	$843.37

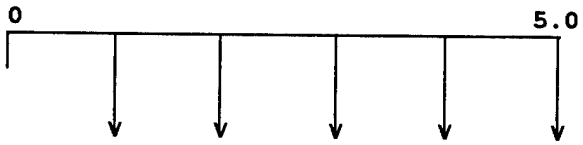
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$141.60	4.13905	$586.09

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

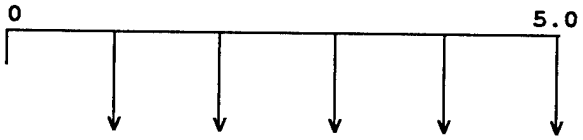


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: BLACK MAX BLACK TOUGH ADHESIVE



Annual Cost = $6785.04

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$203.76	4.13905	$843.37

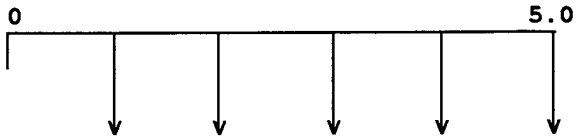
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$6785.04	4.13905	$28083.62

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

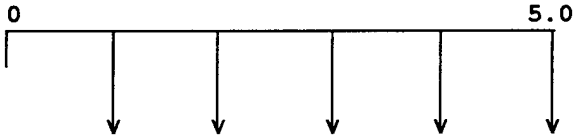


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 3M 90 HIGH STRENGTH ADHESIVE



Annual Cost = $233.42

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$203.76	4.13905	$843.37

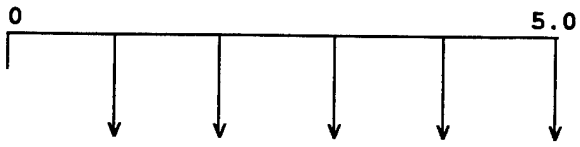
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$233.42	4.13905	$966.14

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

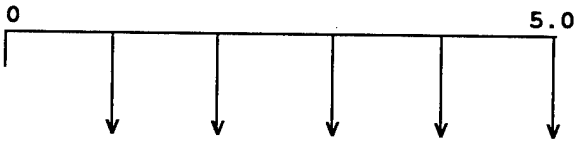


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 3M BRAND SPRAY 80 NEOPRENE CONTACT ADHESIVE



Annual Cost = $237.37

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$203.76	4.13905	$843.37

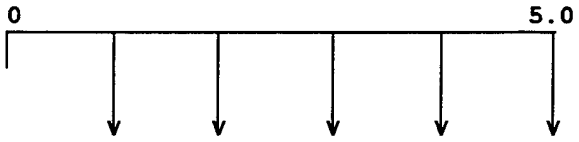
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$237.37	4.13905	$982.49

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

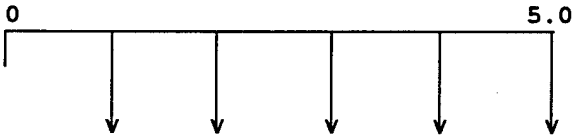


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 2141 RUBBER AND GASKET ADHESIVE



Annual Cost = $166.08

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$203.76	4.13905	$843.37

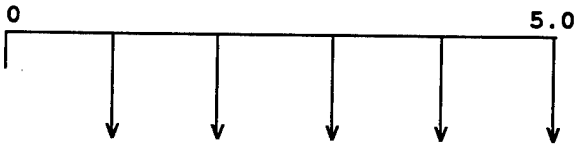
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$166.08	4.13905	$687.41

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

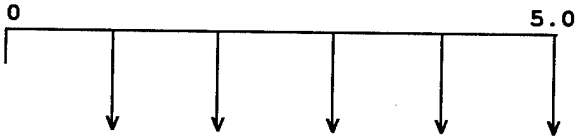


Annual Cost = $203.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SCOTCH-GRIP 1300 RUBBER AND GASKET ADHESIVE



Annual Cost = $208.71

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$203.76	4.13905	$843.37

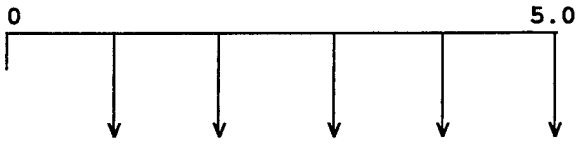
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$208.71	4.13905	$863.86

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOLUBE NO. 1

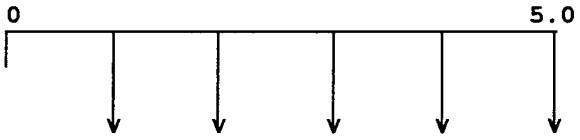


Annual Cost = $8166.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: DAG 156 GRAPHITE, COLLOIDAL



Annual Cost = $8690.03

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$8166.20	4.13905	$33800.31

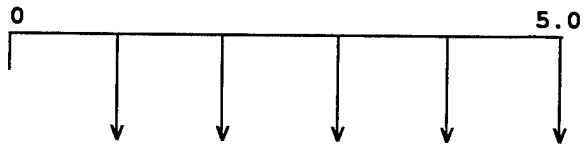
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$8690.03	4.13905	$35968.47

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOLUBE NO. 1

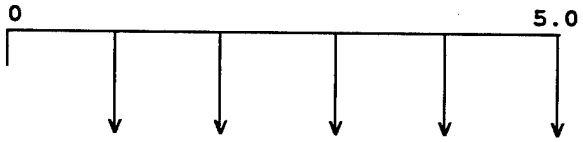


Annual Cost = $8166.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: (55A) 591 COSMOLINE



Annual Cost = $482.22

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$8166.20	4.13905	$33800.31

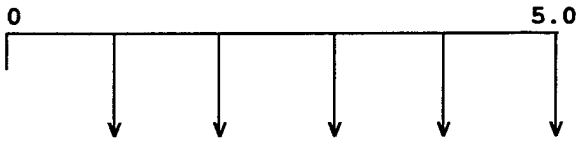
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$482.22	4.13905	$1995.93

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOLUBE NO. 1

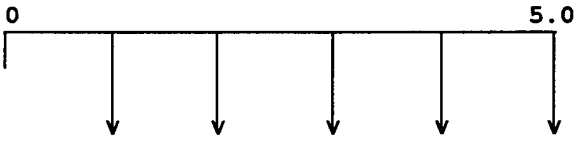


Annual Cost = $8166.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PELCO COLLOIDAL GRAPHITE, 16053



Annual Cost = $16052.95

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$8166.20	4.13905	$33800.31

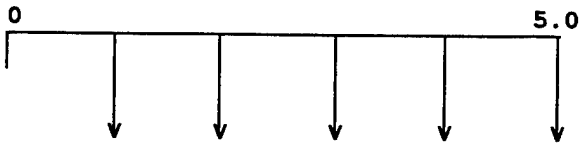
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$16052.95	4.13905	$66443.96

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOLUBE NO. 1

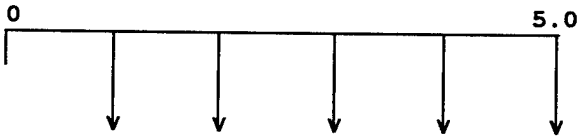


Annual Cost = $8166.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: LOCK-EASE



Annual Cost = $1606.04

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$8166.20	4.13905	$33800.31

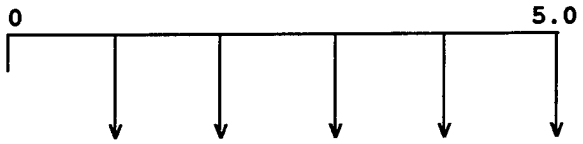
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1606.04	4.13905	$6647.48

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOLUBE NO. 1

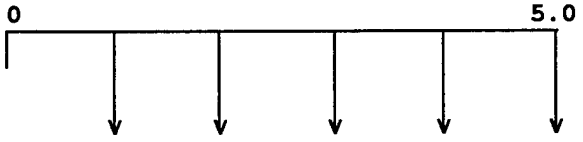


Annual Cost = $8166.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SILOXIRANE 2032 COATING



Annual Cost = $5933.44

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$8166.20	4.13905	$33800.31

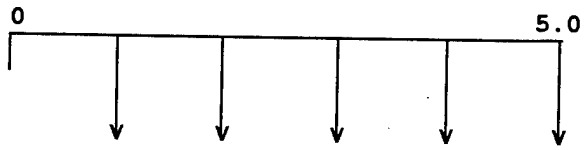
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$5933.44	4.13905	$24558.80

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ACRYLIC LACQUER AEROSOL (BLACK) IB NO 2652

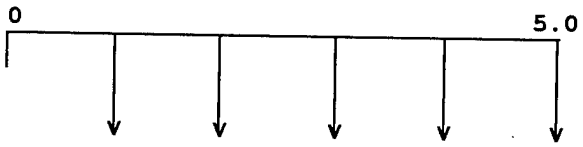


Annual Cost = $45.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: DR038 CONCENTRATE AEROSOL LACQUER, BLACK 17038



Annual Cost = $61.44

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$45.36	4.13905	$187.75

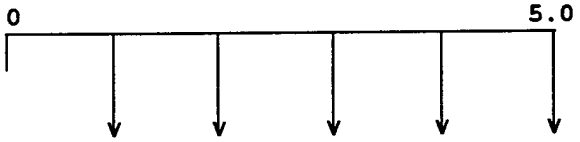
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$61.44	4.13905	$254.30

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ACRYLIC LACQUER AEROSOL (BLACK) IB NO 2652

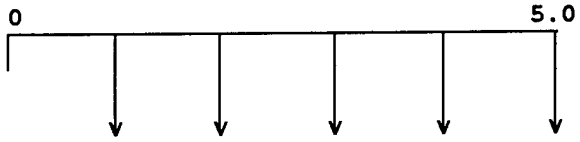


Annual Cost = $45.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: A-4100 AEROSOL BLACK 17038 TT-L-50



Annual Cost = $208.10

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$45.36	4.13905	$187.75

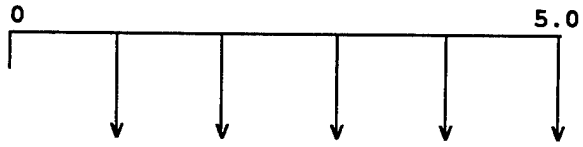
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$208.10	4.13905	$861.34

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

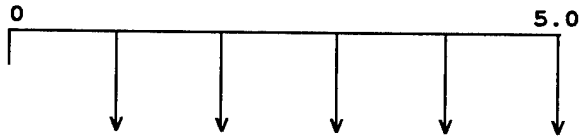


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: N-700A-BLACK CORRSION PREVENTIVE COMPOUND



Annual Cost = $3865.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

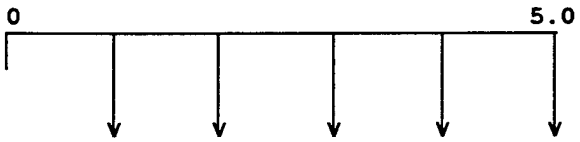
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3865.40	4.13905	$15999.08

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

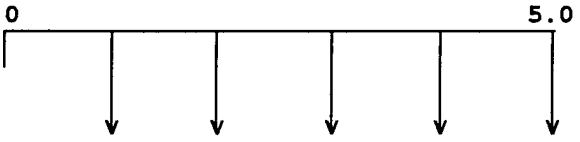


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: N-700-A GRAY NEOPRENE MAINTENANCE COATING



Annual Cost = $946.28

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

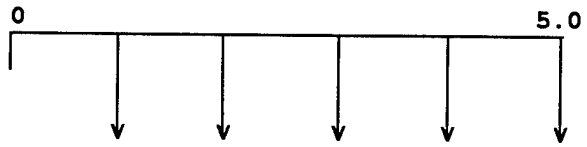
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$946.28	4.13905	$3916.70

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

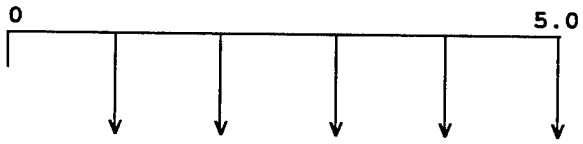


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PLIOBOND 20 ADHESIVE



Annual Cost = $490.86

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

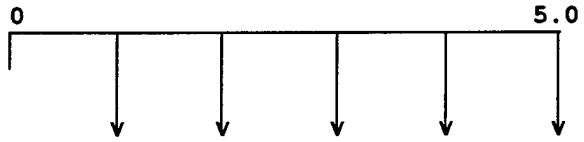
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$490.86	4.13905	$2031.69

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

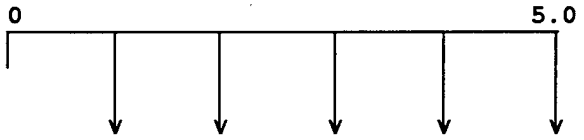


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ANAEROBIC SOLVENT LESS PRIMER



Annual Cost = $4786.65

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

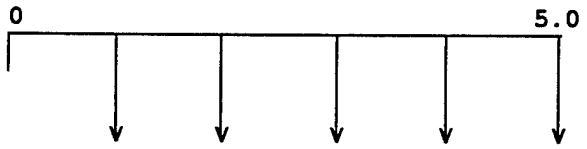
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4786.65	4.13905	$19812.18

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

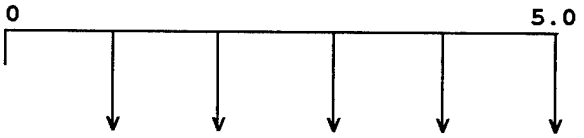


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: EF PRIMER 49



Annual Cost = $2712.96

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

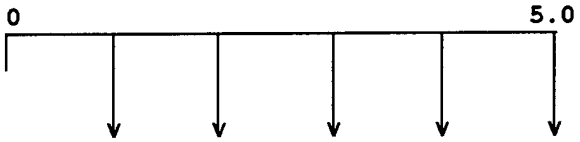
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2712.96	4.13905	$11229.08

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

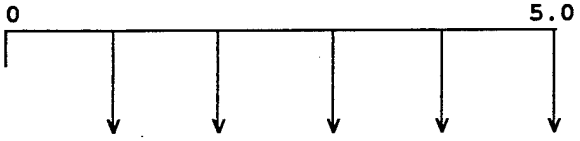


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: EF PRIMER 50



Annual Cost = $2712.96

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

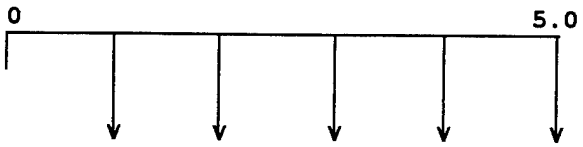
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2712.96	4.13905	$11229.08

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

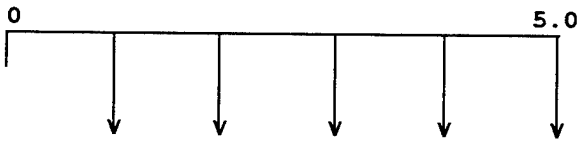


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: BLUE RESIN SOLUTION - G7526F



Annual Cost = $1186.45

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

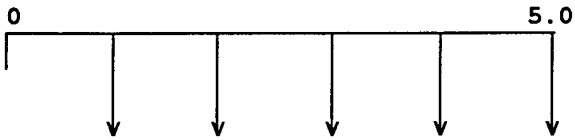
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1186.45	4.13905	$4910.78

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

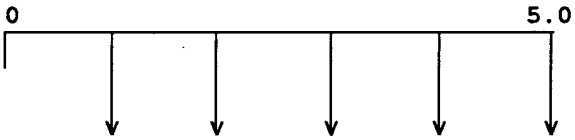


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: NEOPRENE ADHESIVE N-1051



Annual Cost = $366.94

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

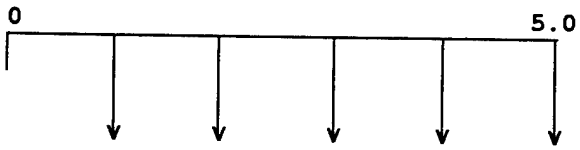
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$366.94	4.13905	$1518.78

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

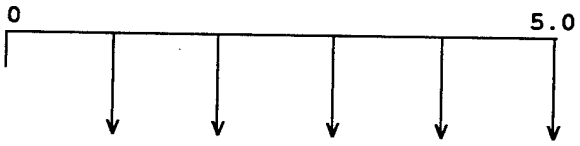


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: BLACK MAX BLACK TOUGH ADHESIVE



Annual Cost = $17099.12

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

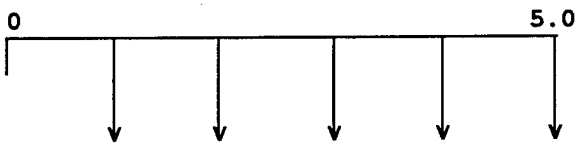
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$17099.12	4.13905	$70774.11

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

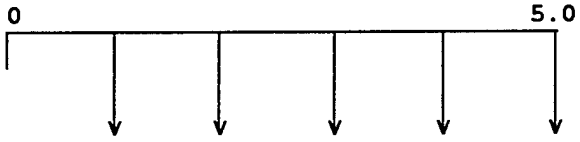


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 3M 90 HIGH STRENGTH ADHESIVE



Annual Cost = $584.81

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

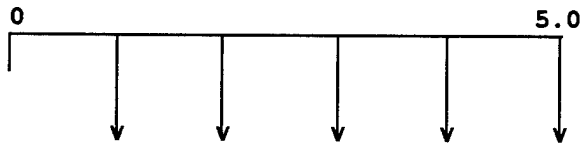
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$584.81	4.13905	$2420.56

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

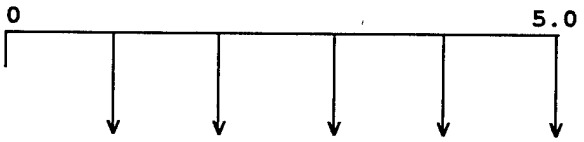


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 3M BRAND SPRAY 80 NEOPRENE CONTACT ADHESIVE



Annual Cost = $594.57

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

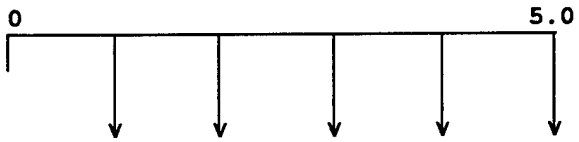
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$594.57	4.13905	$2460.95

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

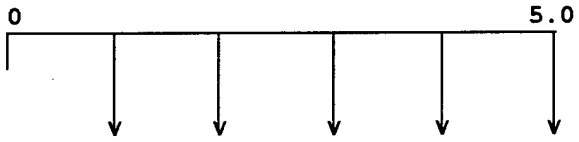


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 2141 RUBBER AND GASKET ADHESIVE



Annual Cost = $448.78

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

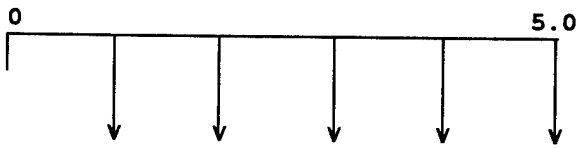
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$448.78	4.13905	$1857.52

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: NEOPRENE N-11 PRIMER

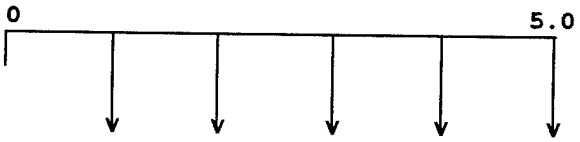


Annual Cost = $530.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SCOTCH-GRIP 1300 RUBBER AND GASKET ADHESIVE



Annual Cost = $568.50

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$530.88	4.13905	$2197.34

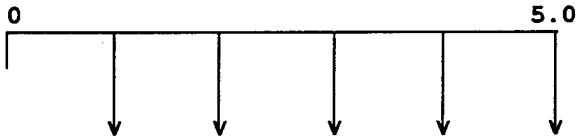
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$568.50	4.13905	$2353.05

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

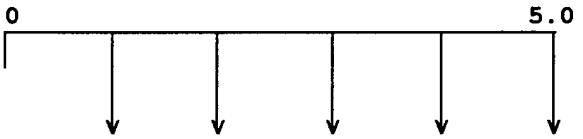


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ARDROX 5300-W HOT TANK STRIPPER



Annual Cost = $1624.35

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

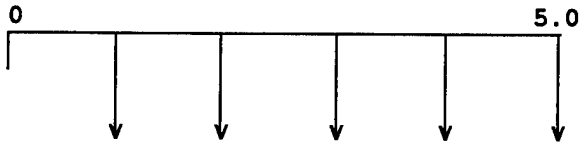
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1624.35	4.13905	$6723.27

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

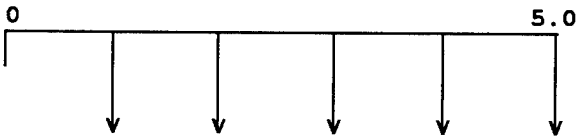


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: BIO T 200A CLEANING COMPOUND, SOLVENT



Annual Cost = $2615.23

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

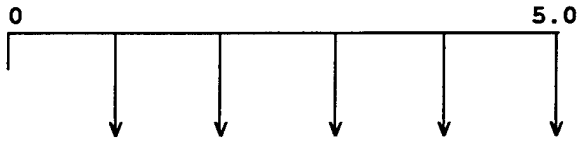
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2615.23	4.13905	$10824.57

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

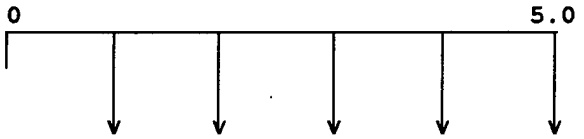


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: BIO T MAX CLEANING COMPOUND, SOLVENT



Annual Cost = $2652.72

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

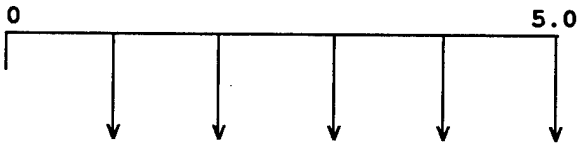
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2652.72	4.13905	$10979.74

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

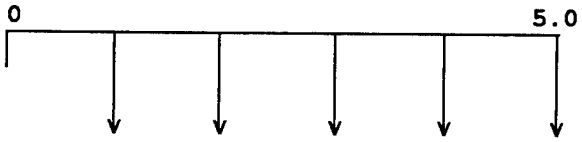


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: BRULIN SD 1291 CLEANING COMPOUND, SOLVENT



Annual Cost = $2298.96

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

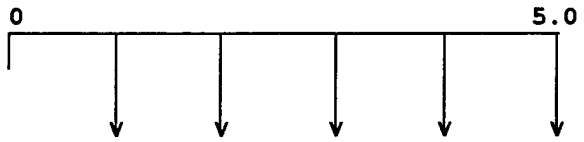
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2298.96	4.13905	$9515.51

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

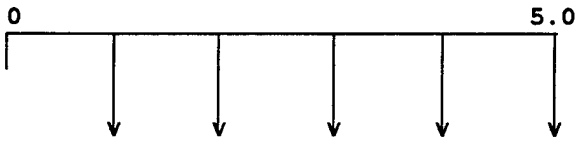


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SAFETY STRIP HT CLEANING COMPOUND, SOLVENT



Annual Cost = $2532.52

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

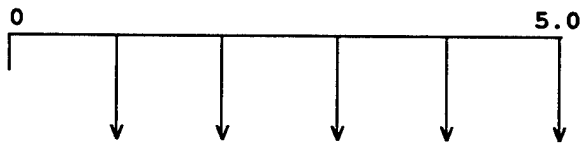
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2532.52	4.13905	$10482.23

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

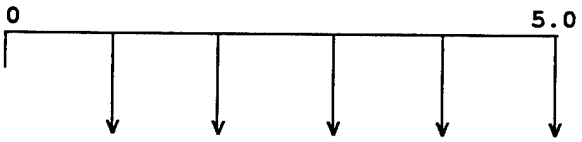


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: NATURE-SOL 100



Annual Cost = $2107.91

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

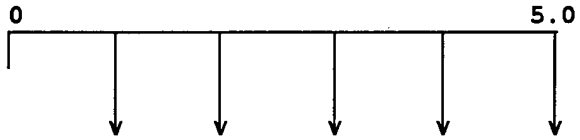
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2107.91	4.13905	$8724.74

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

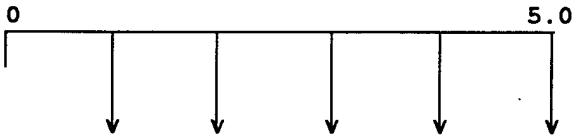


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SAFE-STRIP CLEANING COMPOUND, SOLVENT



Annual Cost = $1702.25

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

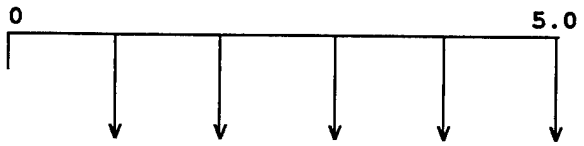
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1702.25	4.13905	$7045.70

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

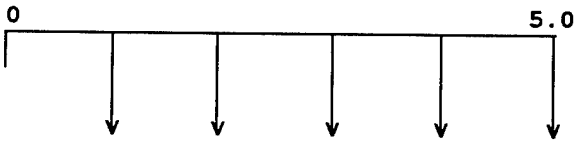


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENVIROSOLV CRX



Annual Cost = $1809.53

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

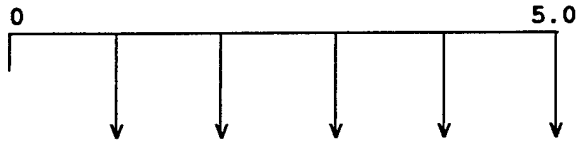
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1809.53	4.13905	$7489.74

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

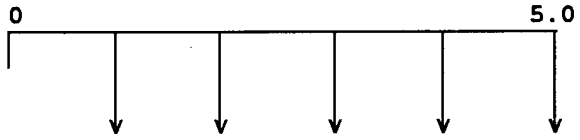


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENVIROSOLVE 654CR



Annual Cost = $1702.57

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

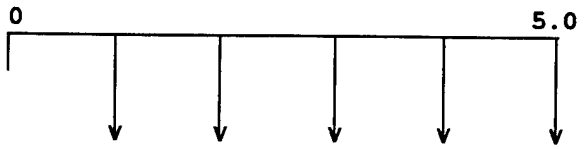
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1702.57	4.13905	$7047.02

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

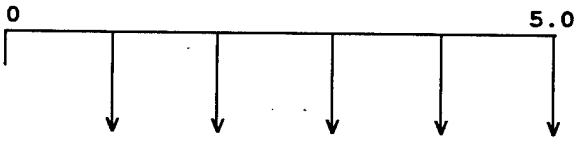


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TEKSOL EP CLEANING COMPOUND, SOLVENT



Annual Cost = $2557.99

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

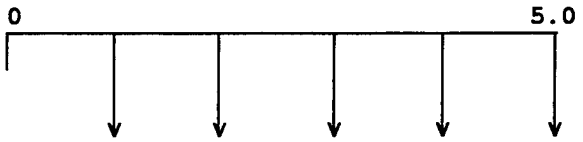
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2557.99	4.13905	$10587.65

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

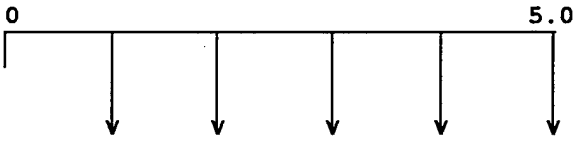


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: X-CALIBER, FX153 CLEANING COMPOUND, SOLVENT



Annual Cost = $3984.92

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

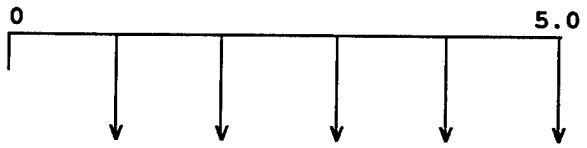
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3984.92	4.13905	$16493.78

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

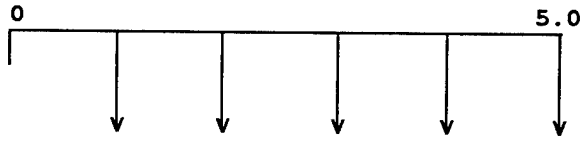


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: CITREX EB, FC 154 CLEANING COMPOUND, SOLVENT



Annual Cost = $3321.74

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

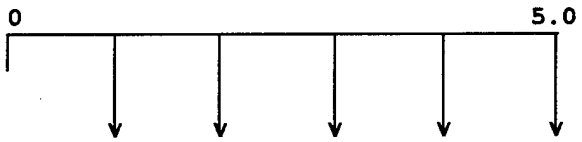
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3321.74	4.13905	$13748.85

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

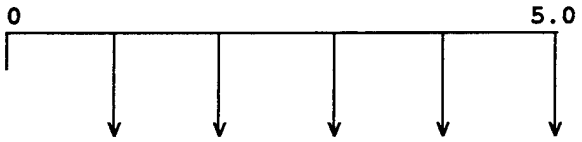


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: CITREX, FC 153 CLEANING COMPOUND, SOLVENT



Annual Cost = $3980.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

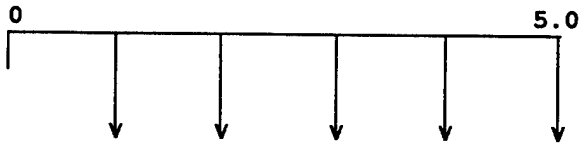
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3980.20	4.13905	$16474.25

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

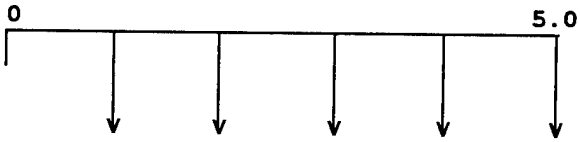


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: FA009 AERO-STRIP CLEANING COMPOUND, SOLVENT



Annual Cost = $1943.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

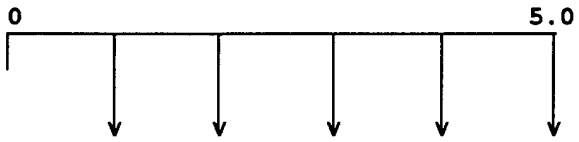
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1943.88	4.13905	$8045.82

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

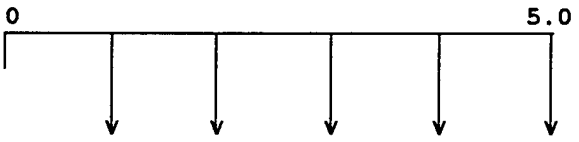


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: CITRA SOAK, FC058



Annual Cost = $1635.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

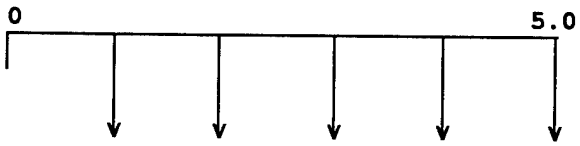
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1635.40	4.13905	$6769.00

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

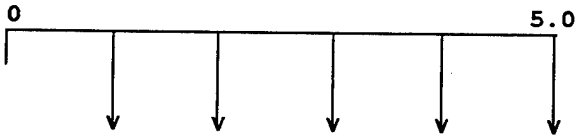


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PREPRITE COATING REMOVER



Annual Cost = $2392.44

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

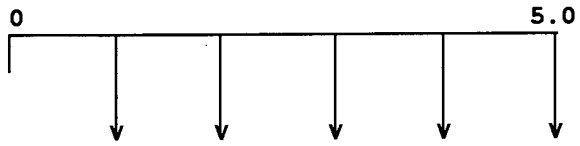
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2392.44	4.13905	$9902.43

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

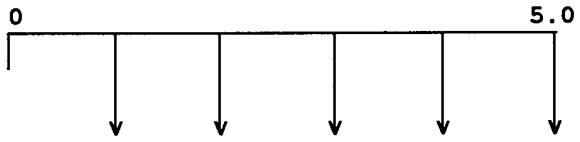


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: FOAMFLUSH URETHANE REMOVER



Annual Cost = $1776.42

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

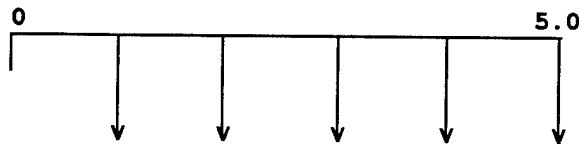
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1776.42	4.13905	$7352.69

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

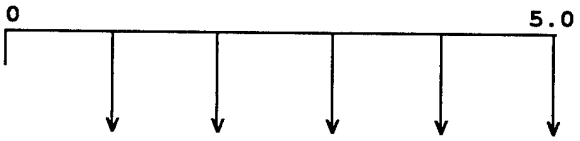


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SHIP SHAPE RESIN CLEANER



Annual Cost = $2553.96

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4002.16	4.13905	$16565.14

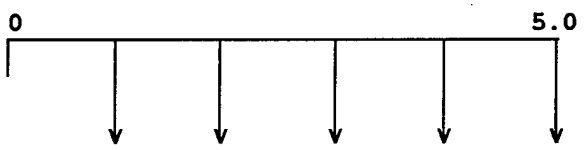
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2553.96	4.13905	$10570.97

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

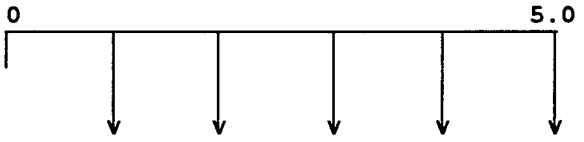


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PUR-O-SHINE HEAVY DUTY CLEANER



Annual Cost = $822.25

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$4002.16	4.13905	$16565.14

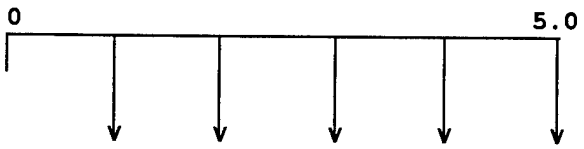
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$822.25	4.13905	$3403.33

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DICHLORMETHANE, TECHNICAL

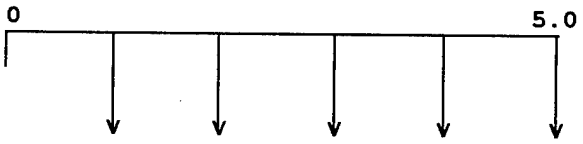


Annual Cost = $4002.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ALFA KLEEN AK-037



Annual Cost = $317.50

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$4002.16	4.13905	$16565.14

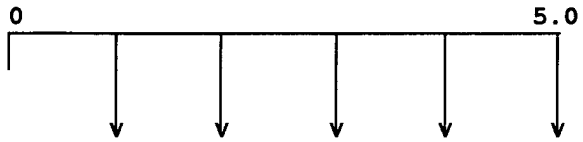
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$317.50	4.13905	$1314.15

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL SILVER 17178

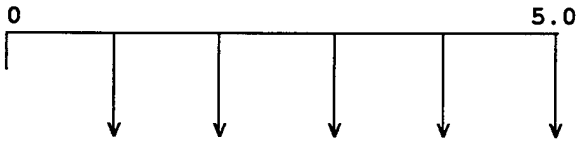


Annual Cost = $79.83

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: GP-0001-7178, SILVER LACQUER



Annual Cost = $78.66

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$79.83	4.13905	$330.42

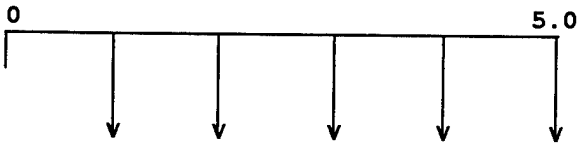
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$78.66	4.13905	$325.58

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL SILVER 17178

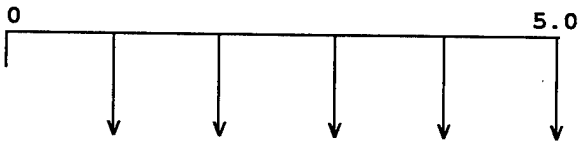


Annual Cost = $79.83

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: AEROSOL COATINGS 01947, ALUMINUM LACQUER 17178



Annual Cost = $78.66

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$79.83	4.13905	$330.42

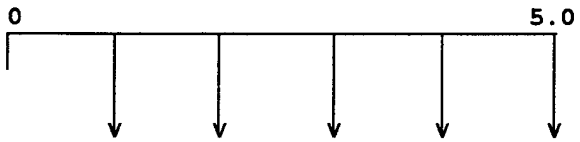
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$78.66	4.13905	$325.58

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL SILVER 17178

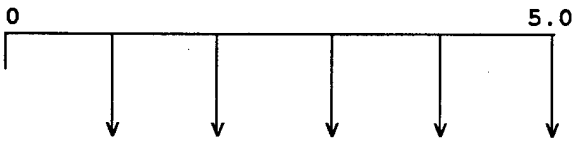


Annual Cost = $79.83

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 310 SILVER 11A RUSTPROOF PAINT



Annual Cost = $103.35

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$79.83	4.13905	$330.42

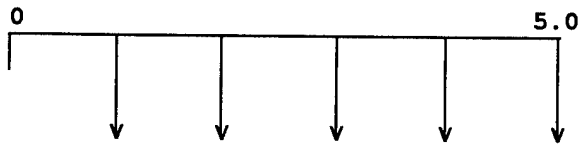
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$103.35	4.13905	$427.77

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL SILVER 17178

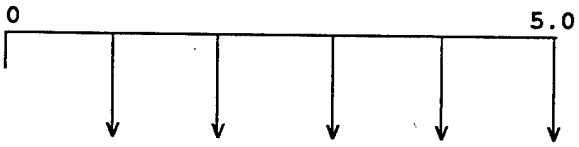


Annual Cost = $79.83

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: A-2000 SERIES AEROSOL LACQUER SILVER 17178



Annual Cost = $312.30

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$79.83	4.13905	$330.42

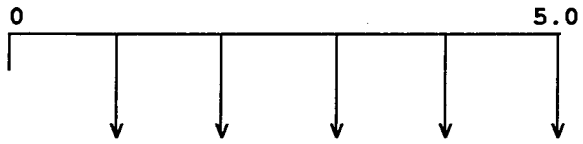
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$312.30	4.13905	$1292.63

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

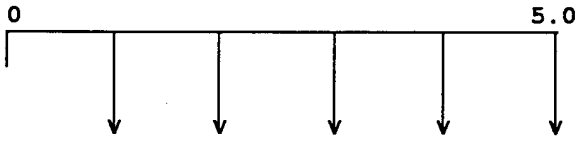


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PLIOBOND 20 ADHESIVE



Annual Cost = $138.01

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2568.00	4.13905	$10629.08

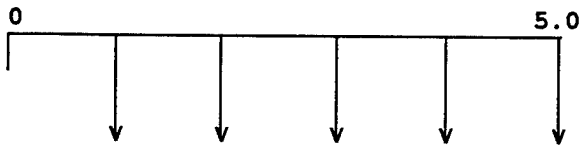
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$138.01	4.13905	$571.23

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

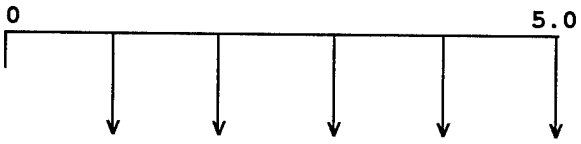


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ACCRABOND GRADE A MIL-S-22473



Annual Cost = $209.04

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

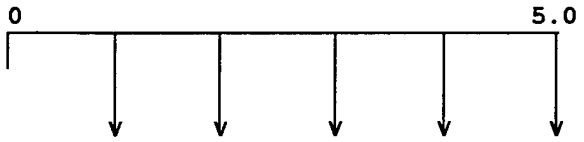
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$209.04	4.13905	$865.23

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

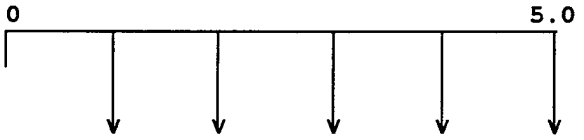


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: NUTS N' BOLTS 223



Annual Cost = $547.52

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

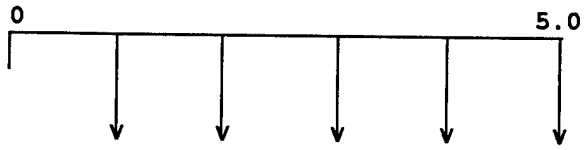
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$547.52	4.13905	$2266.21

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

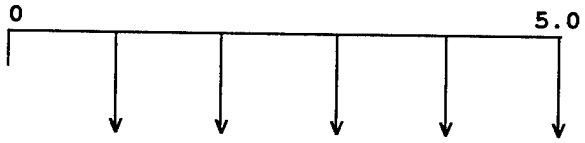


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: NUTS N' BOLTS 227



Annual Cost = $547.52

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

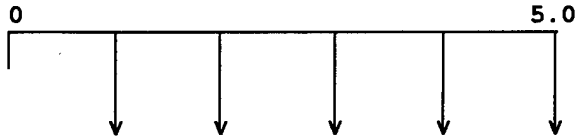
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$547.52	4.13905	$2266.21

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

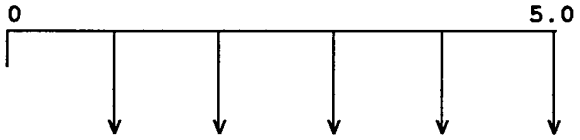


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SEALANT GRADE A 8831



Annual Cost = $380.70

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

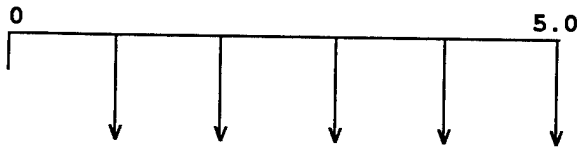
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$380.70	4.13905	$1575.74

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

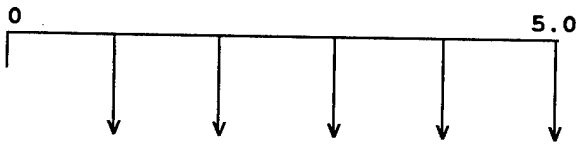


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ANAEROBIC ADHESIVE/SEALANT GRADE A



Annual Cost = $547.52

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

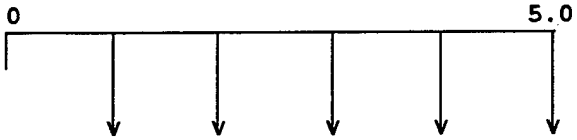
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$547.52	4.13905	$2266.21

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

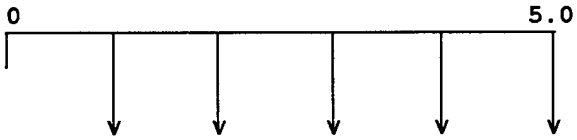


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ANAEROBIC ADHESIVE/SEALANT



Annual Cost = $547.52

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

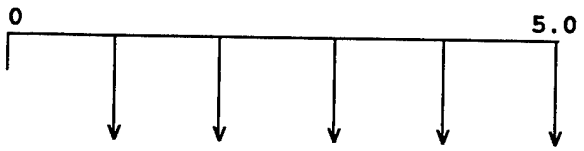
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$547.52	4.13905	$2266.21

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

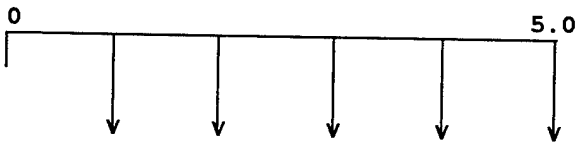


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TB 1361A SEALING COMPOUND



Annual Cost = $375.24

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

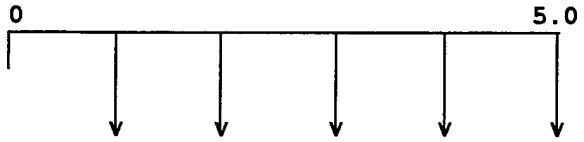
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$375.24	4.13905	$1553.14

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

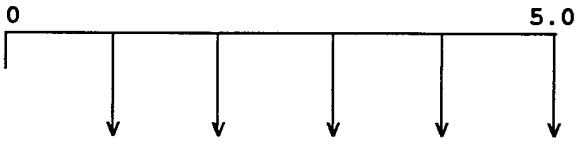


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: GRADE A RED SEALING COMPOUND



Annual Cost = $600.62

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

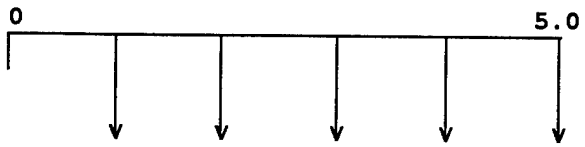
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$600.62	4.13905	$2486.00

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

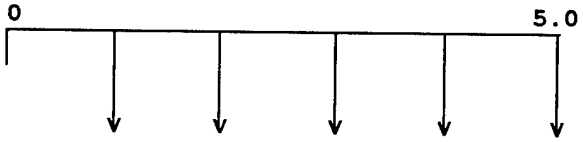


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: BLUE RESIN SOLUTION - G7526F



Annual Cost = $252.85

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

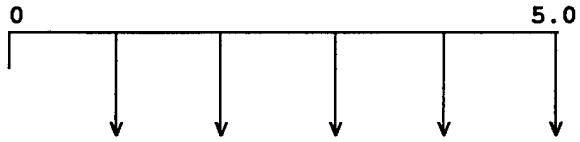
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$252.85	4.13905	$1046.56

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

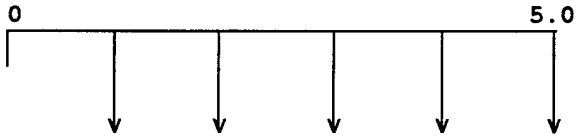


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: NEOPRENE ADHESIVE N-1051



Annual Cost = $93.04

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

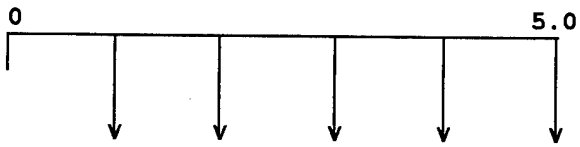
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$93.04	4.13905	$385.10

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

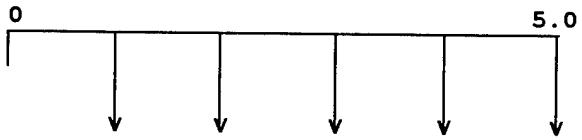


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 3M 90 HIGH STRENGTH ADHESIVE



Annual Cost = $161.52

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2568.00	4.13905	$10629.08

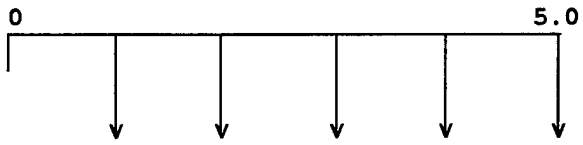
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$161.52	4.13905	$668.54

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

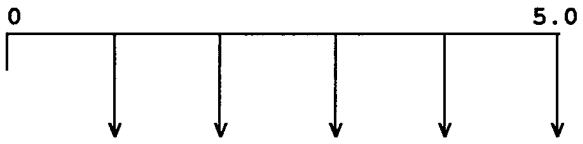


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 3M BRAND SPRAY 80 NEOPRENE CONTACT ADHESIVE



Annual Cost = $163.61

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

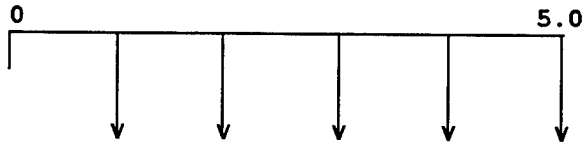
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$163.61	4.13905	$677.19

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

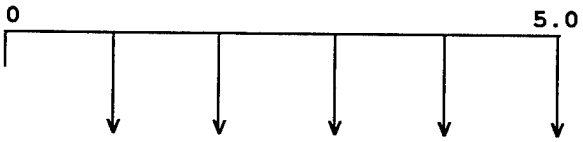


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 2141 RUBBER AND GASKET ADHESIVE



Annual Cost = $152.02

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2568.00	4.13905	$10629.08

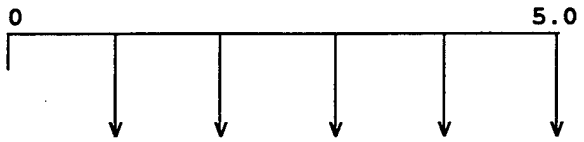
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$152.02	4.13905	$629.22

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCTITE GRADE A ANAEROBIC ADHESIVE

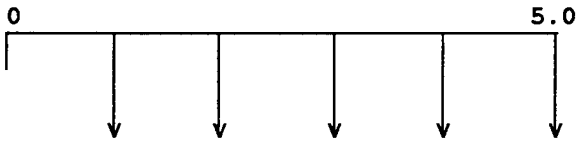


Annual Cost = $2568.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SCOTCH-GRIP 1300 RUBBER AND GASKET ADHESIVE



Annual Cost = $222.72

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2568.00	4.13905	$10629.08

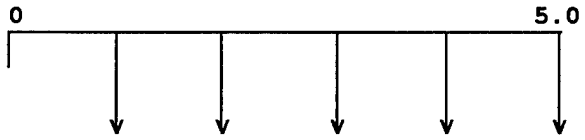
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$222.72	4.13905	$921.85

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

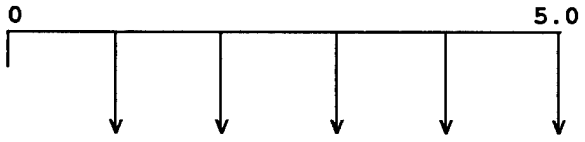


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 4560-30-F A/D PRIMER YELLOW CHROMATE FREE



Annual Cost = $5723.46

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2778.58	4.13905	$11500.68

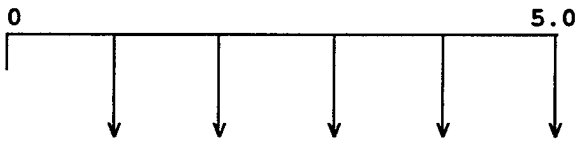
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$5723.46	4.13905	$23689.69

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

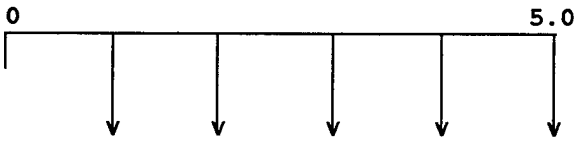


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-P-645B PRIMER, PC H2-016



Annual Cost = $3859.24

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2778.58	4.13905	$11500.68

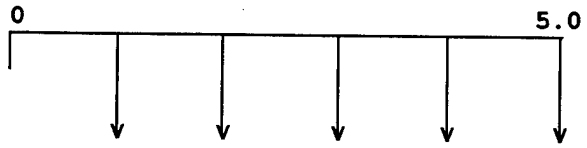
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3859.24	4.13905	$15973.59

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

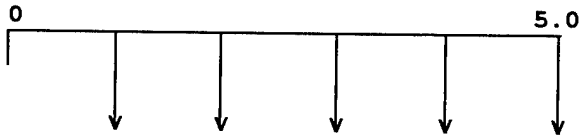


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: FORMULA 84 H2-017 PRIMER COATING YELLOW 33793



Annual Cost = $3857.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2778.58	4.13905	$11500.68

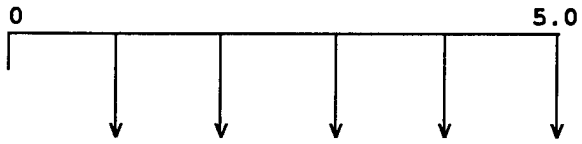
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3857.68	4.13905	$15967.13

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

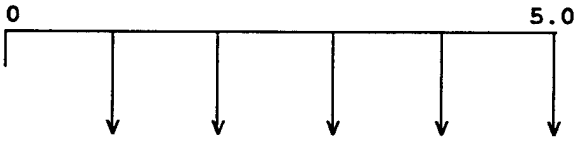


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-P-1757A TYPE I YELLOW PRIMER COATING



Annual Cost = $3447.66

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2778.58	4.13905	$11500.68

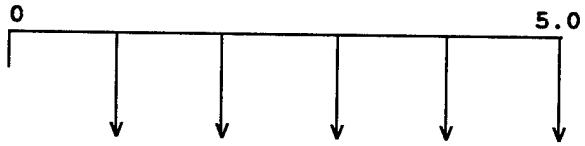
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3447.66	4.13905	$14270.04

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

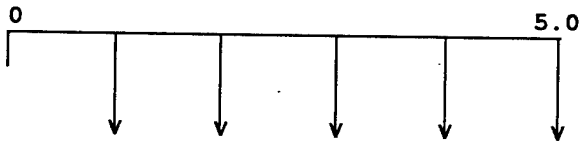


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-P-645B FORMULA 84 NO 33793



Annual Cost = $3859.98

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2778.58	4.13905	$11500.68

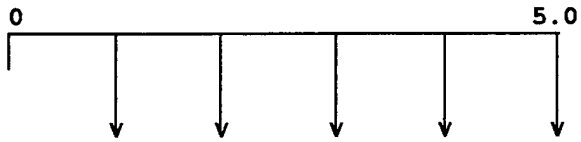
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3859.98	4.13905	$15976.65

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

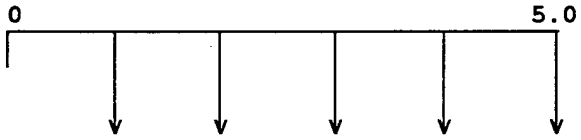


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-P-1757A TYPE I YELLOW P759A-66



Annual Cost = $3451.26

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2778.58	4.13905	$11500.68

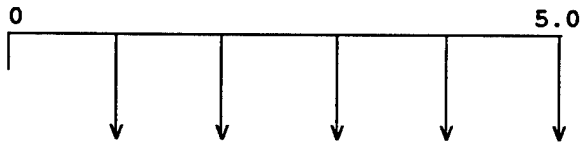
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3451.26	4.13905	$14284.94

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

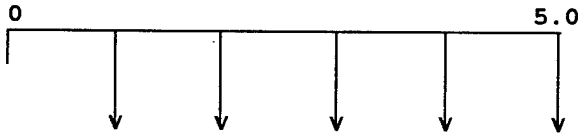


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-P-1757A, TY I, VOC COMPLIANT YELLOW PRIMER COATING



Annual Cost = $3099.66

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2778.58	4.13905	$11500.68

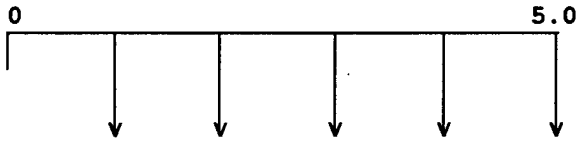
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3099.66	4.13905	$12829.65

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

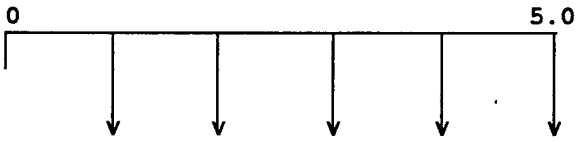


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: P-441A ZINC CHROMATE PRIMER



Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2778.58	4.13905	$11500.68

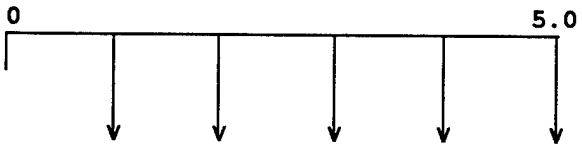
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2778.58	4.13905	$11500.68

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

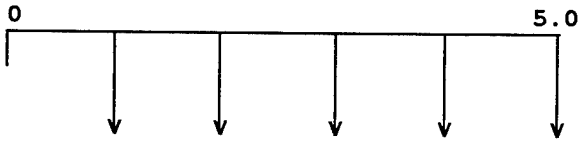


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ZINC CHROMATE PRIMER P-441P



Annual Cost = $2874.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2778.58	4.13905	$11500.68

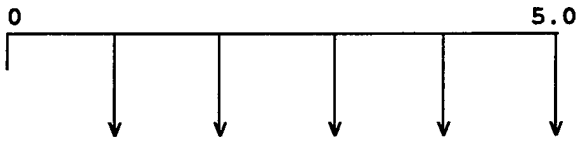
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2874.48	4.13905	$11897.62

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

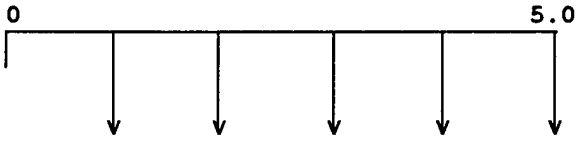


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-P-1757 YELLOW ZINC CHROMATE PRIMER AEROSOL



Annual Cost = $2798.70

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2778.58	4.13905	$11500.68

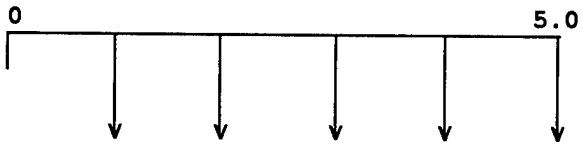
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2798.70	4.13905	$11583.96

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

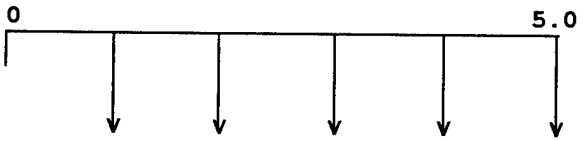


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PRIMER COATING ZINC CHROMATE COMP L



Annual Cost = $5457.06

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2778.58	4.13905	$11500.68

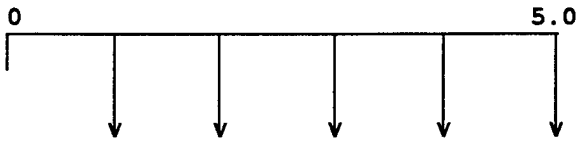
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$5457.06	4.13905	$22587.04

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

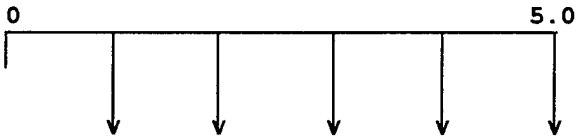


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: X-3917Y TT-P-1757 YELLOW ZINC CHROMATE PRIMER



Annual Cost = $3223.16

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2778.58	4.13905	$11500.68

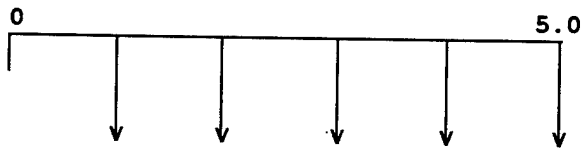
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3223.16	4.13905	$13340.82

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

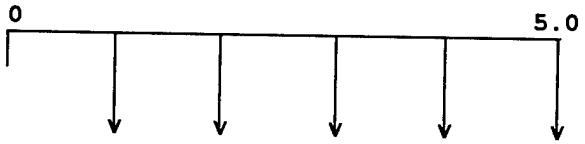


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ZINC CHROMATE PRIMER GP-0004-1757



Annual Cost = $2745.60

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2778.58	4.13905	$11500.68

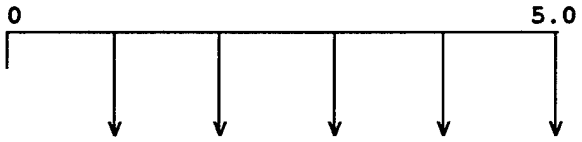
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2745.60	4.13905	$11364.18

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

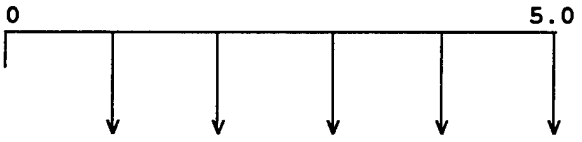


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: F-84 TT-P-645B ZINC MOLYBDATE ALKYD PRIMER



Annual Cost = $6926.10

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2778.58	4.13905	$11500.68

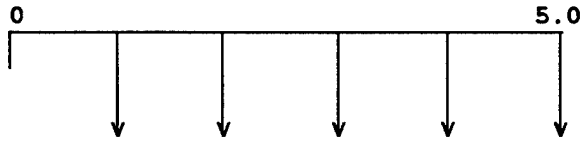
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$6926.10	4.13905	$28667.47

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

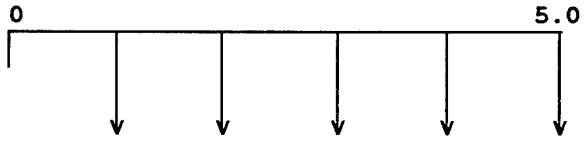


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 16A PRIMER, 119 YELLOW



Annual Cost = $3169.56

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2778.58	4.13905	$11500.68

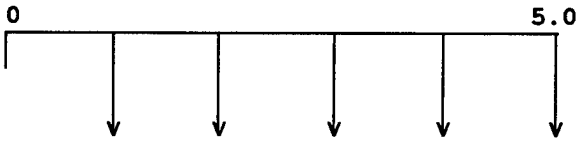
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3169.56	4.13905	$13118.97

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

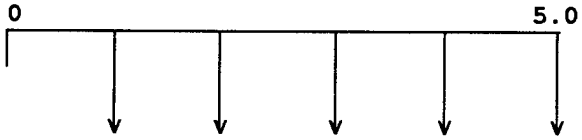


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-P-645B PRIMER, ZINC CHROMATE ALKYD YELLOW 33481



Annual Cost = $21133.32

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2778.58	4.13905	$11500.68

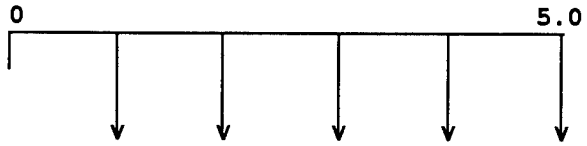
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$21133.32	4.13905	$87471.87

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

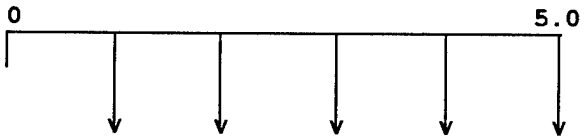


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 4560-30F ZINC PRIMER YELLOW - CHROMATE FREE



Annual Cost = $3165.06

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2778.58	4.13905	$11500.68

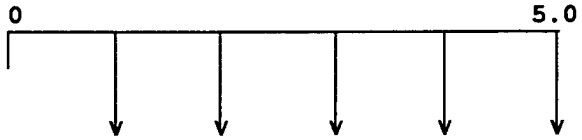
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3165.06	4.13905	$13100.34

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO SURE YELLOW PRIMER (84-331) AEROSOL

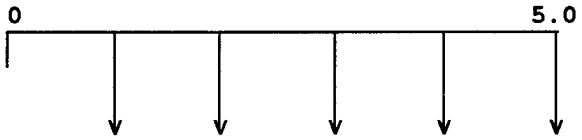


Annual Cost = $2778.58

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 6-204 ZINC CHROMATE METAL PRIMER



Annual Cost = $3349.56

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2778.58	4.13905	$11500.68

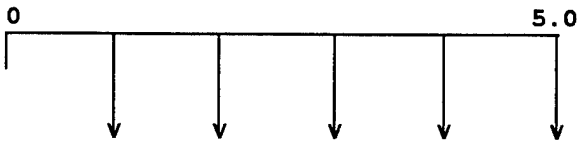
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3349.56	4.13905	$13864.00

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: 01920 BLACK LACQUER 17038 AEROSOL

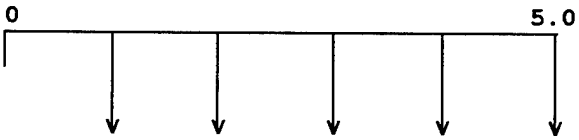


Annual Cost = $53.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: A-4308-17038 AEROSOL GLOSS BLACK



Annual Cost = $171.99

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$53.76	4.13905	$222.52

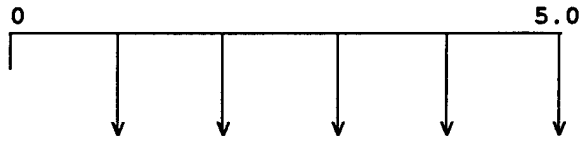
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$171.99	4.13905	$711.88

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: 01920 BLACK LACQUER 17038 AEROSOL

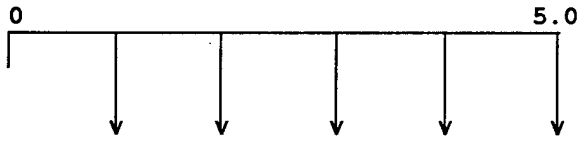


Annual Cost = $53.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SO SURE LACQUER GLOSS BLACK 17038



Annual Cost = $54.93

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$53.76	4.13905	$222.52

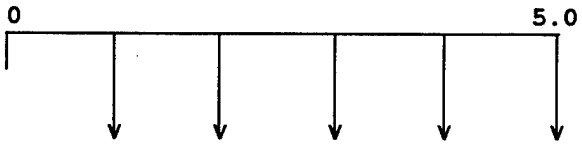
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$54.93	4.13905	$227.36

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: 01920 BLACK LACQUER 17038 AEROSOL

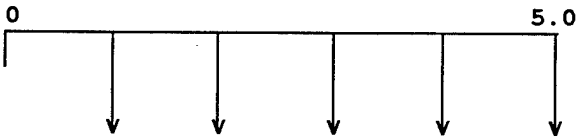


Annual Cost = $53.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ECO SURE BLACK 17038 AEROSOL



Annual Cost = $162.93

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$53.76	4.13905	$222.52

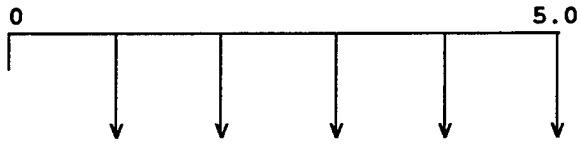
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$162.93	4.13905	$674.38

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: 01920 BLACK LACQUER 17038 AEROSOL

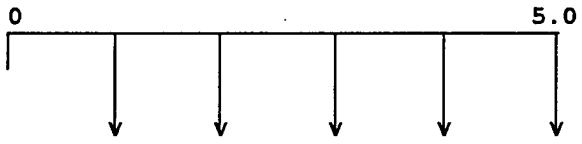


Annual Cost = $53.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ECO SURE BLACK 17038 ENAMEL



Annual Cost = $134.61

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$53.76	4.13905	$222.52

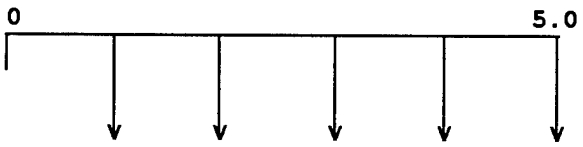
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$134.61	4.13905	$557.16

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: 01920 BLACK LACQUER 17038 AEROSOL

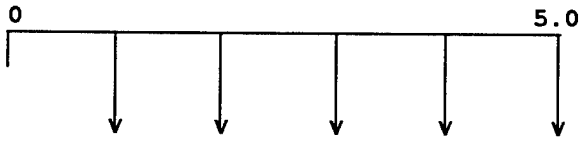


Annual Cost = $53.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: LACQUER, AEROSOL BLACK 17038



Annual Cost = $46.08

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$53.76	4.13905	$222.52

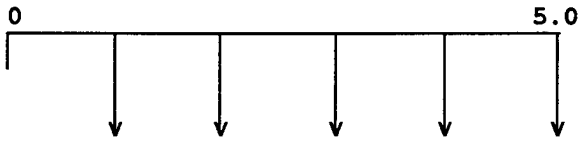
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$46.08	4.13905	$190.73

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: 01920 BLACK LACQUER 17038 AEROSOL

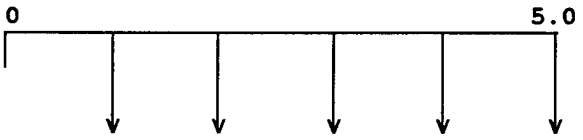


Annual Cost = $53.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 306 BLACK 11A RUSTPROOF PAINT



Annual Cost = $63.60

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$53.76	4.13905	$222.52

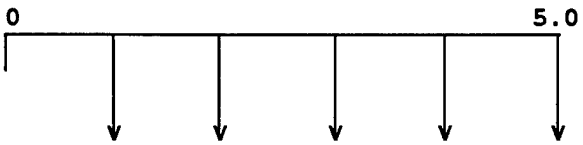
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$63.60	4.13905	$263.24

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: 01920 BLACK LACQUER 17038 AEROSOL

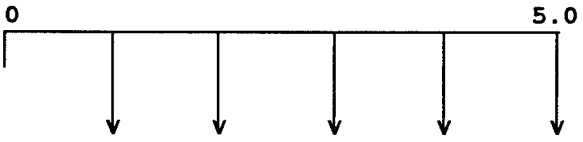


Annual Cost = $53.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: A-2000 SERIES AEROSOL LACQUER BLACK 17038



Annual Cost = $199.25

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$53.76	4.13905	$222.52

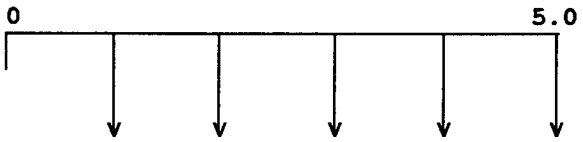
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$199.25	4.13905	$824.71

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: OMEGA 3812 SN 313-2 PAINT REMOVER

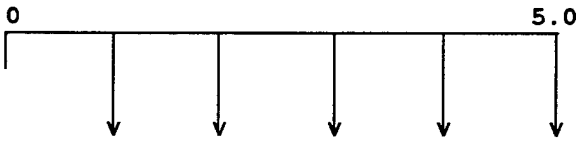


Annual Cost = $6204.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PAINT REMOVER



Annual Cost = $1086.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$6204.20	4.13905	$25679.49

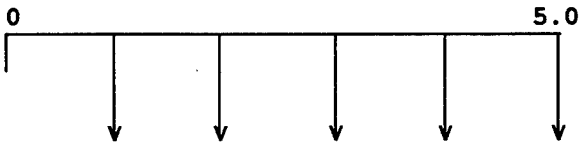
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1086.88	4.13905	$4498.65

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: OMEGA 3812 SN 313-2 PAINT REMOVER

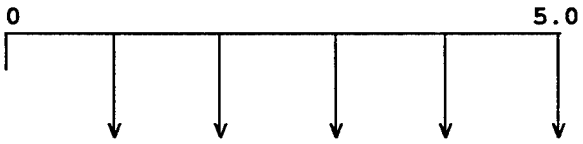


Annual Cost = $6204.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: CREST PAINT STRIPPER #29A



Annual Cost = $6186.80

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$6204.20	4.13905	$25679.49

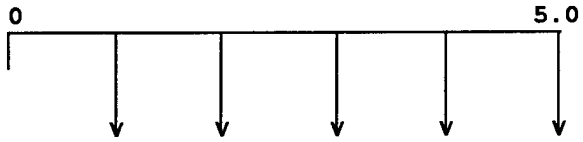
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$6186.80	4.13905	$25607.47

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: OMEGA 3812 SN 313-2 PAINT REMOVER

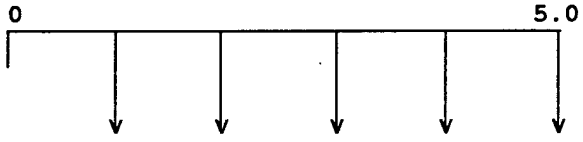


Annual Cost = $6204.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: INTEX 8573 PAINT REMOVER



Annual Cost = $6020.90

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$6204.20	4.13905	$25679.49

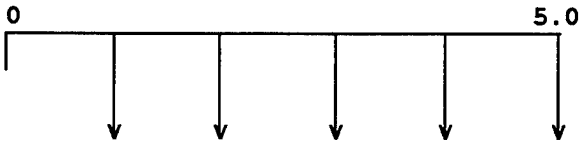
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$6020.90	4.13905	$24920.81

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: OMEGA 3812 SN 313-2 PAINT REMOVER

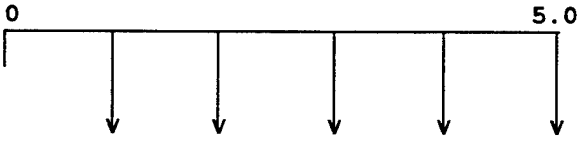


Annual Cost = $6204.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-R-251J TYPE III CLASS B PAINT REMOVER



Annual Cost = $789.46

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$6204.20	4.13905	$25679.49

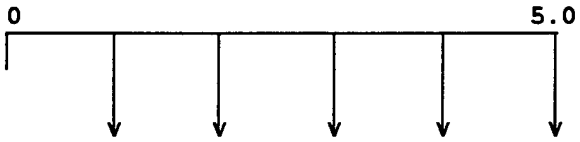
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$789.46	4.13905	$3267.61

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: OMEGA 3812 SN 313-2 PAINT REMOVER

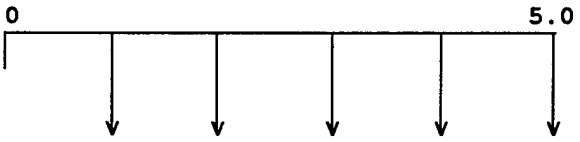


Annual Cost = $6204.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: NONFLAMMABLE PAINT REMOVER



Annual Cost = $862.26

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$6204.20	4.13905	$25679.49

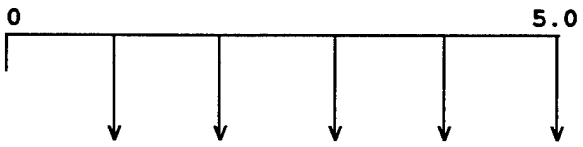
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$862.26	4.13905	$3568.94

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: OMEGA 3812 SN 313-2 PAINT REMOVER

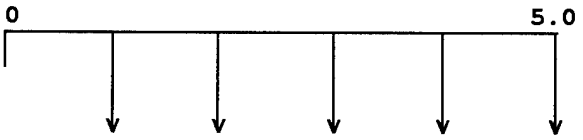


Annual Cost = $6204.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PAINT REMOVER, 400063 NONFLAMMABLE



Annual Cost = $797.10

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$6204.20	4.13905	$25679.49

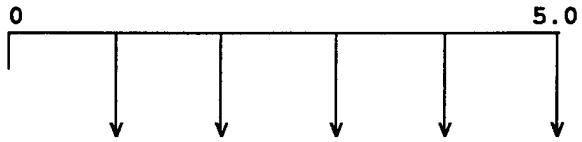
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$797.10	4.13905	$3299.24

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: OMEGA 3812 SN 313-2 PAINT REMOVER

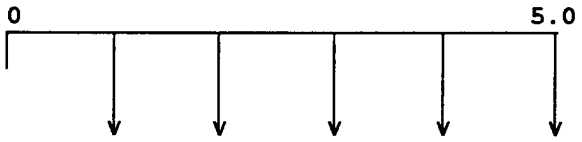


Annual Cost = $6204.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PAINT REMOVER, HIGH VISCOSITY



Annual Cost = $6117.62

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$6204.20	4.13905	$25679.49

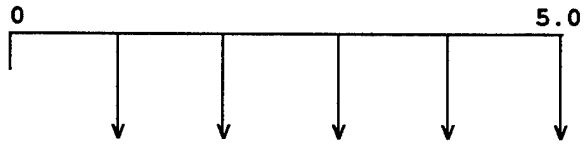
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$6117.62	4.13905	$25321.14

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: OMEGA 3812 SN 313-2 PAINT REMOVER

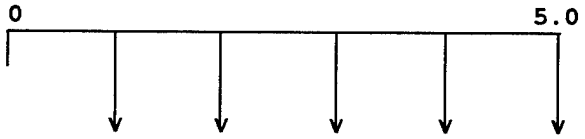


Annual Cost = $6204.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ORGANIC PAINT REMOVER



Annual Cost = $1946.52

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$6204.20	4.13905	$25679.49

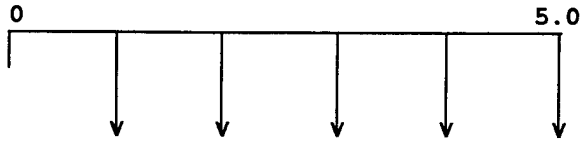
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$1946.52	4.13905	$8056.74

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

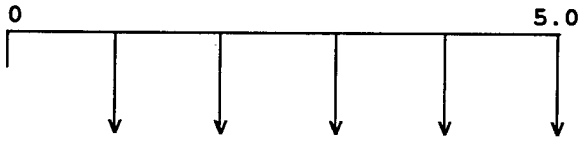


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: MINERAL SPIRITS ODORLESS



Annual Cost = $1386.89

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2871.36	4.13905	$11884.70

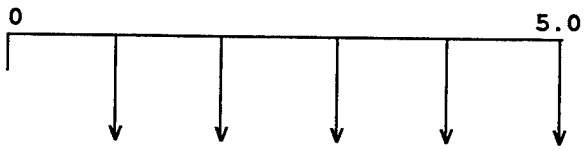
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$1386.89	4.13905	$5740.41

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

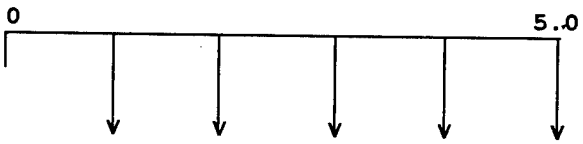


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PAINT THINNER/MINERAL SPIRITS



Annual Cost = $4835.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

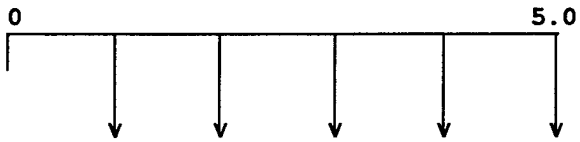
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4835.68	4.13905	$20015.12

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

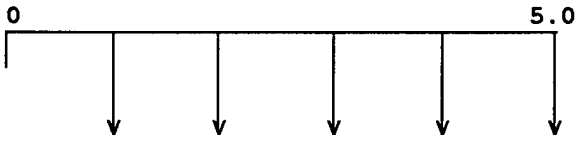


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: CHARTERSOL 300-66 PETROLEUM ALIPHATIC HYDROCARBONS



Annual Cost = $942.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

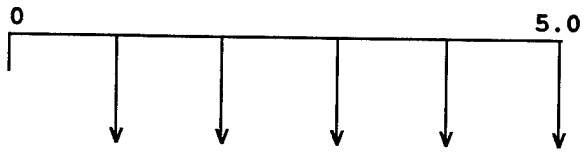
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$942.48	4.13905	$3900.97

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

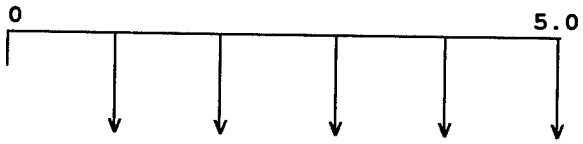


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PAINT THINNER



Annual Cost = $913.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

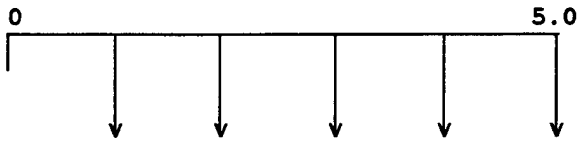
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$913.40	4.13905	$3780.61

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

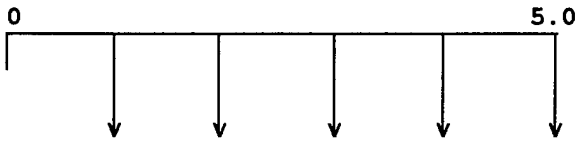


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: THINNER PAINT TYPE I REGULAR MINERAL SPIRITS



Annual Cost = $942.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

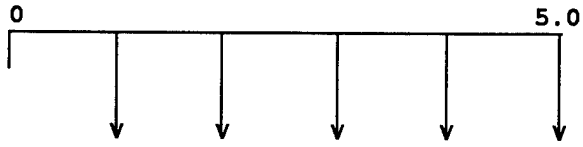
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$942.48	4.13905	$3900.97

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

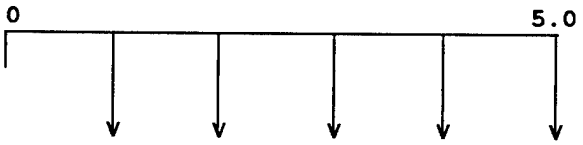


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: MINERAL SPIRITS, TT-T-291F TYPE I



Annual Cost = $2285.32

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

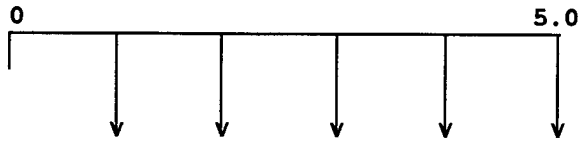
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2285.32	4.13905	$9459.05

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

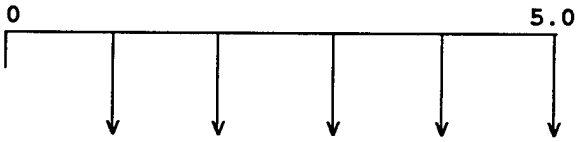


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: STANDARD 350H TT-T-291E TYPE II GRADE A THINNER



Annual Cost = $2260.72

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2871.36	4.13905	$11884.70

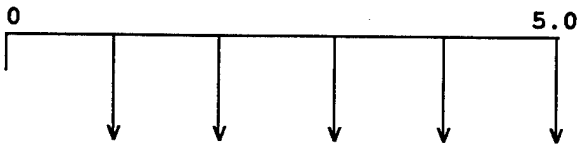
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2260.72	4.13905	$9357.23

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

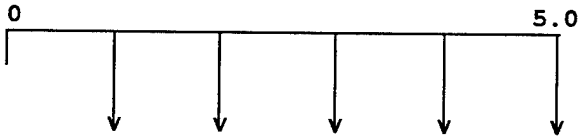


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: CHEVRON THINNER 350H



Annual Cost = $1112.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

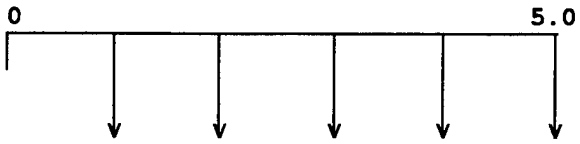
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1112.40	4.13905	$4604.28

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

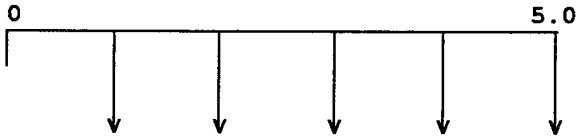


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 350B PAINT THINNER, MINERAL SPIRITS



Annual Cost = $2045.28

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

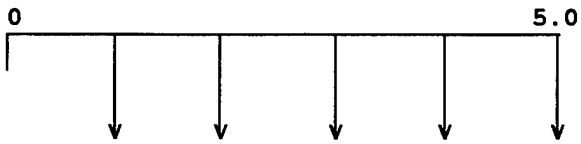
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2045.28	4.13905	$8465.52

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

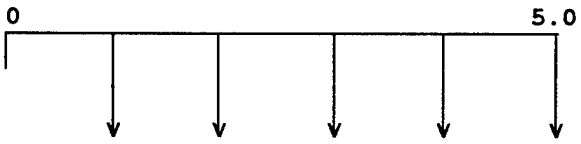


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SOLVENT S-66 THINNER, PAINT PRODUCTS



Annual Cost = $928.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2871.36	4.13905	$11884.70

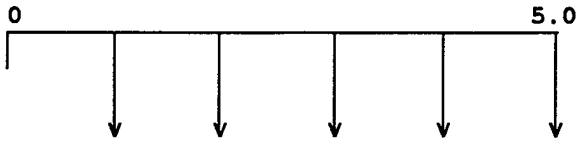
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$928.20	4.13905	$3841.87

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

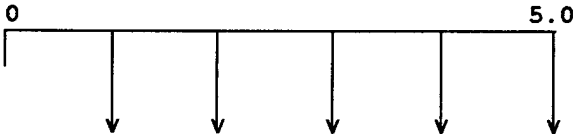


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: PAINT THINNER



Annual Cost = $928.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2871.36	4.13905	$11884.70

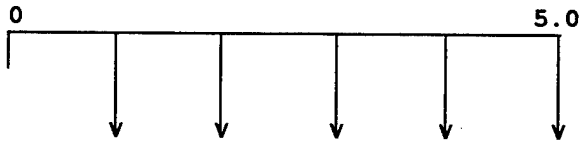
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$928.20	4.13905	$3841.87

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

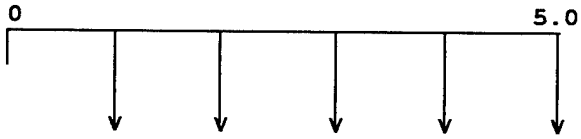


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 266D THINNER, DOPE AND LACQUER



Annual Cost = $1128.84

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

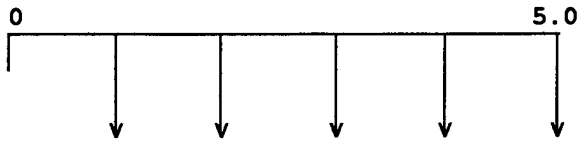
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1128.84	4.13905	$4672.33

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

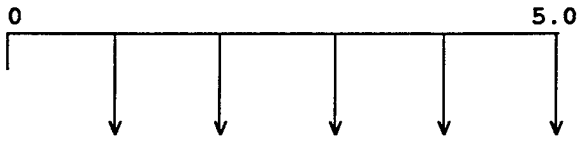


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: MINERAL SPIRITS KLEAN-STRIP, PN-GMS44



Annual Cost = $1990.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

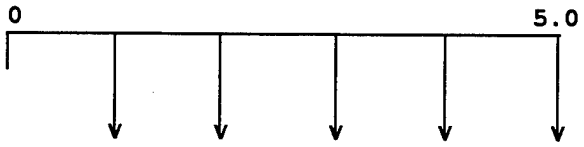
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1990.20	4.13905	$8237.54

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

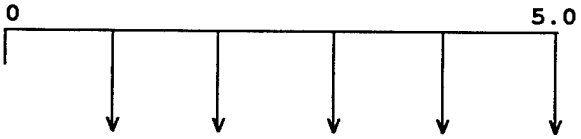


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: THINNER, REGULAR, TYPE I



Annual Cost = $2060.08

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2871.36	4.13905	$11884.70

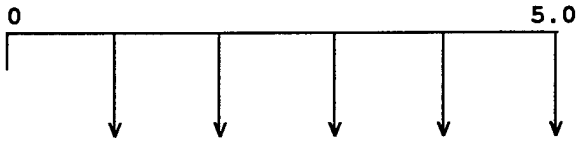
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2060.08	4.13905	$8526.77

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

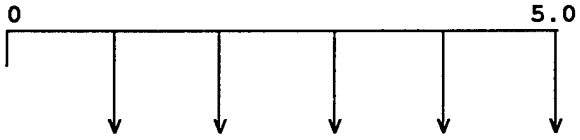


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: REGULAR MINERAL SPIRITS, THINNER



Annual Cost = $911.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

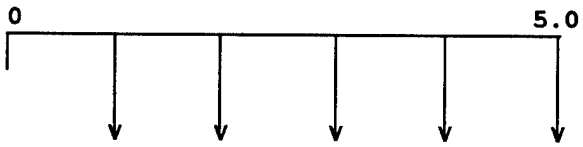
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$911.76	4.13905	$3773.82

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

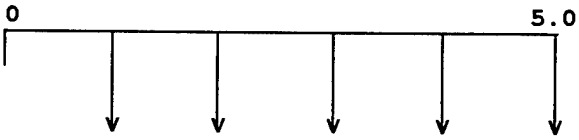


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-T-291F PAINT THINNER



Annual Cost = $928.20

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

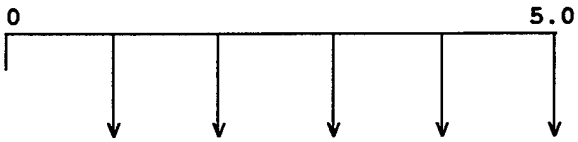
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$928.20	4.13905	$3841.87

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

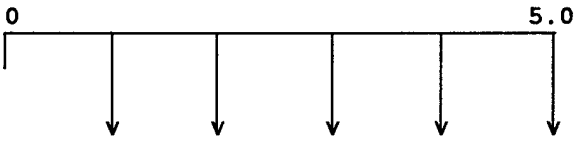


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 291E PAINT THINNER



Annual Cost = $913.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

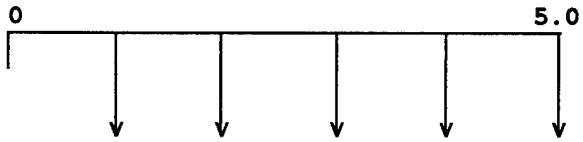
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$913.40	4.13905	$3780.61

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

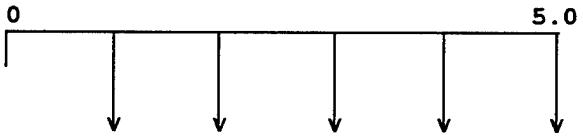


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: THINNER (4-068), GTA435



Annual Cost = $4269.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2871.36	4.13905	$11884.70

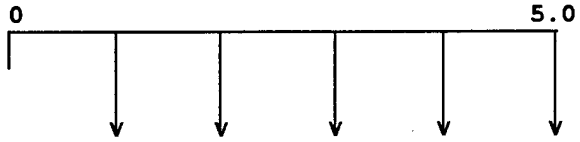
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$4269.00	4.13905	$17669.60

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

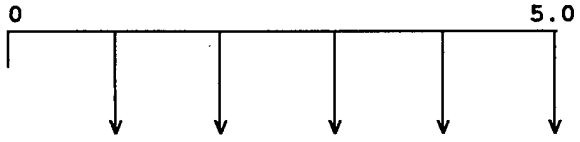


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ODORLESS MINERAL SPIRITS



Annual Cost = $1401.17

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

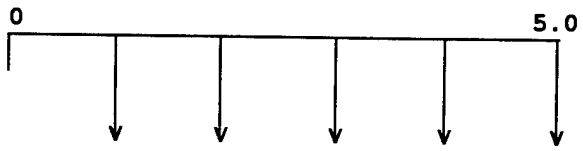
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1401.17	4.13905	$5799.51

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

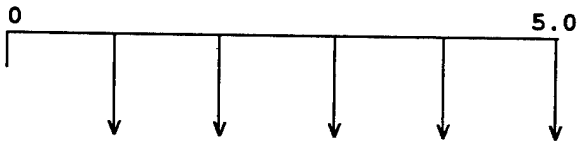


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 21-300 ODORLESS PAINT THINNER



Annual Cost = $2915.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

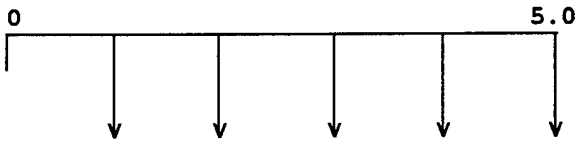
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2915.40	4.13905	$12066.99

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

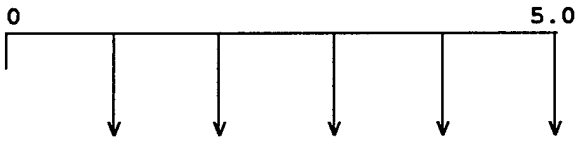


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: THIN-X



Annual Cost = $1400.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

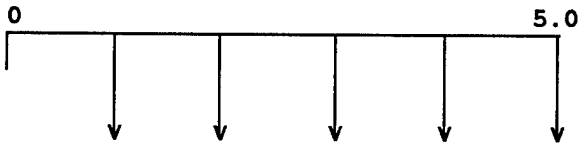
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1400.40	4.13905	$5796.33

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: T-10 PAINT THINNER

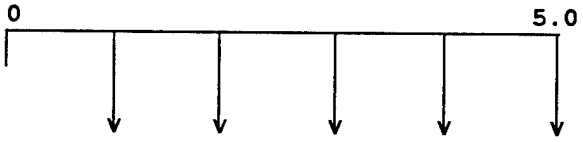


Annual Cost = $2871.36

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ODORLESS THIN-X



Annual Cost = $1400.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.36	4.13905	$11884.70

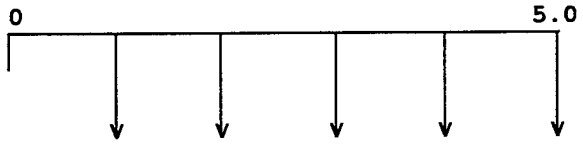
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1400.40	4.13905	$5796.33

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

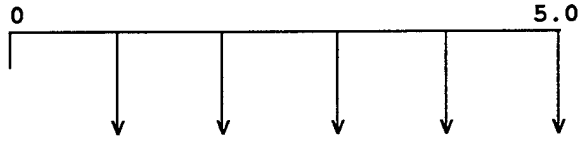


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: BRA640 INTERVIRON ANTI-FOULING RED PAINT



Annual Cost = $6286.28

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3489.48	4.13905	$14443.13

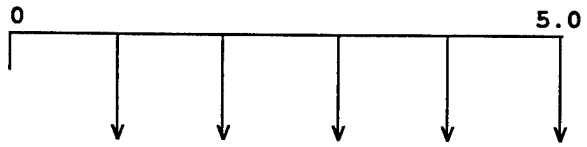
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$6286.28	4.13905	$26019.23

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

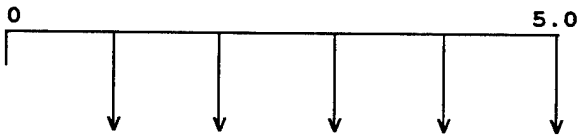


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: N-5564 GLOSS RED SILICONE ENAMEL 11105



Annual Cost = $2873.60

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3489.48	4.13905	$14443.13

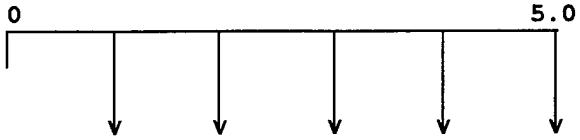
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2873.60	4.13905	$11893.97

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

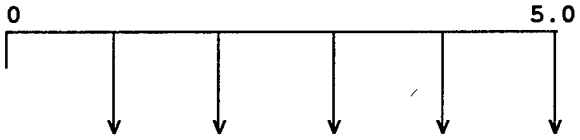


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 888 SERIES WATER BASE ANTIFOUING PAINT



Annual Cost = $5633.60

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3489.48	4.13905	$14443.13

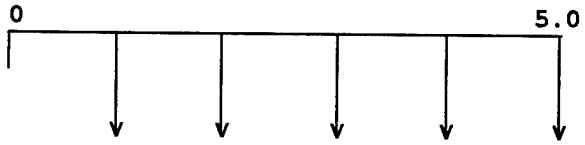
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$5633.60	4.13905	$23317.75

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

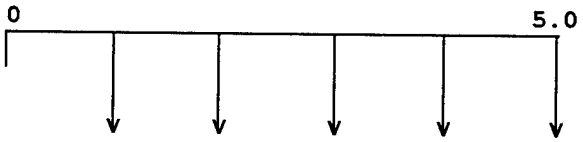


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ANTIFOULING PAINT, 76600-51110 RED



Annual Cost = $8890.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3489.48	4.13905	$14443.13

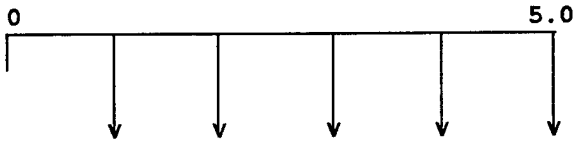
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$8890.00	4.13905	$36796.15

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

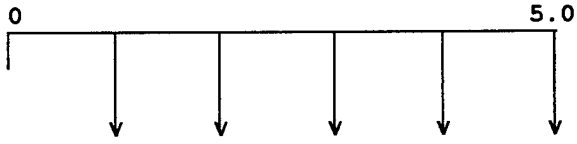


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ANTIFOULING PAINT, 76600-50300 LIGHT RED



Annual Cost = $7024.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3489.48	4.13905	$14443.13

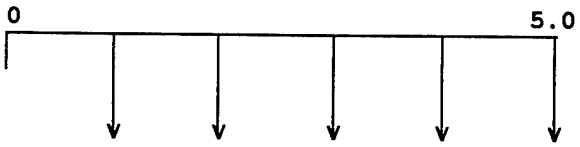
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$7024.00	4.13905	$29072.69

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

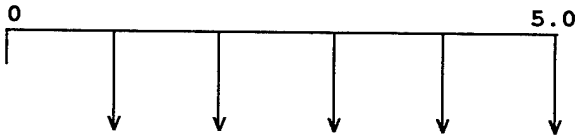


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: F-121 VINYL ANTIFOULING RED PAINT



Annual Cost = $5717.44

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3489.48	4.13905	$14443.13

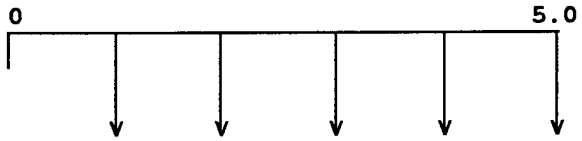
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$5717.44	4.13905	$23664.77

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

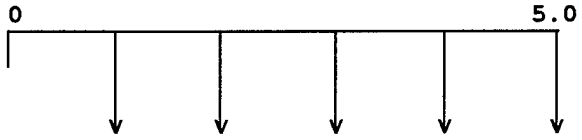


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: VINYL RED ANTIFOULING PAINT



Annual Cost = $6728.18

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3489.48	4.13905	$14443.13

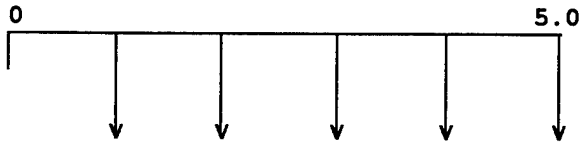
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$6728.18	4.13905	$27848.27

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

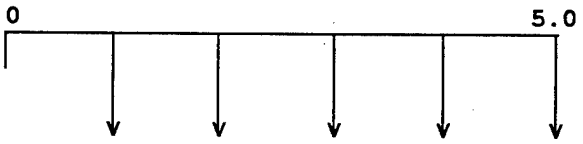


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: INTERCLENE ANTIFOULING RED, BRA540



Annual Cost = $3812.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3489.48	4.13905	$14443.13

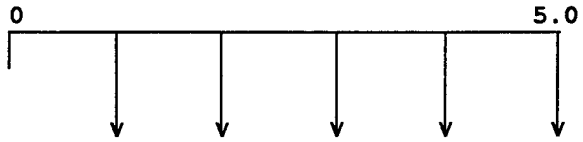
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3812.40	4.13905	$15779.71

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

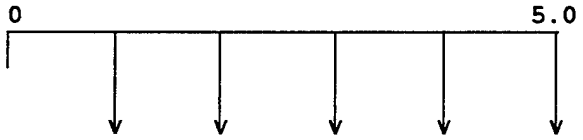


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SUPER BOTTOMKOTE RED, 456



Annual Cost = $7452.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3489.48	4.13905	$14443.13

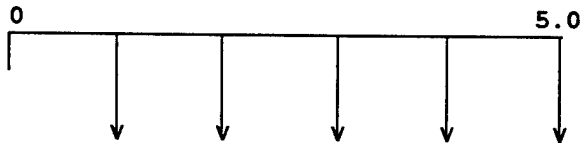
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$7452.40	4.13905	$30845.86

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

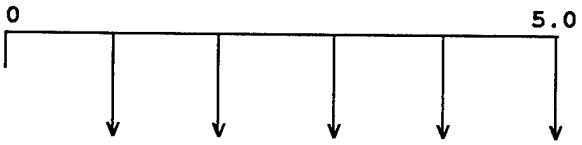


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: MIL-P-15931F RED ANTIFOULING, TYPE I CLASS I, 4050



Annual Cost = $5961.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3489.48	4.13905	$14443.13

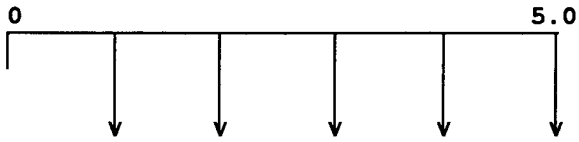
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$5961.00	4.13905	$24672.88

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

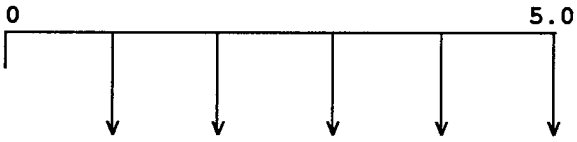


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: WOOLSEY VINELAST 720 PERMANENT RED



Annual Cost = $7310.72

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3489.48	4.13905	$14443.13

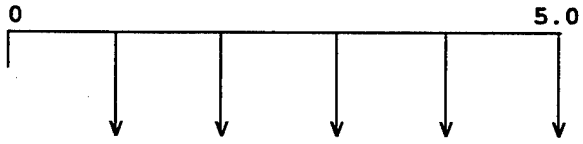
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$7310.72	4.13905	$30259.44

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

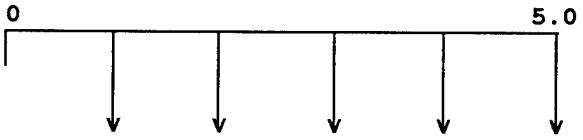


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: WOOLSEY NEPTUNE II WB 551 RED



Annual Cost = $9830.72

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3489.48	4.13905	$14443.13

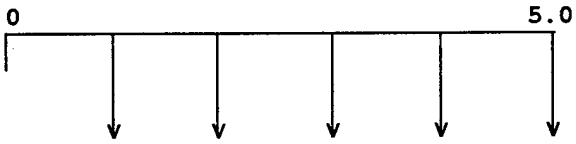
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$9830.72	4.13905	$40689.84

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

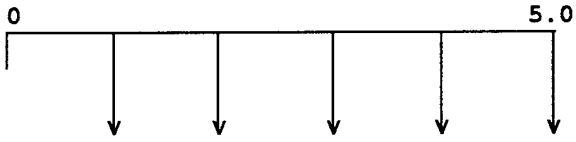


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 1675 TRINIDAD RED



Annual Cost = $10530.72

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3489.48	4.13905	$14443.13

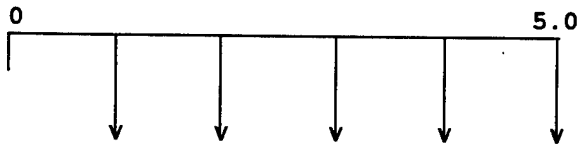
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$10530.72	4.13905	$43587.18

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

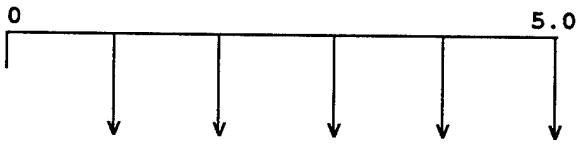


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 1670 ACP-50 RED



Annual Cost = $11930.72

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3489.48	4.13905	$14443.13

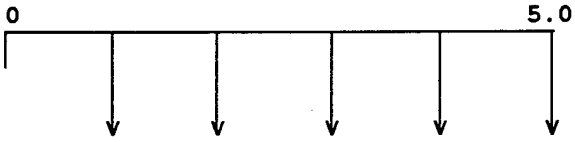
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$11930.72	4.13905	$49381.85

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

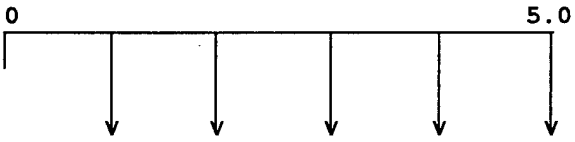
Status Quo Alternative: DEVOE ABC #3 RED AF PAINT



Annual Cost = $3489.48

Assumptions:
Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 1618 UNEPOXY PLUS RED



Annual Cost = $7730.72

Assumptions:
Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3489.48	4.13905	$14443.13

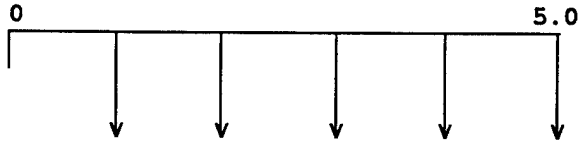
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$7730.72	4.13905	$31997.84

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: DEVOE ABC #3 RED AF PAINT

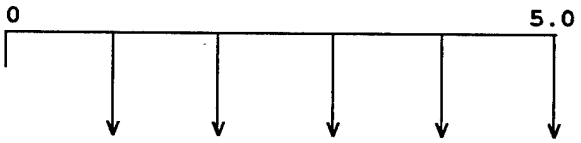


Annual Cost = $3489.48

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: NEPTUNE 710A ROYAL RED ANTIFOULING PAINT



Annual Cost = $9171.64

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3489.48	4.13905	$14443.13

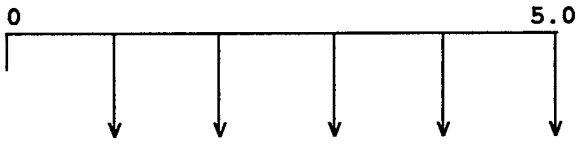
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$9171.64	4.13905	$37961.88

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCQUIC PRIMER T

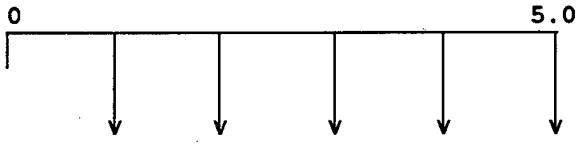


Annual Cost = $128.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ACCRABOND GRADE A MIL-S-22473



Annual Cost = $127.59

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$128.76	4.13905	$532.94

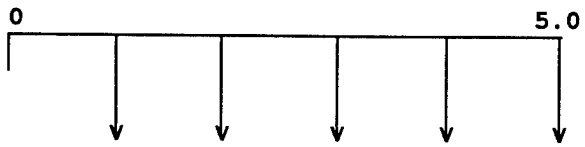
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$127.59	4.13905	$528.10

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCQUIC PRIMER T

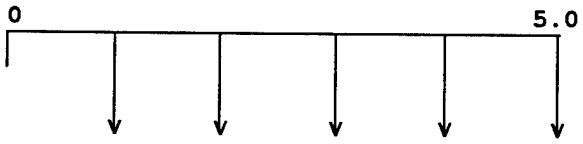


Annual Cost = $128.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: NUTS N' BOLTS 227



Annual Cost = $352.64

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$128.76	4.13905	$532.94

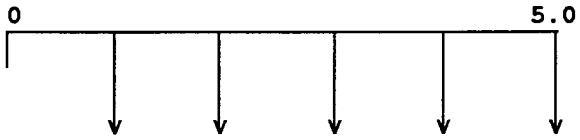
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$352.64	4.13905	$1459.59

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCQUIC PRIMER T

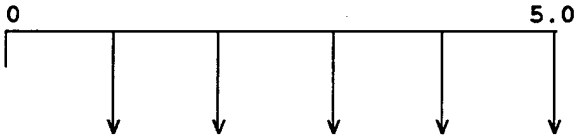


Annual Cost = $128.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SEALANT GRADE A 8831



Annual Cost = $216.12

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$128.76	4.13905	$532.94

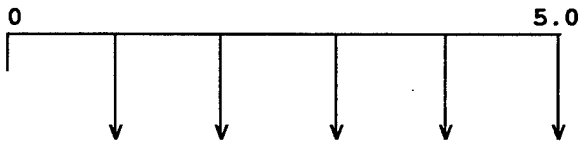
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$216.12	4.13905	$894.53

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCQUIC PRIMER T

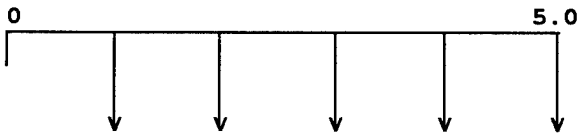


Annual Cost = $128.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: NUTS N' BOLTS 223



Annual Cost = $352.64

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$128.76	4.13905	$532.94

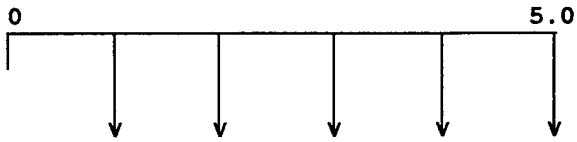
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$352.64	4.13905	$1459.59

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCQUIC PRIMER T

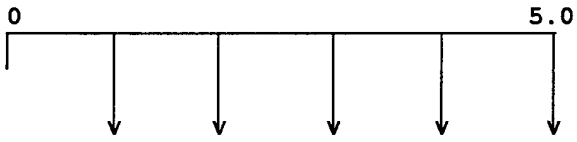


Annual Cost = $128.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ANAEROBIC SOLVENT LESS PRIMER



Annual Cost = $633.60

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$128.76	4.13905	$532.94

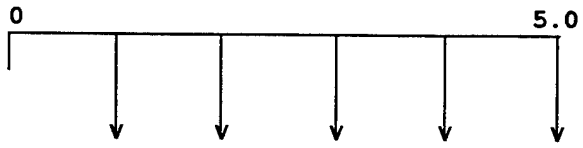
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$633.60	4.13905	$2622.50

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCQUIC PRIMER T

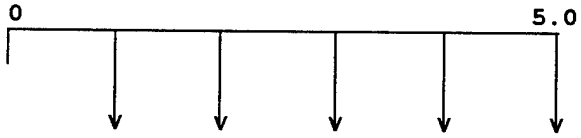


Annual Cost = $128.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: EF PRIMER 49



Annual Cost = $359.04

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$128.76	4.13905	$532.94

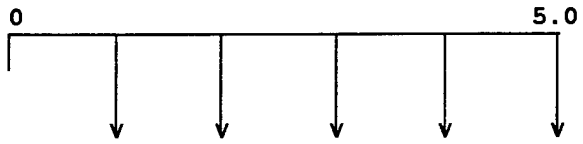
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$359.04	4.13905	$1486.08

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCQUIC PRIMER T

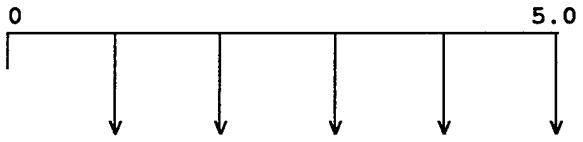


Annual Cost = $128.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: EF PRIMER 50



Annual Cost = $359.04

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$128.76	4.13905	$532.94

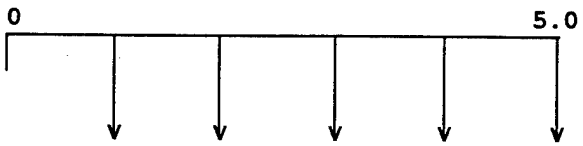
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$359.04	4.13905	$1486.08

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: LOCQUIC PRIMER T

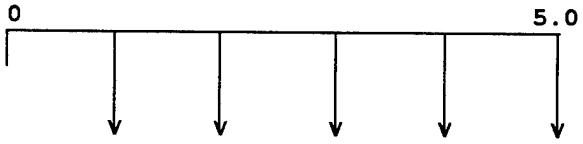


Annual Cost = $128.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: LOCQUIC PRIMER T 7471



Annual Cost = $651.04

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$128.76	4.13905	$532.94

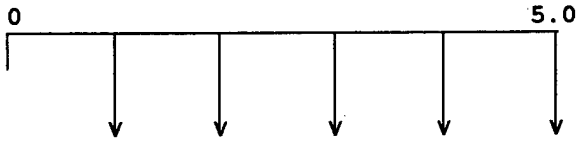
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$651.04	4.13905	$2694.69

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL RED 11136

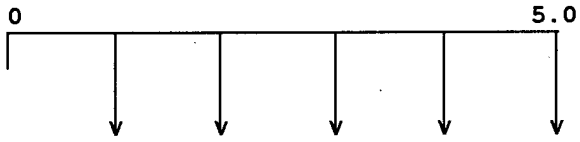


Annual Cost = $32.11

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: FIXALL BRITE RED 11136 (444-1304)



Annual Cost = $72.28

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$32.11	4.13905	$132.90

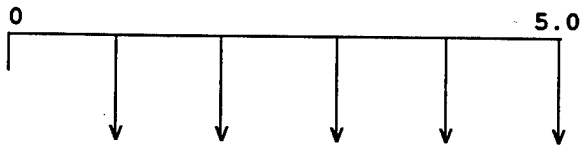
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$72.28	4.13905	$299.17

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL RED 11136

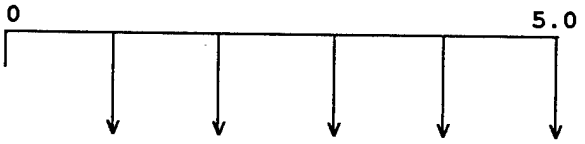


Annual Cost = $32.11

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ECO SURE SPRAY PAINT RED 11136



Annual Cost = $88.53

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$32.11	4.13905	$132.90

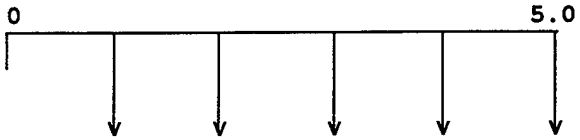
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$88.53	4.13905	$366.43

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL RED 11136

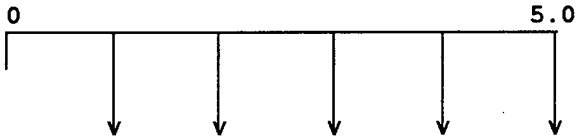


Annual Cost = $32.11

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL, LOW VOC WATER-BASED ENAMEL RED 11136



Annual Cost = $67.95

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$32.11	4.13905	$132.90

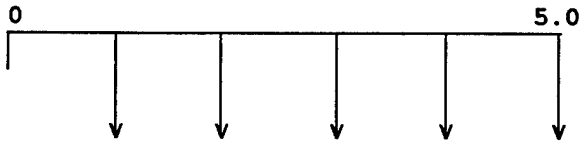
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$67.95	4.13905	$281.25

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL RED 11136

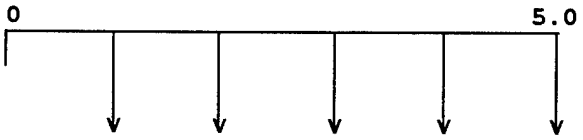


Annual Cost = $32.11

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 11136 RED



Annual Cost = $941.85

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$32.11	4.13905	$132.90

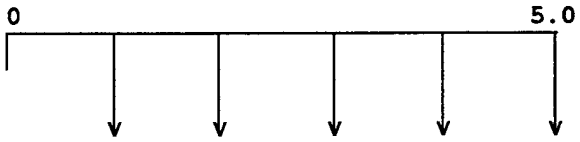
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$941.85	4.13905	$3898.36

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL RED 11136

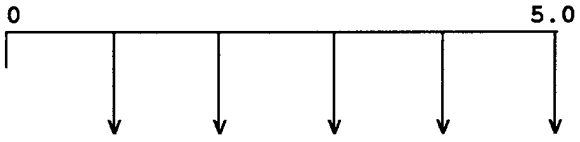


Annual Cost = $32.11

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL RED 11136



Annual Cost = $38.59

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$32.11	4.13905	$132.90

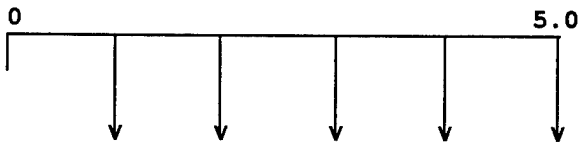
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$38.59	4.13905	$159.73

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL RED 11136

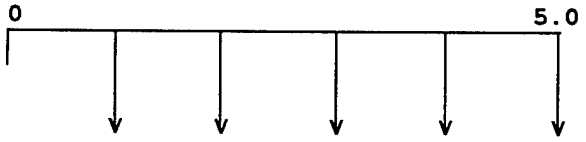


Annual Cost = $32.11

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: GP-0001-1670 RED 11136



Annual Cost = $27.04

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$32.11	4.13905	$132.90

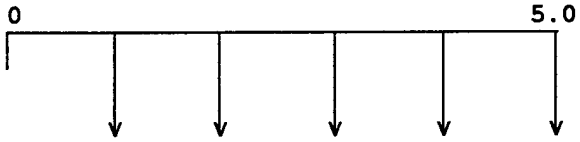
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$27.04	4.13905	$111.92

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL RED 11136

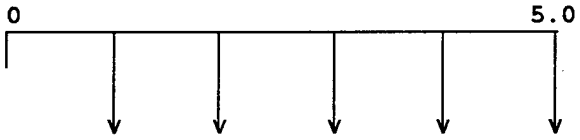


Annual Cost = $32.11

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 301 RED 11A RUSTPROOF PAINT



Annual Cost = $34.45

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$32.11	4.13905	$132.90

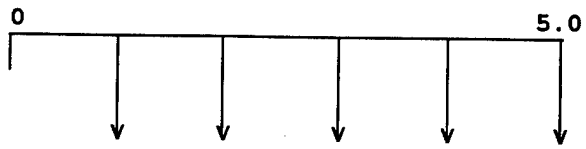
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$34.45	4.13905	$142.59

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL RED 11136

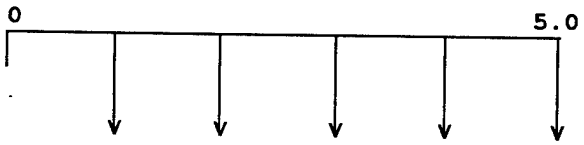


Annual Cost = $32.11

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: A-2000 SERIES AEROSOL LACQUER RED 11136



Annual Cost = $110.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$32.11	4.13905	$132.90

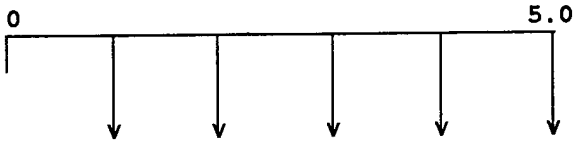
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$110.00	4.13905	$455.30

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL GRAY 16307

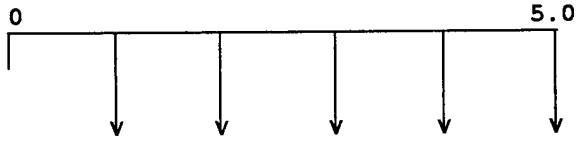


Annual Cost = $258.38

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL LOW VOC WATER-BASED GRAY 16307



Annual Cost = $641.18

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$258.38	4.13905	$1069.45

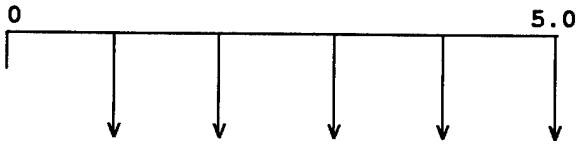
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$641.18	4.13905	$2653.88

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL GRAY 16307

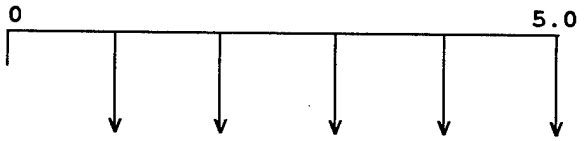


Annual Cost = $258.38

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ECO SURE GRAY 16307 GLOSS VOC COMPLIANT ENAMEL AEROSOL



Annual Cost = $782.78

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$258.38	4.13905	$1069.45

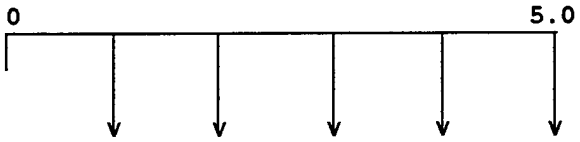
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$782.78	4.13905	$3239.97

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL GRAY 16307

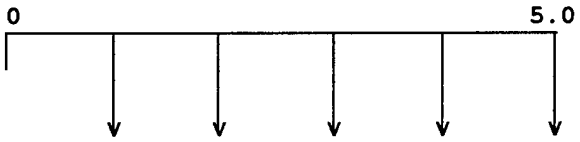


Annual Cost = $258.38

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 361 GRAY 11A RUSTPROOF PAINT



Annual Cost = $318.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$258.38	4.13905	$1069.45

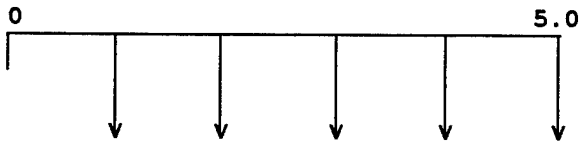
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$318.00	4.13905	$1316.22

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: SO-SURE LACQUER AEROSOL GRAY 16307

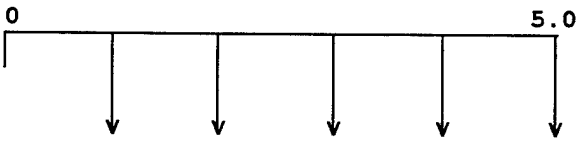


Annual Cost = $258.38

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: A-2000 SERIES AEROSOL LACQUER GRAY 16307



Annual Cost = $969.70

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$258.38	4.13905	$1069.45

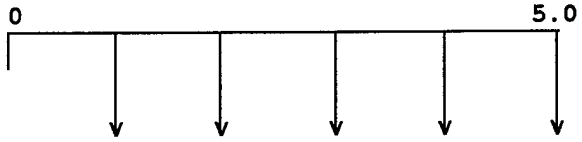
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$969.70	4.13905	$4013.64

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246

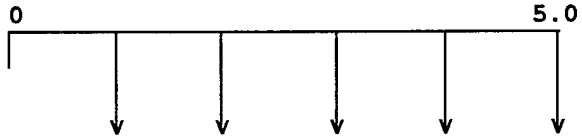


Annual Cost = $4704.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-E-489H ENAMEL, ALKYD GLOSS LOW VOC ORANGE 12246



Annual Cost = $6004.08

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4704.68	4.13905	$19472.91

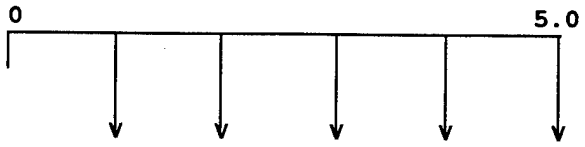
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$6004.08	4.13905	$24851.19

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246

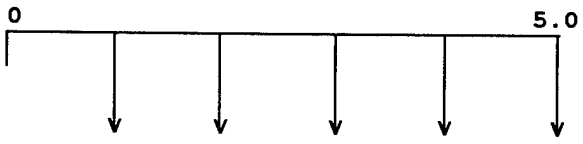


Annual Cost = $4704.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL 12246 ORANGE ALKYD GLOSS



Annual Cost = $5817.60

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$4704.68	4.13905	$19472.91

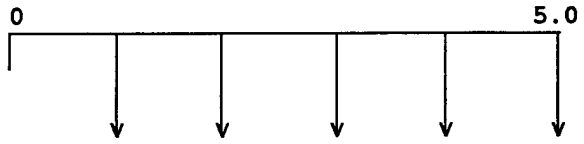
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$5817.60	4.13905	$24079.34

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246

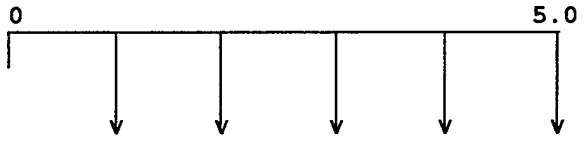


Annual Cost = $4704.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL ORANGE 12246 TT-E-2784



Annual Cost = $3527.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$4704.68	4.13905	$19472.91

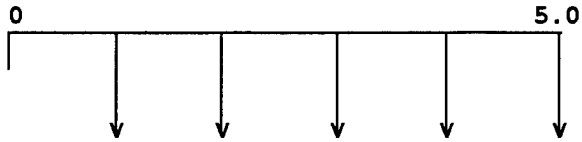
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3527.76	4.13905	$14601.58

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246

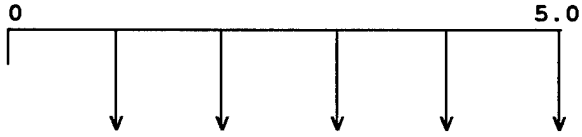


Annual Cost = $4704.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: EXTERIOR TRIM ENAMEL ORANGE 12246



Annual Cost = $2391.72

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$4704.68	4.13905	$19472.91

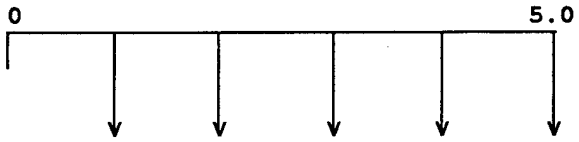
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2391.72	4.13905	$9899.45

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246

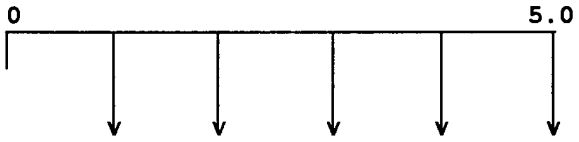


Annual Cost = $4704.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL, ORANGE 12246, TT-E-2784



Annual Cost = $3528.28

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4704.68	4.13905	$19472.91

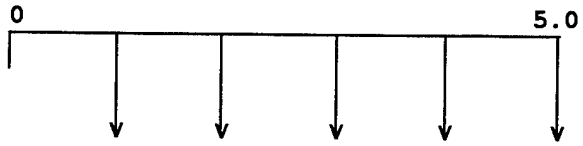
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3528.28	4.13905	$14603.73

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246

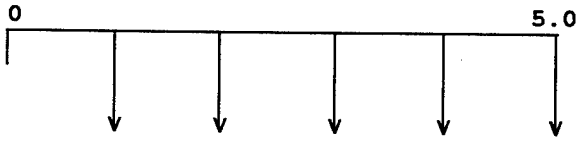


Annual Cost = $4704.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 305 ORANGE 11A RUSTPROOF PAINT



Annual Cost = $2120.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$4704.68	4.13905	$19472.91

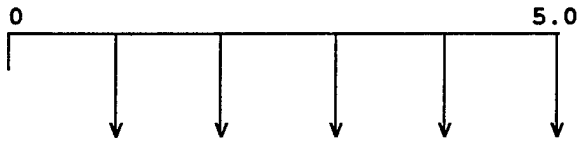
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2120.00	4.13905	$8774.79

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246

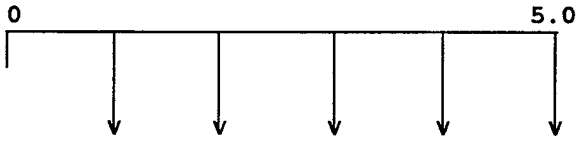


Annual Cost = $4704.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 6407-6409 SERIES GLOSS HIGH SOLIDS POLYURETHANE PAINT



Annual Cost = $5416.44

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$4704.68	4.13905	$19472.91

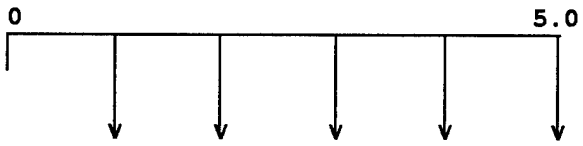
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$5416.44	4.13905	$22418.92

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246

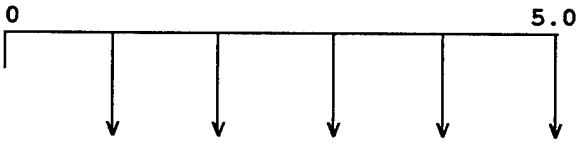


Annual Cost = $4704.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL, VOC COMPLIANT ORANGE 12246



Annual Cost = $7546.72

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$4704.68	4.13905	$19472.91

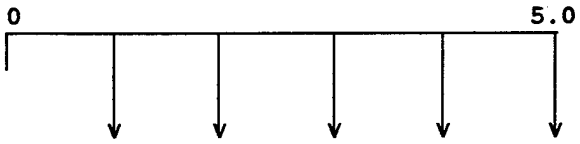
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$7546.72	4.13905	$31236.25

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246

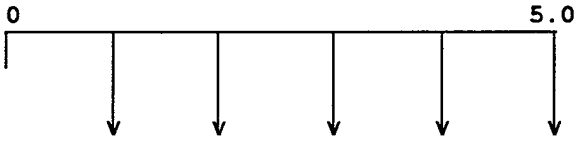


Annual Cost = $4704.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 6-282 SPEEDHIDE INT / EXT GLOSS ENAMEL



Annual Cost = $1609.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$4704.68	4.13905	$19472.91

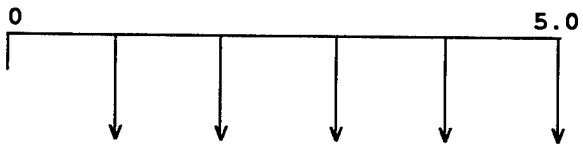
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$1609.76	4.13905	$6662.88

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

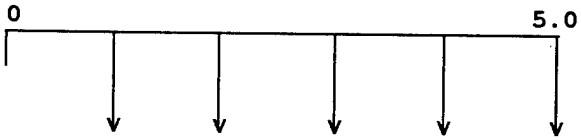


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-E-2484 ENAMEL YELLOW 13538



Annual Cost = $2871.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

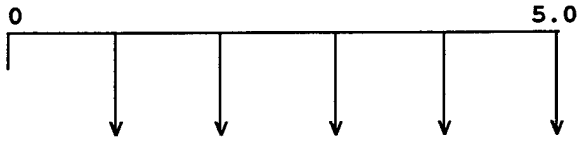
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2871.76	4.13905	$11886.36

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

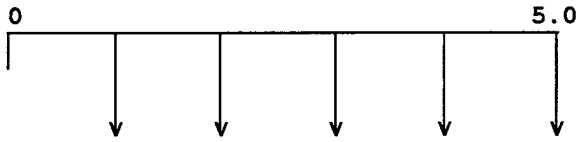


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SO SURE ENAMEL ID 44-130-P YELLOW 13538



Annual Cost = $2214.72

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

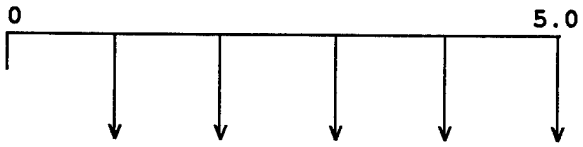
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2214.72	4.13905	$9166.84

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

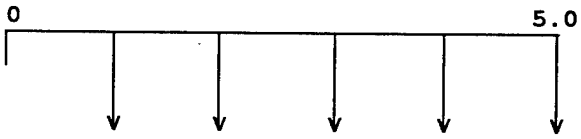


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 742-312 ENAMEL ALKYD GLOSS YELLOW 13538



Annual Cost = $3349.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

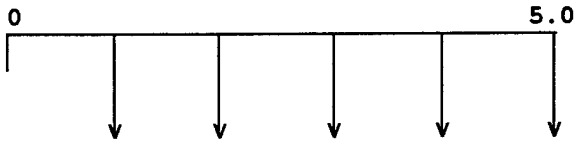
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3349.88	4.13905	$13865.32

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

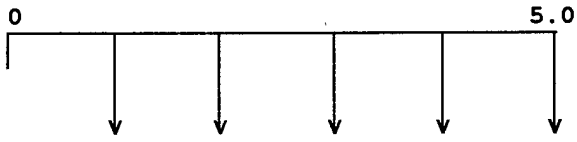


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 742-328 ENAMEL ALKYD GLOSS YELLOW 13538



Annual Cost = $3623.88

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

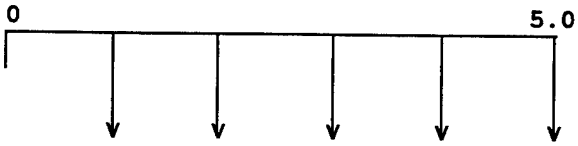
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3623.88	4.13905	$14999.42

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

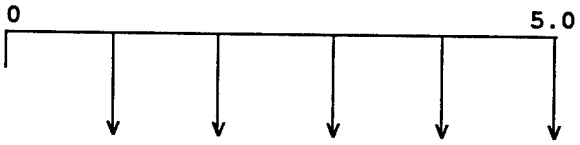


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-E-489G YELLOW 13538 ENAMEL ALKYD GLOSS



Annual Cost = $4491.60

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

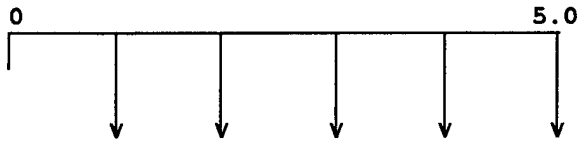
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4491.60	4.13905	$18590.96

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

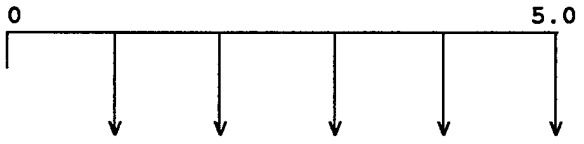


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-E-2784 ULTRA DEEP TINT BASE ENAMEL YELLOW 13538



Annual Cost = $1758.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

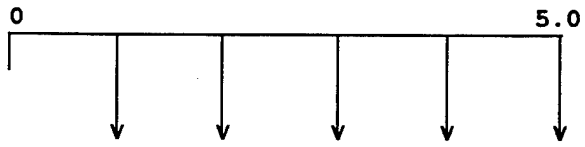
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1758.40	4.13905	$7278.11

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

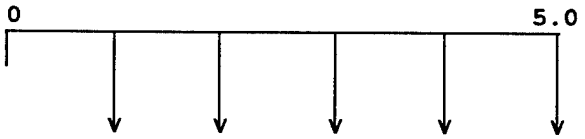


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 600 INDUSTRIAL ENAMEL 13538



Annual Cost = $3364.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

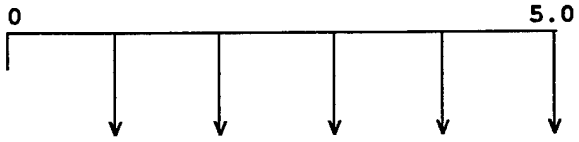
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3364.40	4.13905	$13925.42

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

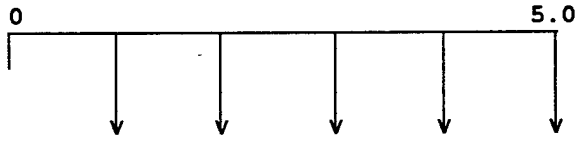


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: YELLOW GLOSS ENAMEL ALKYD 13538



Annual Cost = $4496.28

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

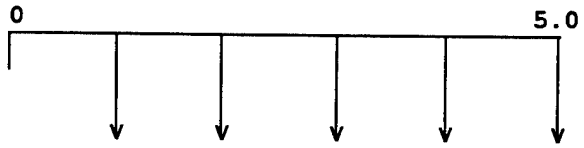
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$4496.28	4.13905	$18610.33

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

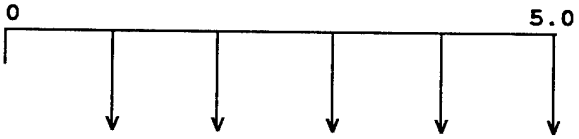


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL ALKYD GLOSS YELLOW 13538



Annual Cost = $3695.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

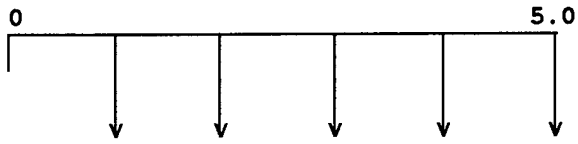
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3695.40	4.13905	$15295.45

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

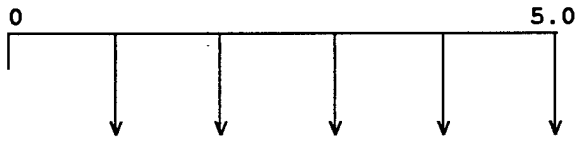


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: EXTERIOR TRIM ENAMEL YELLOW 13538



Annual Cost = $1754.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

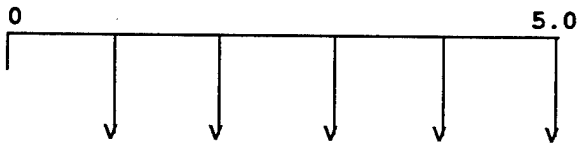
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1754.68	4.13905	$7262.71

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

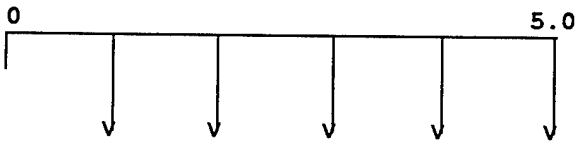


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: SO-SURE YELLOW 13538



Annual Cost = $2219.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

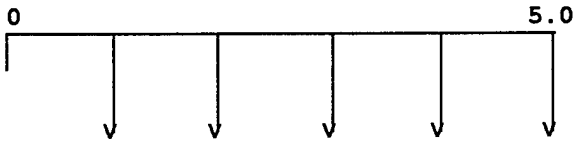
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2219.40	4.13905	$9186.21

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

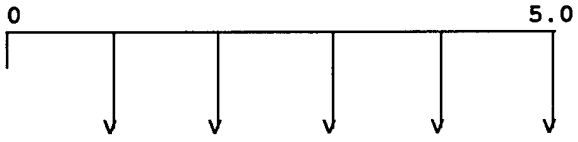


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ECO SURE YELLOW 13538 VOC COMPLIANT ENAMEL AEROSOL



Annual Cost = $5171.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

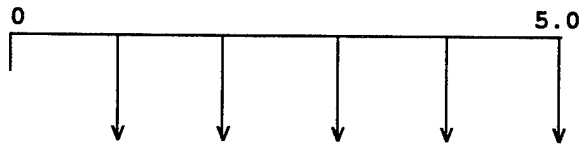
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$5171.40	4.13905	$21404.68

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

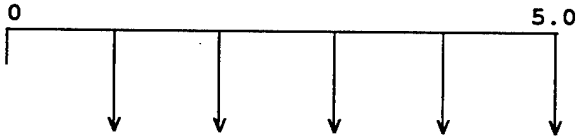


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: N5223 YELLOW A/D ENAMEL 13538



Annual Cost = $3364.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

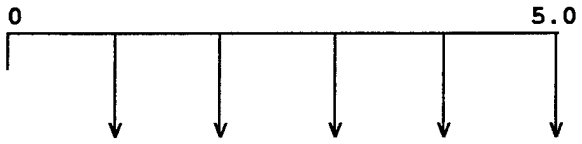
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3364.40	4.13905	$13925.42

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

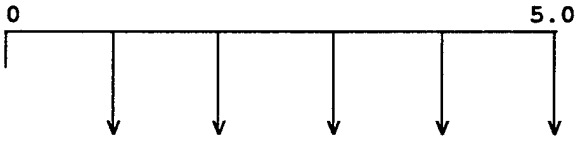


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: INDUSTRIAL ALL PURPOSE SPRAY ENAMEL



Annual Cost = $2255.64

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

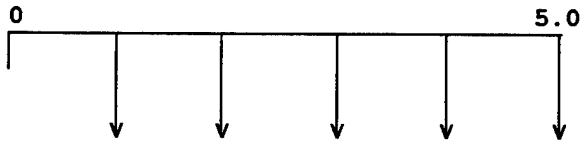
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2255.64	4.13905	$9336.21

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

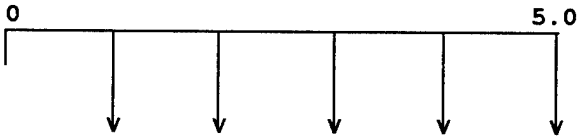


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL GLOSS YELLOW 13538, TT-E-489



Annual Cost = $3881.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3378.68	4.13905	$13984.53

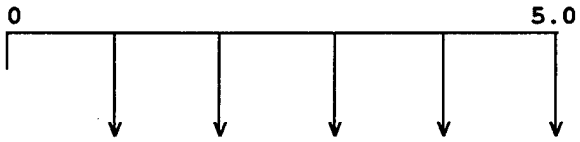
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3881.00	4.13905	$16063.65

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

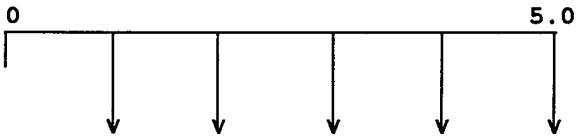


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL YELLOW 13538



Annual Cost = $2872.28

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

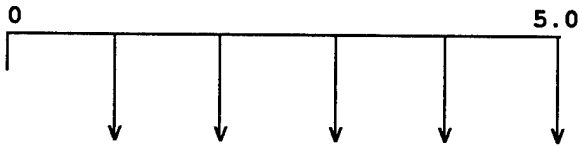
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2872.28	4.13905	$11888.51

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

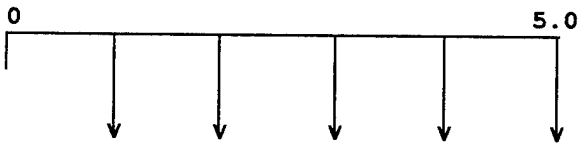


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL ALKYD GLOSS TYPE II YELLOW 13538 AEROSOL



Annual Cost = $2184.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3378.68	4.13905	$13984.53

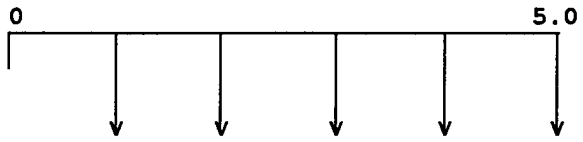
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2184.00	4.13905	$9039.69

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

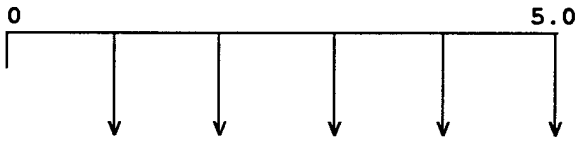


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 302 YELLOW 11A RUSTPROOF PAINT



Annual Cost = $2120.00

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$3378.68	4.13905	$13984.53

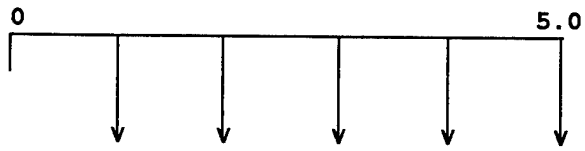
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	**Product and PPE**	$2120.00	4.13905	$8774.79

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

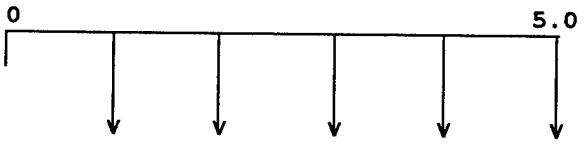


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 6407-6409 SERIES GLOSS HIGH SOLIDS POLYURETHANE PAINT



Annual Cost = $5416.44

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

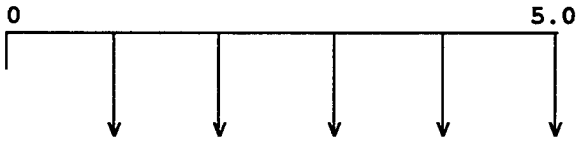
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$5416.44	4.13905	$22418.92

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538

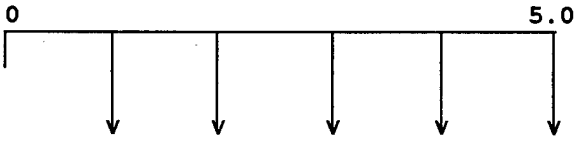


Annual Cost = $3378.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: TT-E-489G TYPE I 13538 YELLOW ORANGE PAINT / COATING



Annual Cost = $5680.72

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3378.68	4.13905	$13984.53

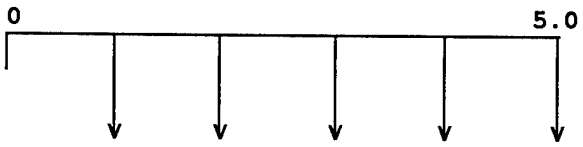
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$5680.72	4.13905	$23512.78

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL DECK INTERIOR GRAY 26231

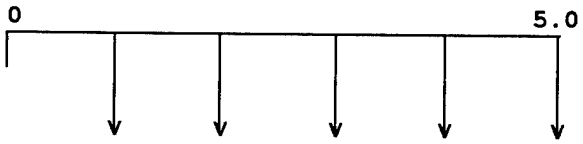


Annual Cost = $3709.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: ENAMEL GRAY 26231



Annual Cost = $3272.52

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3709.68	4.13905	$15354.55

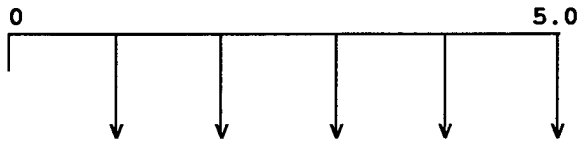
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3272.52	4.13905	$13545.12

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL DECK INTERIOR GRAY 26231

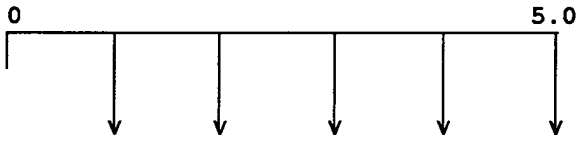


Annual Cost = $3709.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: MIL-E-24635A ENAMEL GRAY 26231



Annual Cost = $2062.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3709.68	4.13905	$15354.55

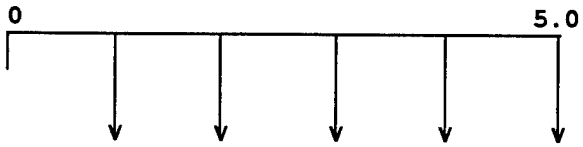
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$2062.40	4.13905	$8536.38

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL DECK INTERIOR GRAY 26231

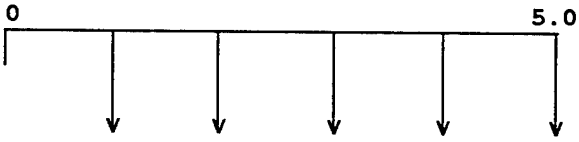


Annual Cost = $3709.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: N-5356 SILICONE ALKYD ENAMEL GRAY 26231



Annual Cost = $1733.40

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3709.68	4.13905	$15354.55

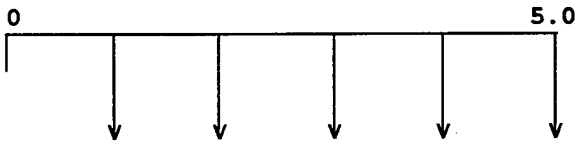
Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$1733.40	4.13905	$7174.63

Figure D-2
The Type II Net Present Value Economic Analysis

The NAVFAC P-442 Economic Analysis Model
Type II Economic Analysis Format

NET PRESENT VALUE COMPARISON
(Equal economic lives and equal or no lead time)

Status Quo Alternative: ENAMEL DECK INTERIOR GRAY 26231

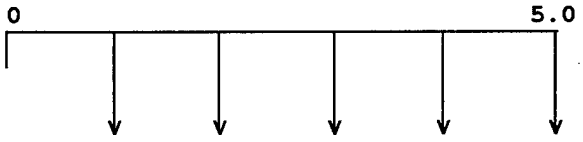


Annual Cost = $3709.68

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Proposed Alternative: 97-480 SILICONE ALKYD



Annual Cost = $3689.76

Assumptions:

Economic Life = 5.0
Interest Rate = 6.65 %

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3709.68	4.13905	$15354.55

Project Year(s)	Cost Element	Amount	Discount Factor	Discount Cost
1 - 5.0	Product and PPE	$3689.76	4.13905	$15272.10

Figure D-2
The Type II Net Present Value Economic Analysis

APPENDIX E

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEETS

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			N-700A-BLACK CORRSION PREVENTIVE COMPOUND		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
5	D. National Stock Number (NSN), if any	8030LLL010010			8030001450111		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBLJRT, 88112		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			TOLUENE (38.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		22	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			40.00 F		
23	B. Boiling Point (BP)	281.00 F			Not Listed		
24	Flammable Combustible Liquids Points		8			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		36.70 mmHg	4	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			33	
28	**10. Material Selection Recommendation**	N-700A-BLACK CORRSION PREVENTIVE COMPOUND					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			N-700-A GRAY NEOPRENE MAINTENANCE COATING		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
5	D. National Stock Number (NSN), if any	8030LLL010010			8030001450111		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBMZBC, 84697		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			TOLUENE (59.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	7	
10	B. Medical Effects (Table A-2d)	Temporary	8		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		31	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			40.00 F		
23	B. Boiling Point (BP)	281.00 F			231.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		25.00 mmHg	3	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			47	
28	**10. Material Selection Recommendation**	NEOPRENE N-11 PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
		INFORMATION	Pts	Code	INFORMATION	Pts	Code
(1)	1. Information Needed						
(2)	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			PLIOBOND 20 ADHESIVE		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
(5)	D. National Stock Number (NSN), if any	8030LLL010010			8040002009190		
(6)	E. MSDS, Cage Number	NAAAAE, 15466			PBPMPZ, 7L600		
(7)	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			FORMALDEHYDE (0.10%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		0.30 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Temporary	8		Permanent,	16	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		100.00 lbs	6	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		7.50 tons/yr	10	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		45	I
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			23.00 F		
(23)	B. Boiling Point (BP)	281.00 F			176.00 F		
(24)	Flammable Combustible Liquids Points		8			9	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		71.00 mmHg	8	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			66	
(28)	**10. Material Selection Recommendation**	NEOPRENE N-11 PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			ANAEROBIC SOLVENT LESS PRIMER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding neprene rubber			Bonding neprene rubber		
5	D. National Stock Number (NSN), if any	8030LLL010010			8030001236955		
6	E. MSDS, Cage Number	NAAAAE, 15466			PAASOL, SAFTL		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			METHACRYLIC ESTER MONOMERS (90.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	8		No medical	0	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		2	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			200.00 F		
23	B. Boiling Point (BP)	281.00 F			301.00 F		
24	Flammable Combustible Liquids Points		8			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			6	
28	**10. Material Selection Recommendation**	ANAEROBIC SOLVENT LESS PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			EF PRIMER 49		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
5	D. National Stock Number (NSN), if any	8030LLL010010			8030013885604		
6	E. MSDS, Cage Number	NAAAAE, 15466			PAEFPR, 61603		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			ISOPROPYL ALCOHOL (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		400.00 ppm	3	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		15	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			17.00 F		
23	B. Boiling Point (BP)	281.00 F			Not Listed		
24	Flammable Combustible Liquids Points		8			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		173.00 mmHg	12	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			31	
28	**10. Material Selection Recommendation**	EF PRIMER 49					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			EF PRIMER 50		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
(5)	D. National Stock Number (NSN), if any	8030LLL010010			8030013885606		
(6)	E. MSDS, Cage Number	NAAAAE, 15466			PAAEFP, 61603		
(7)	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			ORGANO-COPPER COMPOUND (0.60%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		0.10 mg/m3	5	
(10)	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		17	III
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			-4.00 F		
(23)	B. Boiling Point (BP)	281.00 F			133.00 F		
(24)	Flammable Combustible Liquids Points		8			9	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		173.00 mmHg	12	
(27)	9. Hazardous Material Selection Factor (HMSF) Sum of 18 + 24 + 25 + 26		43			42	
(28)	**10. Material Selection Recommendation**	EF PRIMER 50					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			BLUE RESIN SOLUTION - G7526F		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
(5)	D. National Stock Number (NSN), if any	8030LLL010010			8040005304820		
(6)	E. MSDS, Cage Number	NAAAAE, 15466			PBJQCR, 65313		
(7)	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			2-ETHOXYETHANOL (4.70%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		5.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		21	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			65.00 F		
(23)	B. Boiling Point (BP)	281.00 F			284.00 F		
(24)	Flammable Combustible Liquids Points		8			9	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		3.80 mmHg	1	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			31	
(28)	**10. Material Selection Recommendation**	BLUE RESIN SOLUTION - G7526F					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			NEOPRENE ADHESIVE N-1051		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
5	D. National Stock Number (NSN), if any	8030LLL010010			8040006644318		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBFKNV, 56800		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			HEXANE (33.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1.00 lbs	10	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		28	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			19.00 F		
23	B. Boiling Point (BP)	281.00 F			152.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		0.64 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			40	
28	**10. Material Selection Recommendation**	NEOPRENE ADHESIVE N-1051					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			BLACK MAX BLACK TOUGH ADHESIVE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
5	D. National Stock Number (NSN), if any	8030LLL010010			8040014068424		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBXTLH, 05972		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			PHTHALIC ANHYDRIDE (0.60%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		1.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		19	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			200.00 F		
23	B. Boiling Point (BP)	281.00 F			301.00 F		
24	Flammable Combustible Liquids Points		8			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		0.10 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			26	
28	**10. Material Selection Recommendation**	BLACK MAX BLACK TOUGH ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			3M 90 HIGH STRENGTH ADHESIVE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
5	D. National Stock Number (NSN), if any	8030LLL010010			804000F002485		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBBLBB, 04963		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			CYCLOHEXANE (5.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		300.00 ppm	3	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		19	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			-40.00 F		
23	B. Boiling Point (BP)	281.00 F			Not Listed		
24	Flammable Combustible Liquids Points		8			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			22	
28	**10. Material Selection Recommendation**	3M 90 HIGH STRENGTH ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			3M BRAND SPRAY 80 NEOPRENE CONTACT		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
(5)	D. National Stock Number (NSN), if any	8030LLL010010			804000F002486		
(6)	E. MSDS, Cage Number	NAAAAE, 15466			PBBBLB, 04963		
(7)	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			TOLUENE (2.50%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		21	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			-42.00 F		
(23)	B. Boiling Point (BP)	281.00 F			Not Listed		
(24)	Flammable Combustible Liquids Points		8			0	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		Not Listed	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			24	
(28)	**10. Material Selection Recommendation**	3M BRAND SPRAY 80 NEOPRENE CONTACT ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			2141 RUBBER AND GASKET ADHESIVE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
5	D. National Stock Number (NSN), if any	8030LLL010010			8040010682423		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBGWZH, 04963		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			TOLUENE (35.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		26	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			-14.00 F		
23	B. Boiling Point (BP)	281.00 F			132.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		180.00 mmHg	12	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			51	
28	**10. Material Selection Recommendation**	NEOPRENE N-11 PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			SCOTCH-GRIP 1300 RUBBER AND GASKET ADHESIVE		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Bonding neoprene rubber			Bonding neoprene rubber		
(5)	D. National Stock Number (NSN), if any	8030LLL010010			8040010234173		
(6)	E. MSDS, Cage Number	NAAAAE, 15466			PBKHTS, 04963		
(7)	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			HEXANE (7.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1.00 lbs	10	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		27	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			-14.00 F		
(23)	B. Boiling Point (BP)	281.00 F			140.00 F		
(24)	Flammable Combustible Liquids Points		8			9	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		120.00 mmHg	12	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			52	
(28)	**10. Material Selection Recommendation**	NEOPRENE N-11 PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOLUBE NO. 1			DAG 156 GRAPHITE, COLLOIDAL		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Corrosion inhibitor on riggers			Corrosion inhibitor on riggers		
5	D. National Stock Number (NSN), if any	9150003497443			9150009268963		
6	E. MSDS, Cage Number	PBDWYW, 03432			PBJPTM, 70079		
7	F. Specific Chemical Constituent Analyzed	ISOPROPYL ALCOHOL (94.00%)			GRAPHITE, NATURAL (3.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	400.00 ppm	6		2.00 mg/m3	4	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		22	II		20	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	52.00 F			46.00 F		
23	B. Boiling Point (BP)	180.50 F			Not Listed		
24	Flammable Combustible Liquids Points		9			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		31.20 mmHg	4	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		35			28	
28	**10. Material Selection Recommendation**	DAG 156 GRAPHITE, COLLOIDAL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOLUBE NO. 1			(55A) 591 COSMOLINE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Corrosion inhibitor on riggers			Corrosion inhibitor on riggers		
5	D. National Stock Number (NSN), if any	9150003497443			803000N014015		
6	E. MSDS, Cage Number	PBDWYW, 03432			PBKKKY, 33451		
7	F. Specific Chemical Constituent Analyzed	ISOPROPYL ALCOHOL (94.00%)			TOLUENE (12.50%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	400.00 ppm	6		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		22	II		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	52.00 F			-15.00 F		
23	B. Boiling Point (BP)	180.50 F			-10.00 F		
24	Flammable Combustible Liquids Points		9			10	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		36.70 mmHg	4	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		35			43	
28	**10. Material Selection Recommendation**	NEOLUBE NO. 1					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOLUBE NO. 1			PELCO COLLOIDAL GRAPHITE, 16053		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Corrosion inhibitor on riggers			Corrosion inhibitor on riggers		
5	D. National Stock Number (NSN), if any	9150003497443			681000N059603		
6	E. MSDS, Cage Number	PBDWYW, 03432			PBXTQM, 5S264		
7	F. Specific Chemical Constituent Analyzed	ISOPROPYL ALCOHOL (94.00%)			2-METHYL-2,4-PENTANEDIOL (5.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	400.00 ppm	6		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		22	II		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	52.00 F			52.00 F		
23	B. Boiling Point (BP)	180.50 F			Not Listed		
24	Flammable Combustible Liquids Points		9			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		31.00 mmHg	4	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		35			25	
28	**10. Material Selection Recommendation**	PELCO COLLOIDAL GRAPHITE, 16053					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOLUBE NO. 1			LOCK-EASE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Corrosion inhibitor on riggers			Corrosion inhibitor on riggers		
5	D. National Stock Number (NSN), if any	9150003497443			9150005987122		
6	E. MSDS, Cage Number	PBDWYW, 03432			PBFHMM, 96980		
7	F. Specific Chemical Constituent Analyzed	ISOPROPYL ALCOHOL (94.00%)			ALIPHATIC PETROLEUM NAPHTHA (75.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	400.00 ppm	6		100.00 ppm	7	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		22	II		11	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	52.00 F			101.00 F		
23	B. Boiling Point (BP)	180.50 F			572.00 F		
24	Flammable Combustible Liquids Points		9			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		35			25	
28	**10. Material Selection Recommendation**	LOCK-EASE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOLUBE NO. 1			SILOXIRANE 2032 COATING		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Corrosion inhibitor on riggers			Corrosion inhibitor on riggers		
5	D. National Stock Number (NSN), if any	9150003497443			9150000002032		
6	E. MSDS, Cage Number	PBDWYW, 03432			PASILO, APSIN		
7	F. Specific Chemical Constituent Analyzed	ISOPROPYL ALCOHOL (94.00%)			METHYL ISOBUTYL KETONE (2.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	400.00 ppm	6		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		22	II		19	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	52.00 F			152.00 F		
23	B. Boiling Point (BP)	180.50 F			244.40 F		
24	Flammable Combustible Liquids Points		9			5	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		16.00 mmHg	2	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		35			33	
28	**10. Material Selection Recommendation**	SILOXIRANE 2032 COATING					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOLUBE NO. 1			SILOXIRANE 2032 CATALYST		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Corrosion inhibitor on riggers			Corrosion inhibitor on riggers		
5	D. National Stock Number (NSN), if any	9150003497443			9150000002032		
6	E. MSDS, Cage Number	PBDWYW, 03432			PASILX, APSIN		
7	F. Specific Chemical Constituent Analyzed	ISOPROPYL ALCOHOL (94.00%)			BLEND OF CYCLOALIPHATIC AMINES (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	400.00 ppm	6		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	8		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		22	II		14	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	52.00 F			393.00 F		
23	B. Boiling Point (BP)	180.50 F			599.00 F		
24	Flammable Combustible Liquids Points		9			1	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		35			22	
28	**10. Material Selection Recommendation**	SILOXIRANE 2032 CATALYST					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ACRYLIC LACQUER AEROSOL (BLACK) IB NO 2652			DR038 CONCENTRATE AEROSOL LACQUER, BLACK		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting plaques and models			Painting plaques and models		
5	D. National Stock Number (NSN), if any	8010005825382			8010002906984		
6	E. MSDS, Cage Number	PAALMZ, 91794			PBDVHW, 70506		
7	F. Specific Chemical Constituent Analyzed	2-BUTOXYETHANOL (3.10%)			2-BUTOXYETHANOL (4.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	25.00 ppm	5		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	5.00 Hrs/wk		D	5.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-40.00 F			38.00 F		
23	B. Boiling Point (BP)	391.00 F			320.00 F		
24	Flammable Combustible Liquids Points		9			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	300.00 mmHg	15		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			29	
28	**10. Material Selection Recommendation**	DR038 CONCENTRATE AEROSOL LACQUER, BLACK 17038					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	ACRYLIC LACQUER AEROSOL (BLACK) IB NO 2652			A-4100 AEROSOL BLACK 17038 TT-L-50		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Painting plaques and models			Painting plaques and models		
(5)	D. National Stock Number (NSN), if any	8010005825382			8010000793752		
(6)	E. MSDS, Cage Number	PAALMZ, 91794			PAATTL, 65860		
(7)	F. Specific Chemical Constituent Analyzed	2-BUTOXYETHANOL (3.10%)			BUTYL CELLUSOLVE (1.80%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	25.00 ppm	5		25.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		17	III
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	5.00 Hrs/wk		D	5.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	-40.00 F			-154.00 F		
(23)	B. Boiling Point (BP)	391.00 F			397.00 F		
(24)	Flammable Combustible Liquids Points		9			9	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	300.00 mmHg	15		0.90 mmHg	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			30	
(28)	**10. Material Selection Recommendation**	A-4100 AEROSOL BLACK 17038 TT-L-50					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			N-700A-BLACK CORRSION PREVENTIVE COMPOUND		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
(5)	D. National Stock Number (NSN), if any	8030LLL010010			8030001450111		
(6)	E. MSDS, Cage Number	NAAAAE, 15466			PBLJRT, 88112		
(7)	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			TOLUENE (38.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	6	
(10)	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		22	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			2
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			40.00 F		
(23)	B. Boiling Point (BP)	281.00 F			Not Listed		
(24)	Flammable Combustible Liquids Points		8			0	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		36.70 mmHg	4	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			33	
(28)	**10. Material Selection Recommendation**	N-700A-BLACK CORRSION PREVENTIVE COMPOUND					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			N-700-A GRAY NEOPRENE MAINTENANCE COATING		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
5	D. National Stock Number (NSN), if any	8030LLL010010			8030001450111		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBMZBC, 84697		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			TOLUENE (59.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	7	
10	B. Medical Effects (Table A-2d)	Temporary	8		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		31	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			1
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			40.00 F		
23	B. Boiling Point (BP)	281.00 F			231.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		25.00 mmHg	3	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			47	
28	**10. Material Selection Recommendation**	NEOPRENE N-11 PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			PLIOBOND 20 ADHESIVE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
5	D. National Stock Number (NSN), if any	8030LLL010010			8040002009190		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBPMPZ, 7L600		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			FORMALDEHYDE (0.10%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		0.30 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	8		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		100.00 lbs	6	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		7.50 tons/yr	10	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		45	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			1
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			23.00 F		
23	B. Boiling Point (BP)	281.00 F			176.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		71.00 mmHg	8	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			66	
28	**10. Material Selection Recommendation**	NEOPRENE N-11 PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
		INFORMATION	Pts	Code	INFORMATION	Pts	Code
1	1. Information Needed						
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			ANAEROBIC SOLVENT LESS PRIMER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
5	D. National Stock Number (NSN), if any	8030LLL010010			8030001236955		
6	E. MSDS, Cage Number	NAAAAE, 15466			PAASOL, SAFTL		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			METHACRYLIC ESTER MONOMERS (90.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	8		No medical	0	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		2	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			200.00 F		
23	B. Boiling Point (BP)	281.00 F			301.00 F		
24	Flammable Combustible Liquids Points		8			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			6	
28	**10. Material Selection Recommendation**	ANAEROBIC SOLVENT LESS PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			EF PRIMER 49		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
5	D. National Stock Number (NSN), if any	8030LLL010010			8030013885604		
6	E. MSDS, Cage Number	NAAAAE, 15466			PAEFPR, 61603		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			ISOPROPYL ALCOHOL (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		400.00 ppm	3	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		15	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			17.00 F		
23	B. Boiling Point (BP)	281.00 F			Not Listed		
24	Flammable Combustible Liquids Points		8			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		173.00 mmHg	12	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			31	
28	**10. Material Selection Recommendation**	EF PRIMER 49					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			EF PRIMER 50		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
5	D. National Stock Number (NSN), if any	8030LLL010010			8030013885606		
6	E. MSDS, Cage Number	NAAAAE, 15466			PAAEFP, 61603		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			ORGANO-COPPER COMPOUND (0.60%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		0.10 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			-4.00 F		
23	B. Boiling Point (BP)	281.00 F			133.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		173.00 mmHg	12	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			42	
28	**10. Material Selection Recommendation**	EF PRIMER 50					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			BLUE RESIN SOLUTION - G7526F		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
5	D. National Stock Number (NSN), if any	8030LLL010010			8040005304820		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBJQCR, 65313		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			2-ETHOXYETHANOL (4.70%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		5.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			65.00 F		
23	B. Boiling Point (BP)	281.00 F			284.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		3.80 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			31	
28	**10. Material Selection Recommendation**	BLUE RESIN SOLUTION - G7526F					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			NEOPRENE ADHESIVE N-1051		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
5	D. National Stock Number (NSN), if any	8030LLL010010			8040006644318		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBFKNV, 56800		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			HEXANE (33.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1.00 lbs	10	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		28	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			19.00 F		
23	B. Boiling Point (BP)	281.00 F			152.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		0.64 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			40	
28	**10. Material Selection Recommendation**	NEOPRENE ADHESIVE N-1051					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			BLACK MAX BLACK TOUGH ADHESIVE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
5	D. National Stock Number (NSN), if any	8030LLL010010			8040014068424		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBXTLH, 05972		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			PHTHALIC ANHYDRIDE (0.60%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		1.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	0.00 tons/yr	10		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		38	I		19	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			1			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			200.00 F		
23	B. Boiling Point (BP)	281.00 F			301.00 F		
24	Flammable Combustible Liquids Points		8			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		0.10 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		53			26	
28	**10. Material Selection Recommendation**	BLACK MAX BLACK TOUGH ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			3M 90 HIGH STRENGTH ADHESIVE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
5	D. National Stock Number (NSN), if any	8030LLL010010			804000F002485		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBBLBB, 04963		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			CYCLOHEXANE (5.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		300.00 ppm	3	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		19	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			-40.00 F		
23	B. Boiling Point (BP)	281.00 F			Not Listed		
24	Flammable Combustible Liquids Points		8			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			22	
28	**10. Material Selection Recommendation**	3M 90 HIGH STRENGTH ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			3M BRAND SPRAY 80 NEOPRENE CONTACT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
5	D. National Stock Number (NSN), if any	8030LLL010010			804000F002486		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBBBLB, 04963		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			TOLUENE (2.50%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			-42.00 F		
23	B. Boiling Point (BP)	281.00 F			Not Listed		
24	Flammable Combustible Liquids Points		8			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			24	
28	**10. Material Selection Recommendation**	3M BRAND SPRAY 80 NEOPRENE CONTACT ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			2141 RUBBER AND GASKET ADHESIVE		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
(5)	D. National Stock Number (NSN), if any	8030LLL010010			8040010682423		
(6)	E. MSDS, Cage Number	NAAAAE, 15466			PBGWZH, 04963		
(7)	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			TOLUENE (35.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	6	
(10)	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	8	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		26	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			2
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			-14.00 F		
(23)	B. Boiling Point (BP)	281.00 F			132.00 F		
(24)	Flammable Combustible Liquids Points		8			9	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		180.00 mmHg	12	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			51	
(28)	**10. Material Selection Recommendation**	NEOPRENE N-11 PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	NEOPRENE N-11 PRIMER			SCOTCH-GRIP 1300 RUBBER AND GASKET ADHESIVE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Bonding rubber linings			Bonding rubber linings		
5	D. National Stock Number (NSN), if any	8030LLL010010			8040010234173		
6	E. MSDS, Cage Number	NAAAAE, 15466			PBKHTS, 04963		
7	F. Specific Chemical Constituent Analyzed	XYLOL (77.00%)			HEXANE (7.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	8		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	8		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1.00 lbs	10	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		28	II		27	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			-14.00 F		
23	B. Boiling Point (BP)	281.00 F			140.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	29.00 mmHg	3		120.00 mmHg	12	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		43			52	
28	**10. Material Selection Recommendation**	NEOPRENE N-11 PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			ARDROX 5300-W HOT TANK STRIPPER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013871080		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBWLKP, 23373		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			ETHANOLAMINE (19.50%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		3.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			190.00 F		
23	B. Boiling Point (BP)	104.00 F			338.00 F		
24	Flammable Combustible Liquids Points		9			4	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		1.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			38	
28	**10. Material Selection Recommendation**	ARDROX 5300-W HOT TANK STRIPPER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			BIO T 200A CLEANING COMPOUND, SOLVENT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013874893		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBXVSS, 0XYG0		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			NATURAL TERPENE (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			146.00 F		
23	B. Boiling Point (BP)	104.00 F			334.00 F		
24	Flammable Combustible Liquids Points		9			5	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		2.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			16	
28	**10. Material Selection Recommendation**	BIO T 200A CLEANING COMPOUND, SOLVENT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			BIO T MAX CLEANING COMPOUND, SOLVENT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013813930		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBSGMF, 0XYG0		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			NATURAL TERPENE (99.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			130.00 F		
23	B. Boiling Point (BP)	104.00 F			334.00 F		
24	Flammable Combustible Liquids Points		9			6	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		2.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			17	
28	**10. Material Selection Recommendation**	BIO T MAX CLEANING COMPOUND, SOLVENT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			BRULIN SD 1291 CLEANING COMPOUND, SOLVENT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013940167		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBWMWX, 94058		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			DIPROPYLENE GLYCOL METHYL ETHER (70.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		100.00 ppm	7	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		11	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			160.00 F		
23	B. Boiling Point (BP)	104.00 F			212.00 F		
24	Flammable Combustible Liquids Points		9			5	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		0.40 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			20	
28	**10. Material Selection Recommendation**	BRULIN SD 1291 CLEANING COMPOUND, SOLVENT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			SAFETY STRIP HT CLEANING COMPOUND, SOLVENT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013940168		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBXGBJ, 94058		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			DIETHYLENE GLYCOL MONOBUTYL ETHER (50.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			220.00 F		
23	B. Boiling Point (BP)	104.00 F			400.00 F		
24	Flammable Combustible Liquids Points		9			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		1.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			14	
28	**10. Material Selection Recommendation**	SAFETY STRIP HT CLEANING COMPOUND, SOLVENT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			NATURE-SOL 100		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013942617		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBWMXB, 94058		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			DIPROPYLENE GLYCOL METHYL ETHER (5.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		9	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			120.00 F		
23	B. Boiling Point (BP)	104.00 F			347.00 F		
24	Flammable Combustible Liquids Points		9			6	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		0.55 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			19	
28	**10. Material Selection Recommendation**	NATURE-SOL 100					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			SAFE-STRIP CLEANING COMPOUND, SOLVENT		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Stripping plastisol coatings			Stripping plastisol coatings		
(5)	D. National Stock Number (NSN), if any	6810006169188			6850013868430		
(6)	E. MSDS, Cage Number	PAAEEX, 5A188			PBVHNP, 0WU71		
(7)	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			N-METHYLPYRROLIDONE (85.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		100.00 ppm	8	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		20	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			3
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	-142.06 F			197.00 F		
(23)	B. Boiling Point (BP)	104.00 F			396.00 F		
(24)	Flammable Combustible Liquids Points		9			4	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		0.90 mmHg	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			24	
(28)	**10. Material Selection Recommendation**	SAFE-STRIP CLEANING COMPOUND, SOLVENT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			ENVIROSOLV CRX		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013947539		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBXCDM, 05867		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			ETHANOLAMINE (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		3.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		9	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			125.00 F		
23	B. Boiling Point (BP)	104.00 F			325.00 F		
24	Flammable Combustible Liquids Points		9			6	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		65.00 mmHg	7	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			26	
28	**10. Material Selection Recommendation**	ENVIROSOLV CRX					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			ENVIROSOLVE 654CR		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013889732		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBYCFJ, 05867		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			MONOETHANOLAMINE (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		3.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		9	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			200.00 F		
23	B. Boiling Point (BP)	104.00 F			210.00 F		
24	Flammable Combustible Liquids Points		9			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		0.20 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			16	
28	**10. Material Selection Recommendation**	ENVIROSOLVE 654CR					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			TEKSOL EP CLEANING COMPOUND, SOLVENT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013780583		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBSGKN, 0K209		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			HYDROTREATED HEAVY NAPHTHA (50.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			112.00 F		
23	B. Boiling Point (BP)	104.00 F			310.00 F		
24	Flammable Combustible Liquids Points		9			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		9.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			17	
28	**10. Material Selection Recommendation**	TEKSOL EP CLEANING COMPOUND, SOLVENT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			X-CALIBER, FX153 CLEANING COMPOUND, SOLVENT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013780582		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBSGKM, 0K209		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			1-METHYLPYRROLIDONE (50.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		100.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		18	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			136.00 F		
23	B. Boiling Point (BP)	104.00 F			370.00 F		
24	Flammable Combustible Liquids Points		9			6	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		1.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			29	
28	**10. Material Selection Recommendation**	X-CALIBER, FX153 CLEANING COMPOUND, SOLVENT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			CITREX EB, FC 154 CLEANING COMPOUND, SOLVENT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013780599		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBSGKP, 0K209		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			2-BUTOXYETHANOL/GLYCOL ETHER EB (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			136.00 F		
23	B. Boiling Point (BP)	104.00 F			340.00 F		
24	Flammable Combustible Liquids Points		9			6	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		One Point Skin Protection	1	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		1.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			33	
28	**10. Material Selection Recommendation**	CITREX EB, FC 154 CLEANING COMPOUND, SOLVENT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			CITREX, FC 153 CLEANING COMPOUND, SOLVENT		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
(5)	D. National Stock Number (NSN), if any	6810006169188			6850013780618		
(6)	E. MSDS, Cage Number	PAAEEX, 5A188			PBSGKT, 0K209		
(7)	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			N-METHYLPYRROLIDONE (25.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		100.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		17	III
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	-142.06 F			144.00 F		
(23)	B. Boiling Point (BP)	104.00 F			340.00 F		
(24)	Flammable Combustible Liquids Points		9			5	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		1.00 mmHg	1	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			27	
(28)	**10. Material Selection Recommendation**	CITREX, FC 153 CLEANING COMPOUND, SOLVENT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			FA009 AERO-STRIP CLEANING COMPOUND,		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013813640		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBSGMC, 0K209		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			PROPYLENE GLYCOL MONOMETHYL ETHER		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		100.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		18	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			132.00 F		
23	B. Boiling Point (BP)	104.00 F			302.00 F		
24	Flammable Combustible Liquids Points		9			6	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		3.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			29	
28	**10. Material Selection Recommendation**	FA009 AERO-STRIP CLEANING COMPOUND, SOLVENT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			CITRA SOAK, FC058		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			685000N027125		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBNLMF, 0K209		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			1-METHYL-4-CYCLOHEXANE (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			120.00 F		
23	B. Boiling Point (BP)	104.00 F			340.00 F		
24	Flammable Combustible Liquids Points		9			6	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		2.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			17	
28	**10. Material Selection Recommendation**	CITRA SOAK, FC058					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			PREPRITE COATING REMOVER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013830445		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBSJBY, 0SXX1		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			1-METHYLPYRROLIDONE (35.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		100.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		18	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			191.00 F		
23	B. Boiling Point (BP)	104.00 F			399.00 F		
24	Flammable Combustible Liquids Points		9			4	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		0.29 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			25	
28	**10. Material Selection Recommendation**	PREPRITE COATING REMOVER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			FOAMFLUSH URETHANE REMOVER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013833032		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBSJCF, 0SXX1		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			1-METHYLPYRROLIDONE (40.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		100.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		18	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			191.00 F		
23	B. Boiling Point (BP)	104.00 F			396.00 F		
24	Flammable Combustible Liquids Points		9			4	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		1.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			27	
28	**10. Material Selection Recommendation**	FOAMFLUSH URETHANE REMOVER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			SHIP SHAPE RESIN CLEANER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850013833848		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBSJCZ, 0SXX1		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			1-METHYLPYRROLIDONE (70.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		100.00 ppm	7	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		23	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			197.00 F		
23	B. Boiling Point (BP)	104.00 F			399.00 F		
24	Flammable Combustible Liquids Points		9			4	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		0.29 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF) Sum of 18 + 24 + 25 + 26		72			31	
28	**10. Material Selection Recommendation**	SHIP SHAPE RESIN CLEANER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			PUR-O-SHINE HEAVY DUTY CLEANER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			681000F030823		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBSLXY, AMER5		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			SULFURIC ACID (0.01%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		1.00 mg/m3	4	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		12	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			Not Listed		
23	B. Boiling Point (BP)	104.00 F			290.00 F		
24	Flammable Combustible Liquids Points		9			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			12	
28	**10. Material Selection Recommendation**	PUR-O-SHINE HEAVY DUTY CLEANER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DICHLORMETHANE, TECHNICAL			ALFA KLEEN AK-037		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Stripping Plastisol coatings			Stripping Plastisol coatings		
5	D. National Stock Number (NSN), if any	6810006169188			6850002929700		
6	E. MSDS, Cage Number	PAAEEX, 5A188			PBVZFM, 62639		
7	F. Specific Chemical Constituent Analyzed	METHYLENE CHLORIDE (100.0%)			ETHANOLAMINE (1.05%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	16		3.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		44	I		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			2			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	-142.06 F			200.00 F		
23	B. Boiling Point (BP)	104.00 F			200.00 F		
24	Flammable Combustible Liquids Points		9			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		One Point Skin Protection	1	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	355.00 mmHg	15		6.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		72			22	
28	**10. Material Selection Recommendation**	ALFA KLEEN AK-037					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL SILVER 17178			GP-0001-7178, SILVER LACQUER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting hard hats			Painting hard hats		
5	D. National Stock Number (NSN), if any	8010007219751			8010007219751		
6	E. MSDS, Cage Number	PAADLI, 0FTT5			PBTQYY, 59581		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (26.62%)			PROPYLENE OXIDE (0.16%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		20.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		100.00 lbs	6	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		5.00 tons/yr -	10	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		45	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	0.25 Hrs/wk		E	0.25 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			-10.00 F		
23	B. Boiling Point (BP)	Not Listed			Not Listed		
24	Flammable Combustible Liquids Points		0			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			48	
28	**10. Material Selection Recommendation**	SO-SURE LACQUER AEROSOL SILVER 17178					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL SILVER 17178			AEROSOL COATINGS 01947, ALUMINUM LACQUER 17178		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting hard hats			Painting hard hats		
5	D. National Stock Number (NSN), if any	8010007219751			8010007219751		
6	E. MSDS, Cage Number	PAADLI, 0FTT5			PBHFZL, 5E481		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (26.62%)			TOLUENE (60.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		50.00 ppm	7	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		31	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	0.25 Hrs/wk		E	0.25 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			19.00 F		
23	B. Boiling Point (BP)	Not Listed			Not Listed		
24	Flammable Combustible Liquids Points		0			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			34	
28	**10. Material Selection Recommendation**	AEROSOL COATINGS 01947, ALUMINUM LACQUER 17178					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL SILVER 17178			310 SILVER 11A RUSTPROOF PAINT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting hard hats			Painting hard hats		
5	D. National Stock Number (NSN), if any	8010007219751			8010007219751		
6	E. MSDS, Cage Number	PAADLI, 0FTT5			PAERVS, 0UPL1		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (26.62%)			XYLENE (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	0.25 Hrs/wk		E	0.25 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			-18.40 F		
23	B. Boiling Point (BP)	Not Listed			-10.00 F		
24	Flammable Combustible Liquids Points		0			10	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		6.72 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			32	
28	**10. Material Selection Recommendation**	310 SILVER 11A RUSTPROOF PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL SILVER 17178			A-2000 SERIES AEROSOL LACQUER SILVER 17178		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting hard hats			Painting hard hats		
5	D. National Stock Number (NSN), if any	8010007219751			8010007219751		
6	E. MSDS, Cage Number	PAADLI, 0FTT5			PAASIL, 65860		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (26.62%)			BUTYL CELLUSOLVE (2.40%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	0.25 Hrs/wk		E	0.25 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			-154.00 F		
23	B. Boiling Point (BP)	Not Listed			336.00 F		
24	Flammable Combustible Liquids Points		0			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		0.90 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			30	
28	**10. Material Selection Recommendation**	A-2000 SERIES AEROSOL LACQUER SILVER 17178					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			PLIOBOND 20 ADHESIVE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8040002009190		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBPMPZ, 7L600		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			FORMALDEHYDE (0.10%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		0.30 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		100.00 lbs	6	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		7.50 tons/yr	10	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		45	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			1
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			23.00 F		
23	B. Boiling Point (BP)	300.00 F			176.00 F		
24	Flammable Combustible Liquids Points		3			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		71.00 mmHg	8	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			66	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			ACCRABOND GRADE A MIL-S-22473		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8030000676744		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBJYQN, 5V071		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			ETHYLENE GLYCOL METHACRYLATE MONOMER		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			251.00 F		
23	B. Boiling Point (BP)	300.00 F			393.00 F		
24	Flammable Combustible Liquids Points		3			2	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		One Point Skin Protection	1	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		0.01 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			9	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			NUTS N' BOLTS 223		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8030000812339		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBHCXG, 61603		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			SACCHARIN (0.90%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		100.00 lbs	6	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		20	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			201.00 F		
23	B. Boiling Point (BP)	300.00 F			301.00 F		
24	Flammable Combustible Liquids Points		3			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			24	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			NUTS N' BOLTS 227		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8030000812339		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBHQSC, 61603		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			1-METHYL-1-PHENYLETHYL HYDROPEROXIDE (2.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		No medical	0	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		10.00 lbs	8	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		18	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			201.00 F		
23	B. Boiling Point (BP)	300.00 F			301.00 F		
24	Flammable Combustible Liquids Points		3			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			22	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
		INFORMATION	Pts	Code	INFORMATION	Pts	Code
1	1. Information Needed						
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			SEALANT GRADE A 8831		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8030000812338		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBPRCD, 05972		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			TRIBUTYLAMINE (2.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		No medical	0	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		10	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			201.00 F		
23	B. Boiling Point (BP)	300.00 F			301.00 F		
24	Flammable Combustible Liquids Points		3			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			18	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			ANAEROBIC ADHESIVE/SEALANT GRADE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8030000676744		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBKJDJ, SAFTL		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			SACCHARIN (1.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		No medical	0	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		100.00 lbs	6	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		16	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			200.00 F		
23	B. Boiling Point (BP)	300.00 F			301.00 F		
24	Flammable Combustible Liquids Points		3			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			20	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			ANAEROBIC ADHESIVE/SEALANT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8030000812339		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBRJZY, SAFTL		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			NOT HAZARDOUS (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			251.00 F		
23	B. Boiling Point (BP)	300.00 F			301.00 F		
24	Flammable Combustible Liquids Points		3			2	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			9	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			TB 1361A SEALING COMPOUND		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8030000812338		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBCXCY, 60859		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			TERTIARY AMINE (2.80%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			201.00 F		
23	B. Boiling Point (BP)	300.00 F			6001.00 F		
24	Flammable Combustible Liquids Points		3			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			13	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			GRADE A RED SEALING COMPOUND		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8030000812339		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBCXWQ, 81349		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			TERTIARY AMINE (2.80%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			201.00 F		
23	B. Boiling Point (BP)	300.00 F			Not Listed		
24	Flammable Combustible Liquids Points		3			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			13	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			BLUE RESIN SOLUTION - G7526F		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8040005304820		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBJQCR, 65313		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			2-ETHOXYETHANOL (4.70%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		5.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			65.00 F		
23	B. Boiling Point (BP)	300.00 F			284.00 F		
24	Flammable Combustible Liquids Points		3			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		3.80 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			31	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			NEOPRENE ADHESIVE N-1051		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8040006644318		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBFKNV, 56800		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			HEXANE (33.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		50.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		1.00 lbs	10	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		28	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			19.00 F		
23	B. Boiling Point (BP)	300.00 F			152.00 F		
24	Flammable Combustible Liquids Points		3			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		0.64 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			40	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			3M 90 HIGH STRENGTH ADHESIVE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			804000F002485		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBBLBB, 04963		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			CYCLOHEXANE (5.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		300.00 ppm	3	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		19	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			-40.00 F		
23	B. Boiling Point (BP)	300.00 F			Not Listed		
24	Flammable Combustible Liquids Points		3			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			22	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
		INFORMATION	Pts	Code	INFORMATION	Pts	Code
(1)	1. Information Needed						
(2)	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			3M BRAND SPRAY 80 NEOPRENE CONTACT		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
(5)	D. National Stock Number (NSN), if any	8030009073961			804000F002486		
(6)	E. MSDS, Cage Number	PBFVYT, 05972			PBBBLB, 04963		
(7)	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			TOLUENE (2.50%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		50.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		1000.00 lbs	4	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		21	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			2
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	200.00 F			-42.00 F		
(23)	B. Boiling Point (BP)	300.00 F			Not Listed		
(24)	Flammable Combustible Liquids Points		3			0	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye Protection Only	3	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		Not Listed	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			24	
(28)	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			2141 RUBBER AND GASKET ADHESIVE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8040010682423		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBGWZH, 04963		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			TOLUENE (35.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		50.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		26	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			-14.00 F		
23	B. Boiling Point (BP)	300.00 F			132.00 F		
24	Flammable Combustible Liquids Points		3			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		180.00 mmHg	12	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			51	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCTITE GRADE A ANAEROBIC ADHESIVE			SCOTCH-GRIP 1300 RUBBER AND GASKET ADHESIVE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Gluing rubber together			Gluing rubber together		
5	D. National Stock Number (NSN), if any	8030009073961			8040010234173		
6	E. MSDS, Cage Number	PBFVYT, 05972			PBKHTS, 04963		
7	F. Specific Chemical Constituent Analyzed	DIMETHACRYLATE ESTERS (91.00%)			HEXANE (7.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	2000.00 ppm	2		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		1.00 lbs	10	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		6	IV		27	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	20.00 Hrs/wk		B	20.00 Hrs/wk		B
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	200.00 F			-14.00 F		
23	B. Boiling Point (BP)	300.00 F			140.00 F		
24	Flammable Combustible Liquids Points		3			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	Not Listed	0		120.00 mmHg	12	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		9			52	
28	**10. Material Selection Recommendation**	LOCTITE GRADE A ANAEROBIC ADHESIVE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			4560-30-F A/D PRIMER YELLOW CHROMATE FREE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			801000N056332		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBWNCL, 65860		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			ISOBUTYL ALCOHOL (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		31	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			24.00 F		
23	B. Boiling Point (BP)	244.40 F			176.00 F		
24	Flammable Combustible Liquids Points		9			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		8.80 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			45	
28	**10. Material Selection Recommendation**	SO SURE YELLOW PRIMER (84-331) AEROSOL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			TT-P-645B PRIMER, PC H2-016		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			8010012851328		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBMXLL, 5V430		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			COBALT (0.09%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.05 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			110.00 F		
23	B. Boiling Point (BP)	244.40 F			396.00 F		
24	Flammable Combustible Liquids Points		9			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		9.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			33	
28	**10. Material Selection Recommendation**	TT-P-645B PRIMER, PC H2-016					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			FORMULA 84 H2-017 PRIMER COATING YELLOW 33793		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			8010012851329		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBXCHN, 5V430		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			100 SOLVENT (11.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		50.00 ppm	16	
10	B. Medical Effects (Table A-2d)	Temporary	4		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		40	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			2
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			110.00 F		
23	B. Boiling Point (BP)	244.40 F			396.00 F		
24	Flammable Combustible Liquids Points		9			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		9.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			52	
28	**10. Material Selection Recommendation**	SO SURE YELLOW PRIMER (84-331) AEROSOL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			TT-P-1757A TYPE I YELLOW PRIMER COATING		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			8010005152208		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBNCDP, 3Z268		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			ZINC CHROMATE (24.22%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.01 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			25.00 F		
23	B. Boiling Point (BP)	244.40 F			315.00 F		
24	Flammable Combustible Liquids Points		9			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF) Sum of 18 + 24 + 25 + 26		37			42	
28	**10. Material Selection Recommendation**	SO SURE YELLOW PRIMER (84-331) AEROSOL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			TT-P-645B FORMULA 84 NO 33793		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			8010012851329		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBLNMP, 3Z268		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			HYDROCARBON MIXTURE (20.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			102.00 F		
23	B. Boiling Point (BP)	244.40 F			315.00 F		
24	Flammable Combustible Liquids Points		9			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		2.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			37	
28	**10. Material Selection Recommendation**	SO SURE YELLOW PRIMER (84-331) AEROSOL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			TT-P-1757A TYPE I YELLOW P759A-66		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
(5)	D. National Stock Number (NSN), if any	8010002970593			8010005152208		
(6)	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBPRGY, 00297		
(7)	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			LEAD CHROMATE (AS CHROMIUM VI) (0.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.05 mg/m3	5	
(10)	B. Medical Effects (Table A-2d)	Temporary	4		Permanent,	16	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		29	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	62.60 F			15.00 F		
(23)	B. Boiling Point (BP)	244.40 F			Not Listed		
(24)	Flammable Combustible Liquids Points		9			0	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			33	
(28)	**10. Material Selection Recommendation**	TT-P-1757A TYPE I YELLOW P759A-66					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			TT-P-1757A, TY I, VOC COMPLIANT YELLOW PRIMER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			8010002970593		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBNWLC, 00297		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			ZINC CHROMATE (22.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.01 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			46.00 F		
23	B. Boiling Point (BP)	244.40 F			Not Listed		
24	Flammable Combustible Liquids Points		9			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			33	
28	**10. Material Selection Recommendation**	TT-P-1757A, TY I, VOC COMPLIANT YELLOW PRIMER COATING					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			P-441A ZINC CHROMATE PRIMER		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
(5)	D. National Stock Number (NSN), if any	8010002970593			8010002970593		
(6)	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBDWCC, 71191		
(7)	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			ZINC CHROMATE (25.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.01 mg/m3	5	
(10)	B. Medical Effects (Table A-2d)	Temporary	4		Permanent,	12	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		25	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	62.60 F			50.00 F		
(23)	B. Boiling Point (BP)	244.40 F			Not Listed		
(24)	Flammable Combustible Liquids Points		9			0	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			29	
(28)	**10. Material Selection Recommendation**	P-441A ZINC CHROMATE PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			ZINC CHROMATE PRIMER P-441P		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			8010002970593		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBHMLV, 80592		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			ZINC CHROMATE (25.60%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.01 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			50.00 F		
23	B. Boiling Point (BP)	244.40 F			Not Listed		
24	Flammable Combustible Liquids Points		9			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			33	
28	**10. Material Selection Recommendation**	ZINC CHROMATE PRIMER P-441P					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			TT-P-1757 YELLOW ZINC CHROMATE PRIMER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			8010002970593		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBHMLT, 07708		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			ZINC CHROMATE (5.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.01 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			0.00 F		
23	B. Boiling Point (BP)	244.40 F			335.00 F		
24	Flammable Combustible Liquids Points		9			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			42	
28	**10. Material Selection Recommendation**	SO SURE YELLOW PRIMER (84-331) AEROSOL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			PRIMER COATING ZINC CHROMATE COMP L		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			8010005152208		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBFCBZ, 61196		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			ZINC CHROMATE (7.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.01 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		13	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			13.00 F		
23	B. Boiling Point (BP)	244.40 F			290.00 F		
24	Flammable Combustible Liquids Points		9			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory and Eye Protection	6	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			28	
28	**10. Material Selection Recommendation**	PRIMER COATING ZINC CHROMATE COMP L					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			X-3917Y TT-P-1757 YELLOW ZINC CHROMATE PRIMER		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
(5)	D. National Stock Number (NSN), if any	8010002970593			8010005152211		
(6)	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBFCCG, 34346		
(7)	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			METHYL ALCOHOL (0.90%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		200.00 ppm	4	
(10)	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		5000.00 lbs	2	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		18	III
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	62.60 F			54.00 F		
(23)	B. Boiling Point (BP)	244.40 F			148.64 F		
(24)	Flammable Combustible Liquids Points		9			9	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		100.00 mmHg	10	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			41	
(28)	**10. Material Selection Recommendation**	SO SURE YELLOW PRIMER (84-331) AEROSOL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			ZINC CHROMATE PRIMER GP-0004-1757		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			8010002970593		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBHFPM, 59581		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			ZINC CHROMATE (6.73%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.01 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			10.00 F		
23	B. Boiling Point (BP)	244.40 F			Not Listed		
24	Flammable Combustible Liquids Points		9			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			17	
28	**10. Material Selection Recommendation**	ZINC CHROMATE PRIMER GP-0004-1757					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			F-84 TT-P-645B ZINC MOLYBDATE ALKYD PRIMER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			8010012851329		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBTSSX, 60163		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			MINERAL SPIRITS (14.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			100.00 F		
23	B. Boiling Point (BP)	244.40 F			302.00 F		
24	Flammable Combustible Liquids Points		9			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			27	
28	**10. Material Selection Recommendation**	F-84 TT-P-645B ZINC MOLYBDATE ALKYD PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			16A PRIMER, 119 YELLOW		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
(5)	D. National Stock Number (NSN), if any	8010002970593			801000N055487		
(6)	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBWBHK, 0UPL1		
(7)	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			XYLENE (14.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		100.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	8	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		1000.00 lbs	4	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		25	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	62.60 F			-22.00 F		
(23)	B. Boiling Point (BP)	244.40 F			-10.00 F		
(24)	Flammable Combustible Liquids Points		9			10	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		6.72 mmHg	1	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			40	
(28)	**10. Material Selection Recommendation**	SO SURE YELLOW PRIMER (84-331) AEROSOL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			TT-P-645B PRIMER, ZINC CHROMATE ALKYD YELLOW		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			8010001617419		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBJQMW, 00297		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			STODDARD SOLVENT (7.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		9	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			102.00 F		
23	B. Boiling Point (BP)	244.40 F			300.00 F		
24	Flammable Combustible Liquids Points		9			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			23	
28	**10. Material Selection Recommendation**	TT-P-645B PRIMER, ZINC CHROMATE ALKYD YELLOW 33481					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			4560-30F ZINC PRIMER YELLOW - CHROMATE FREE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			801000N006620		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PAAZNP, 65860		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			ISOBUTYL ALCOHOL (9.80%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		19	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			24.00 F		
23	B. Boiling Point (BP)	244.40 F			246.00 F		
24	Flammable Combustible Liquids Points		9			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		8.80 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			33	
28	**10. Material Selection Recommendation**	4560-30F ZINC PRIMER YELLOW - CHROMATE FREE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO SURE YELLOW PRIMER (84-331) AEROSOL			6-204 ZINC CHROMATE METAL PRIMER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Priming boat clamps			Priming boat clamps		
5	D. National Stock Number (NSN), if any	8010002970593			801000F023926		
6	E. MSDS, Cage Number	PAGMKM, 0FTT5			PBNJTP, PPGIN		
7	F. Specific Chemical Constituent Analyzed	ZINC CHROMATE (7.49%)			ZINC POTASSIUM CHROMATE (8.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.01 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		9	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	10.00 Hrs/wk		C	10.00 Hrs/wk		C
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	62.60 F			104.00 F		
23	B. Boiling Point (BP)	244.40 F			468.00 F		
24	Flammable Combustible Liquids Points		9			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		2.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		37			21	
28	**10. Material Selection Recommendation**	6-204 ZINC CHROMATE METAL PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	01920 BLACK LACQUER 17038 AEROSOL			A-4308-17038 AEROSOL GLOSS BLACK		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting flanges			Painting flanges		
5	D. National Stock Number (NSN), if any	8010002906984			8010013316107		
6	E. MSDS, Cage Number	NAAAGA, 09800			PBPPHT, 65860		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (4.00%)			XYLENE (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		33	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	0.25 Hrs/wk		E	0.25 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	19.00 F			Not Listed		
23	B. Boiling Point (BP)	-1.00 F			408.00 F		
24	Flammable Combustible Liquids Points		10			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye Protection Only	3		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	36.70 mmHg	4		9.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			38	
28	**10. Material Selection Recommendation**	A-4308-17038 AEROSOL GLOSS BLACK					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	01920 BLACK LACQUER 17038 AEROSOL			SO SURE LACQUER GLOSS BLACK 17038		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting flanges			Painting flanges		
5	D. National Stock Number (NSN), if any	8010002906984			8010002906984		
6	E. MSDS, Cage Number	NAAAGA, 09800			PBPFWV, 0FTT5		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (4.00%)			TOLUENE (24.68%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	0.25 Hrs/wk		E	0.25 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	19.00 F			Not Listed		
23	B. Boiling Point (BP)	-1.00 F			Not Listed		
24	Flammable Combustible Liquids Points		10			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye Protection Only	3		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	36.70 mmHg	4		60.00 mmHg	6	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			35	
28	**10. Material Selection Recommendation**	SO SURE LACQUER GLOSS BLACK 17038					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	01920 BLACK LACQUER 17038 AEROSOL			ECO SURE BLACK 17038 AEROSOL		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting flanges			Painting flanges		
5	D. National Stock Number (NSN), if any	8010002906984			8010013316107		
6	E. MSDS, Cage Number	NAAAGA, 09800			PBSSMR, 0FTT5		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (4.00%)			AROMATIC 150 (2.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		5.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	0.25 Hrs/wk		E	0.25 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	19.00 F			Not Listed		
23	B. Boiling Point (BP)	-1.00 F			Not Listed		
24	Flammable Combustible Liquids Points		10			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye Protection Only	3		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	36.70 mmHg	4		63.00 mmHg	7	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			32	
28	**10. Material Selection Recommendation**	ECO SURE BLACK 17038 AEROSOL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	01920 BLACK LACQUER 17038 AEROSOL			ECO SURE BLACK 17038 ENAMEL		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting flanges			Painting flanges		
5	D. National Stock Number (NSN), if any	8010002906984			8010013504746		
6	E. MSDS, Cage Number	NAAAGA, 09800			PBSSPF, 0FTT5		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (4.00%)			2-BUTOXYETHANOL (4.33%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	0.25 Hrs/wk		E	0.25 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	19.00 F			-42.00 F		
23	B. Boiling Point (BP)	-1.00 F			Not Listed		
24	Flammable Combustible Liquids Points		10			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye Protection Only	3		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	36.70 mmHg	4		63.00 mmHg	7	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			32	
28	**10. Material Selection Recommendation**	ECO SURE BLACK 17038 ENAMEL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	01920 BLACK LACQUER 17038 AEROSOL			LACQUER, AEROSOL BLACK 17038		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting flanges			Painting flanges		
5	D. National Stock Number (NSN), if any	8010002906984			8010002906984		
6	E. MSDS, Cage Number	NAAAGA, 09800			PBDVHV, 59581		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (4.00%)			METHYLENE CHLORIDE (26.30%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		50.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		22	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	0.25 Hrs/wk		E	0.25 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	19.00 F			-10.00 F		
23	B. Boiling Point (BP)	-1.00 F			Not Listed		
24	Flammable Combustible Liquids Points		10			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye Protection Only	3		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	36.70 mmHg	4		380.00 mmHg	15	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			37	
28	**10. Material Selection Recommendation**	LACQUER, AEROSOL BLACK 17038					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	01920 BLACK LACQUER 17038 AEROSOL			306 BLACK 11A RUSTPROOF PAINT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting flanges			Painting flanges		
5	D. National Stock Number (NSN), if any	8010002906984			8010002906984		
6	E. MSDS, Cage Number	NAAAGA, 09800			PAERVR, 0UPL1		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (4.00%)			XYLENE (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	0.25 Hrs/wk		E	0.25 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	19.00 F			-18.40 F		
23	B. Boiling Point (BP)	-1.00 F			-10.00 F		
24	Flammable Combustible Liquids Points		10			10	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye Protection Only	3		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	36.70 mmHg	4		6.72 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			32	
28	**10. Material Selection Recommendation**	306 BLACK 11A RUSTPROOF PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	01920 BLACK LACQUER 17038 AEROSOL			A-2000 SERIES AEROSOL LACQUER BLACK 17038		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting flanges			Painting flanges		
5	D. National Stock Number (NSN), if any	8010002906984			8010002906984		
6	E. MSDS, Cage Number	NAAAGA, 09800			PAABLA, 65860		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (4.00%)			BUTYL CELLUSOLVE (2.40%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	0.25 Hrs/wk		E	0.25 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	19.00 F			-154.00 F		
23	B. Boiling Point (BP)	-1.00 F			336.00 F		
24	Flammable Combustible Liquids Points		10			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye Protection Only	3		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	36.70 mmHg	4		0.90 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			30	
28	**10. Material Selection Recommendation**	A-2000 SERIES AEROSOL LACQUER BLACK 17038					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	OMEGA 3812 SN 313-2 PAINT REMOVER			PAINT REMOVER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint off surfaces			Cleaning paint off surfaces		
5	D. National Stock Number (NSN), if any	8010001605800			8010001605798		
6	E. MSDS, Cage Number	PBKZWS, 0B5U9			PBDDHJ, 60777		
7	F. Specific Chemical Constituent Analyzed	PHENOL (CARBOLIC ACID) (16.00%)			BENZENE (30.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	5.00 ppm	5		1.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		10.00 lbs	8	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		26	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	40.00 Hrs/wk		A	40.00 Hrs/wk		A
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			1			1
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	175.00 F			105.00 F		
23	B. Boiling Point (BP)	102.00 F			387.00 F		
24	Flammable Combustible Liquids Points		4			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Respiratory, Eye, and Skin	7		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	335.00 mmHg	15		5.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		59			38	
28	**10. Material Selection Recommendation**	PAINT REMOVER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	OMEGA 3812 SN 313-2 PAINT REMOVER			CREST PAINT STRIPPER #29A		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint off surfaces			Cleaning paint off surfaces		
5	D. National Stock Number (NSN), if any	8010001605800			8010002862861		
6	E. MSDS, Cage Number	PBKZWS, 0B5U9			PBXBLC, 77513		
7	F. Specific Chemical Constituent Analyzed	PHENOL (CARBOLIC ACID) (16.00%)			METHYLENE CHLORIDE (70.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	5.00 ppm	5		50.00 ppm	7	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		35	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	40.00 Hrs/wk		A	40.00 Hrs/wk		A
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			1			1
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	175.00 F			Not Listed		
23	B. Boiling Point (BP)	102.00 F			115.00 F		
24	Flammable Combustible Liquids Points		4			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Respiratory, Eye, and Skin	7		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	335.00 mmHg	15		360.00 mmHg	15	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		59			57	
28	**10. Material Selection Recommendation**	CREST PAINT STRIPPER #29A					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	OMEGA 3812 SN 313-2 PAINT REMOVER			INTEX 8573 PAINT REMOVER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint off surfaces			Cleaning paint off surfaces		
5	D. National Stock Number (NSN), if any	8010001605800			8010001605800		
6	E. MSDS, Cage Number	PBKZWS, 0B5U9			PBVYGR, 8Z357		
7	F. Specific Chemical Constituent Analyzed	PHENOL (CARBOLIC ACID) (16.00%)			SODIUM CHROMATE (0.90%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	5.00 ppm	5		0.05 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		10.00 lbs	8	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	40.00 Hrs/wk		A	40.00 Hrs/wk		A
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			1			1
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	175.00 F			Not Listed		
23	B. Boiling Point (BP)	102.00 F			103.00 F		
24	Flammable Combustible Liquids Points		4			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Respiratory, Eye, and Skin	7		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	335.00 mmHg	15		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		59			32	
28	**10. Material Selection Recommendation**	INTEX 8573 PAINT REMOVER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	OMEGA 3812 SN 313-2 PAINT REMOVER			TT-R-251J TYPE III CLASS B PAINT REMOVER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint off surfaces			Cleaning paint off surfaces		
5	D. National Stock Number (NSN), if any	8010001605800			8010001605800		
6	E. MSDS, Cage Number	PBKZWS, 0B5U9			PBDDHP, 60672		
7	F. Specific Chemical Constituent Analyzed	PHENOL (CARBOLIC ACID) (16.00%)			CHLORINATED HYDROCARBONS (70.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	5.00 ppm	5		500.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		9	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	40.00 Hrs/wk		A	40.00 Hrs/wk		A
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			1			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	175.00 F			Not Listed		
23	B. Boiling Point (BP)	102.00 F			105.00 F		
24	Flammable Combustible Liquids Points		4			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Respiratory, Eye, and Skin	7		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	335.00 mmHg	15		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		59			13	
28	**10. Material Selection Recommendation**	TT-R-251J TYPE III CLASS B PAINT REMOVER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	OMEGA 3812 SN 313-2 PAINT REMOVER			NONFLAMMABLE PAINT REMOVER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint off surfaces			Cleaning paint off surfaces		
5	D. National Stock Number (NSN), if any	8010001605800			8010001605800		
6	E. MSDS, Cage Number	PBKZWS, 0B5U9			PBHCYG, 0CA98		
7	F. Specific Chemical Constituent Analyzed	PHENOL (CARBOLIC ACID) (16.00%)			METHYLENE CHLORIDE (50.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	5.00 ppm	5		50.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		30	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	40.00 Hrs/wk		A	40.00 Hrs/wk		A
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			1			1
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	175.00 F			Not Listed		
23	B. Boiling Point (BP)	102.00 F			120.00 F		
24	Flammable Combustible Liquids Points		4			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Respiratory, Eye, and Skin	7		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	335.00 mmHg	15		380.00 mmHg	15	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		59			49	
28	**10. Material Selection Recommendation**	NONFLAMMABLE PAINT REMOVER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	OMEGA 3812 SN 313-2 PAINT REMOVER			PAINT REMOVER, 400063 NONFLAMMABLE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint off surfaces			Cleaning paint off surfaces		
5	D. National Stock Number (NSN), if any	8010001605800			8010001605800		
6	E. MSDS, Cage Number	PBKZWS, 0B5U9			PBHCYH, 25451		
7	F. Specific Chemical Constituent Analyzed	PHENOL (CARBOLIC ACID) (16.00%)			2-BUTOXYETHANOL (4.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	5.00 ppm	5		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	40.00 Hrs/wk		A	40.00 Hrs/wk		A
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			1			1
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	175.00 F			Not Listed		
23	B. Boiling Point (BP)	102.00 F			340.00 F		
24	Flammable Combustible Liquids Points		4			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Respiratory, Eye, and Skin	7		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	335.00 mmHg	15		300.00 mmHg	15	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		59			44	
28	**10. Material Selection Recommendation**	PAINT REMOVER, 400063 NONFLAMMABLE					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	OMEGA 3812 SN 313-2 PAINT REMOVER			PAINT REMOVER, HIGH VISCOSITY		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint off surfaces			Cleaning paint off surfaces		
5	D. National Stock Number (NSN), if any	8010001605800			8010001605800		
6	E. MSDS, Cage Number	PBKZWS, 0B5U9			PBHCYJ, 91522		
7	F. Specific Chemical Constituent Analyzed	PHENOL (CARBOLIC ACID) (16.00%)			2-BUTOXYETHANOL (3.80%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	5.00 ppm	5		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	40.00 Hrs/wk		A	40.00 Hrs/wk		A
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			1			1
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	175.00 F			Not Listed		
23	B. Boiling Point (BP)	102.00 F			340.00 F		
24	Flammable Combustible Liquids Points		4			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Respiratory, Eye, and Skin	7		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	335.00 mmHg	15		274.00 mmHg	15	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		59			47	
28	**10. Material Selection Recommendation**	PAINT REMOVER, HIGH VISCOSITY					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	OMEGA 3812 SN 313-2 PAINT REMOVER			ORGANIC PAINT REMOVER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint off surfaces			Cleaning paint off surfaces		
5	D. National Stock Number (NSN), if any	8010001605800			8010001605799		
6	E. MSDS, Cage Number	PBKZWS, 0B5U9			PBDDHL, 80244		
7	F. Specific Chemical Constituent Analyzed	PHENOL (CARBOLIC ACID) (16.00%)			TOLUENE (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	5.00 ppm	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		33	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	40.00 Hrs/wk		A	40.00 Hrs/wk		A
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			1			1
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	175.00 F			Not Listed		
23	B. Boiling Point (BP)	102.00 F			104.00 F		
24	Flammable Combustible Liquids Points		4			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Respiratory, Eye, and Skin	7		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	335.00 mmHg	15		340.00 mmHg	15	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		59			40	
28	**10. Material Selection Recommendation**	ORGANIC PAINT REMOVER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			MINERAL SPIRITS ODORLESS		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010010213320		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBLJLT, 7L600		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			ALIPHATIC PETROLEUM DISTILLATES (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		100.00 ppm	16	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		20	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			120.00 F		
23	B. Boiling Point (BP)	300.00 F			340.00 F		
24	Flammable Combustible Liquids Points		8			6	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		2.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			31	
28	**10. Material Selection Recommendation**	MINERAL SPIRITS ODORLESS					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			PAINT THINNER/MINERAL SPIRITS		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			801000N024841		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBMNXH, 86589		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			PARAFFINS (97.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		250.00 ppm	7	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		15	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			104.00 F		
23	B. Boiling Point (BP)	300.00 F			316.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		5.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			30	
28	**10. Material Selection Recommendation**	PAINT THINNER/MINERAL SPIRITS					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			CHARTERSOL 300-66 PETROLEUM ALIPHATIC		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010005587026		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBFFJX, 60776		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			BENZIN, NAPHTHA (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		100.00 ppm	16	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		24	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			105.00 F		
23	B. Boiling Point (BP)	300.00 F			386.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		5.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			36	
28	**10. Material Selection Recommendation**	CHARTERSOL 300-66 PETROLEUM ALIPHATIC HYDROCARBONS					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			PAINT THINNER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010005587026		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBKZZH, 60777		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			BENZENE (0.09%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		1.00 mg/m3	4	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		10.00 lbs	8	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		28	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			109.00 F		
23	B. Boiling Point (BP)	300.00 F			391.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		5.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			40	
28	**10. Material Selection Recommendation**	PAINT THINNER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			THINNER PAINT TYPE I REGULAR MINERAL SPIRITS		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010002422089		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBKBBM, 4N760		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			STODDARD SOLVENT (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		100.00 ppm	16	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		20	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			100.00 F		
23	B. Boiling Point (BP)	300.00 F			308.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		3.10 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			32	
28	**10. Material Selection Recommendation**	THINNER PAINT TYPE I REGULAR MINERAL SPIRITS					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			MINERAL SPIRITS, TT-T-291F TYPE I		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010002422089		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBHJKS, 4N760		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			66/3 MINERAL SPIRITS (65.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		100.00 ppm	7	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		15	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			105.00 F		
23	B. Boiling Point (BP)	300.00 F			405.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Respiratory and Eye Protection	6	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		1.80 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			29	
28	**10. Material Selection Recommendation**	MINERAL SPIRITS, TT-T-291F TYPE I					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			STANDARD 350H TT-T-291E TYPE II GRADE A THINNER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010002422089		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBDMQM, 33958		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			ALIPHATIC HYDROCARBON (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		250.00 ppm	12	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		16	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			106.00 F		
23	B. Boiling Point (BP)	300.00 F			300.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Respiratory and Eye Protection	6	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		5.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			30	
28	**10. Material Selection Recommendation**	STANDARD 350H TT-T-291E TYPE II GRADE A THINNER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			CHEVRON THINNER 350H		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010002422089		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBJFNL, 33958		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			1,2,4-TRIMETHYLBENZENE (2.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			105.00 F		
23	B. Boiling Point (BP)	300.00 F			404.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		2.20 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			37	
28	**10. Material Selection Recommendation**	CHEVRON THINNER 350H					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			350B PAINT THINNER, MINERAL SPIRITS		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010002422086		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBDMQK, 94548		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			BENZENE (0.40%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		1.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		10.00 lbs	8	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			105.00 F		
23	B. Boiling Point (BP)	300.00 F			387.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		5.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			44	
28	**10. Material Selection Recommendation**	T-10 PAINT THINNER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			SOLVENT S-66 THINNER, PAINT PRODUCTS		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010002422089		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBKSKD, 0A9L8		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			BENZENE (0.05%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		1.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		10.00 lbs	8	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			105.00 F		
23	B. Boiling Point (BP)	300.00 F			369.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		2.70 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			41	
28	**10. Material Selection Recommendation**	T-10 PAINT THINNER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			PAINT THINNER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010002422089		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBRKCH, 0A9L8		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			BENZENE (0.09%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		5.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		10.00 lbs	8	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			105.00 F		
23	B. Boiling Point (BP)	300.00 F			385.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		2.70 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			29	
28	**10. Material Selection Recommendation**	PAINT THINNER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			266D THINNER, DOPE AND LACQUER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010002422089		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBDMQP, 60786		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			TOLUENE (20.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		33	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			2.00 F		
23	B. Boiling Point (BP)	300.00 F			268.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		49.00 mmHg	5	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			50	
28	**10. Material Selection Recommendation**	T-10 PAINT THINNER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			MINERAL SPIRITS KLEAN-STRIP, PN-GMS44		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010008377969		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBMXJF, 25451		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			MINERAL SPIRITS (99.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		100.00 ppm	16	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		28	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			104.00 F		
23	B. Boiling Point (BP)	300.00 F			360.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		3.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			40	
28	**10. Material Selection Recommendation**	MINERAL SPIRITS KLEAN-STRIP, PN-GMS44					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			THINNER, REGULAR, TYPE I		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010002422089		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBGWVF, 9V846		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			MINERAL SPIRITS (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		100.00 ppm	16	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		28	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			111.00 F		
23	B. Boiling Point (BP)	300.00 F			390.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			43	
28	**10. Material Selection Recommendation**	T-10 PAINT THINNER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	T-10 PAINT THINNER			REGULAR MINERAL SPIRITS, THINNER		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
(5)	D. National Stock Number (NSN), if any	8010LLDM10117			8010002422089		
(6)	E. MSDS, Cage Number	PAABCD, 1HK86			PBQYCB, 0BBA1		
(7)	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			BENZENE (0.09%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		1.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		10.00 lbs	8	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		25	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			105.00 F		
(23)	B. Boiling Point (BP)	300.00 F			373.00 F		
(24)	Flammable Combustible Liquids Points		8			7	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		One Point Skin Protection	1	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		27.00 mmHg	3	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			36	
(28)	**10. Material Selection Recommendation**	REGULAR MINERAL SPIRITS, THINNER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			TT-T-291F PAINT THINNER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010002422089		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBDMQN, 59142		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			PETROLEUM HYDROCARBON BLEND (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	0.00 Hrs/wk		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			105.00 F		
23	B. Boiling Point (BP)	300.00 F			390.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		2.40 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			18	
28	**10. Material Selection Recommendation**	TT-T-291F PAINT THINNER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	T-10 PAINT THINNER			291E PAINT THINNER		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
(5)	D. National Stock Number (NSN), if any	8010LLDM10117			8010005587026		
(6)	E. MSDS, Cage Number	PAABCD, 1HK86			PBFFJZ, 81348		
(7)	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			SOLVENTS (100.0%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		250.00 ppm	12	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		20	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			100.00 F		
(23)	B. Boiling Point (BP)	300.00 F			405.00 F		
(24)	Flammable Combustible Liquids Points		8			7	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		77.00 mmHg	8	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			39	
(28)	**10. Material Selection Recommendation**	291E PAINT THINNER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			THINNER (4-068), GTA435		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			801000N036910		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBRDRN, 26351		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			2-BUTOXY-ETHANOL (50.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		25.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		22	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			100.00 F		
23	B. Boiling Point (BP)	300.00 F			340.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		0.60 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			33	
28	**10. Material Selection Recommendation**	THINNER (4-068), GTA435					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			ODORLESS MINERAL SPIRITS		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			8010010213320		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PBSHVM, 86961		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			ODORLESS MINERAL SPIRITS (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			125.00 F		
23	B. Boiling Point (BP)	300.00 F			395.00 F		
24	Flammable Combustible Liquids Points		8			6	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		5.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			17	
28	**10. Material Selection Recommendation**	ODORLESS MINERAL SPIRITS					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			21-300 ODORLESS PAINT THINNER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			801000F005982		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PAAODO, PPGIN		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			HYDROTREATED HEAVY NAPHTHA (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			125.00 F		
23	B. Boiling Point (BP)	300.00 F			205.00 F		
24	Flammable Combustible Liquids Points		8			6	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		0.50 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			16	
28	**10. Material Selection Recommendation**	21-300 ODORLESS PAINT THINNER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			THIN-X		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			801000F005982		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PAAODR, PPGIN		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			TOLUENE (0.40%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			100.00 F		
23	B. Boiling Point (BP)	300.00 F			202.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		9.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			33	
28	**10. Material Selection Recommendation**	THIN-X					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	T-10 PAINT THINNER			ODORLESS THIN-X		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Cleaning paint brushes			Cleaning paint brushes		
5	D. National Stock Number (NSN), if any	8010LLDM10117			801000F005982		
6	E. MSDS, Cage Number	PAABCD, 1HK86			PAAODL, PPGIN		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (40.00%)			ODORLESS THIN-X (100.0%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		32	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			125.00 F		
23	B. Boiling Point (BP)	300.00 F			395.00 F		
24	Flammable Combustible Liquids Points		8			6	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	No PPE Requirements Available	0		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.90 mmHg	1		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		41			13	
28	**10. Material Selection Recommendation**	ODORLESS THIN-X					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			BRA640 INTERVIRON ANTI-FOULING RED PAINT		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Painting tires			Painting tires		
(5)	D. National Stock Number (NSN), if any	8010012214815			8010013398708		
(6)	E. MSDS, Cage Number	PAADCB, 1HK86			PBQYPV, 26351		
(7)	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			N-BUTYL ALCOHOL (3.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		50.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		5000.00 lbs	2	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		23	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			80.00 F		
(23)	B. Boiling Point (BP)	644.00 F			280.00 F		
(24)	Flammable Combustible Liquids Points		8			8	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		Not Listed	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			38	
(28)	**10. Material Selection Recommendation**	BRA640 INTERVIRON ANTI-FOULING RED PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			N-5564 GLOSS RED SILICONE ENAMEL 11105		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting tires			Painting tires		
5	D. National Stock Number (NSN), if any	8010012214815			8010013499006		
6	E. MSDS, Cage Number	PAADCB, 1HK86			PBWRGT, 02388		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			COBALT COMPOUNDS (0.90%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		0.10 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			107.00 F		
23	B. Boiling Point (BP)	644.00 F			398.00 F		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			36	
28	**10. Material Selection Recommendation**	N-5564 GLOSS RED SILICONE ENAMEL 11105					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			888 SERIES WATER BASE ANTIFOUING PAINT		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Painting tires			Painting tires		
(5)	D. National Stock Number (NSN), if any	8010012214815			801000N059301		
(6)	E. MSDS, Cage Number	PAADCB, 1HK86			PBXJJN, 9D157		
(7)	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			COPPER (CUPROUS OXIDE) (68.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		0.10 mg/m3	7	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		5000.00 lbs	2	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		21	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			Not Listed		
(23)	B. Boiling Point (BP)	644.00 F			Not Listed		
(24)	Flammable Combustible Liquids Points		8			0	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		Not Listed	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			25	
(28)	**10. Material Selection Recommendation**	888 SERIES WATER BASE ANTIFOUING PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			ANTIFOULING PAINT, 76600-51110 RED		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting tires			Painting tires		
5	D. National Stock Number (NSN), if any	8010012214815			8010013398707		
6	E. MSDS, Cage Number	PAADCB, 1HK86			PHEMPE, HEMPE		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			N-BUTANOL (2.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		27	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			72.00 F		
23	B. Boiling Point (BP)	644.00 F			405.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			36	
28	**10. Material Selection Recommendation**	ANTIFOULING PAINT, 76600-51110 RED					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
		INFORMATION	Pts	Code	INFORMATION	Pts	Code
(1)	1. Information Needed						
(2)	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			ANTIFOULING PAINT, 76600-50300 LIGHT RED		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Painting tires			Painting tires		
(5)	D. National Stock Number (NSN), if any	8010012214815			8010013398709		
(6)	E. MSDS, Cage Number	PAADCB, 1HK86			PHEMPL, HEMPE		
(7)	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			N-BUTANOL (2.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		50.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		5000.00 lbs	2	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		0.00 tons/yr	10	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		37	I
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			3
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			72.00 F		
(23)	B. Boiling Point (BP)	644.00 F			405.00 F		
(24)	Flammable Combustible Liquids Points		8			9	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		Not Listed	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			46	
(28)	**10. Material Selection Recommendation**	DEVOE ABC #3 RED AF PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			F-121 VINYL ANTIFOULING RED PAINT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting tires			Painting tires		
5	D. National Stock Number (NSN), if any	8010012214815			8010012867050		
6	E. MSDS, Cage Number	PAADCB, 1HK86			PBQDBJ, 60163		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			2-PENTANONE (9.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		19	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			60.00 F		
23	B. Boiling Point (BP)	644.00 F			286.00 F		
24	Flammable Combustible Liquids Points		8			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		15.00 mmHg	2	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			33	
28	**10. Material Selection Recommendation**	F-121 VINYL ANTIFOULING RED PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			VINYL RED ANTIFOULING PAINT		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Painting tires			Painting tires		
(5)	D. National Stock Number (NSN), if any	8010012214815			8010002904075		
(6)	E. MSDS, Cage Number	PAADCB, 1HK86			PBDVDQ, 60163		
(7)	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			METHYL ISOBUTYL KETONE (19.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		50.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		5000.00 lbs	2	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		19	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			13.90 F		
(23)	B. Boiling Point (BP)	644.00 F			118.30 F		
(24)	Flammable Combustible Liquids Points		8			9	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	9	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		16.00 mmHg	2	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			39	
(28)	**10. Material Selection Recommendation**	VINYL RED ANTIFOULING PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			INTERCLENE ANTIFOULING RED, BRA540		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting tires			Painting tires		
5	D. National Stock Number (NSN), if any	8010012214815			8010012419735		
6	E. MSDS, Cage Number	PAADCB, 1HK86			PBPVJL, 69827		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			N-BUTYL ALCOHOL (7.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		23	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			80.00 F		
23	B. Boiling Point (BP)	644.00 F			280.00 F		
24	Flammable Combustible Liquids Points		8			8	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			36	
28	**10. Material Selection Recommendation**	INTERCLENE ANTIFOULING RED, BRA540					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			SUPER BOTTOMKOTE RED, 456		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Painting tires			Painting tires		
(5)	D. National Stock Number (NSN), if any	8010012214815			801000N038383		
(6)	E. MSDS, Cage Number	PAADCB, 1HK86			PBRDYS, 26351		
(7)	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			COPPER OXIDE (62.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		0.10 mg/m3	7	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		27	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			81.00 F		
(23)	B. Boiling Point (BP)	644.00 F			281.00 F		
(24)	Flammable Combustible Liquids Points		8			8	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		Not Listed	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			39	
(28)	**10. Material Selection Recommendation**	SUPER BOTTOMKOTE RED, 456					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			MIL-P-15931F RED ANTIFOULING, TYPE I CLASS		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting tires			Painting tires		
5	D. National Stock Number (NSN), if any	8010012214815			8010012867050		
6	E. MSDS, Cage Number	PAADCB, 1HK86			PBWCHR, 26351		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			METHYL ISOBUTYL KETONE (7.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		No Medical	0	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		15	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			73.00 F		
23	B. Boiling Point (BP)	644.00 F			280.00 F		
24	Flammable Combustible Liquids Points		8			8	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		16.00 mmHg	2	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			25	
28	**10. Material Selection Recommendation**	MIL-P-15931F RED ANTIFOULING, TYPE I CLASS I, 4050					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			WOOLSEY VINELAST 720 PERMANENT RED		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Painting tires			Painting tires		
(5)	D. National Stock Number (NSN), if any	8010012214815			8010012419735		
(6)	E. MSDS, Cage Number	PAADCB, 1HK86			PAVINE, 00297		
(7)	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			METHYL ISOBUTYL KETONE (7.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		50.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		5000.00 lbs	2	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		23	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	80.00 F			75.00 F		
(23)	B. Boiling Point (BP)	644.00 F			Not Listed		
(24)	Flammable Combustible Liquids Points		8			8	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		16.00 mmHg	2	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			36	
(28)	**10. Material Selection Recommendation**	WOOLSEY VINELAST 720 PERMANENT RED					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			WOOLSEY NEPTUNE II WB 551 RED		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting tires			Painting tires		
5	D. National Stock Number (NSN), if any	8010012214815			8010012419735		
6	E. MSDS, Cage Number	PAADCB, 1HK86			PANEPT, 00297		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			ETHYLENE GLYCOL MONOBUTYL ETHER (2.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			140.00 F		
23	B. Boiling Point (BP)	644.00 F			Not Listed		
24	Flammable Combustible Liquids Points		8			5	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		300.00 mmHg	15	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			40	
28	**10. Material Selection Recommendation**	WOOLSEY NEPTUNE II WB 551 RED					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			1675 TRINIDAD RED		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting tires			Painting tires		
5	D. National Stock Number (NSN), if any	8010012214815			8010012419735		
6	E. MSDS, Cage Number	PAADCB, 1HK86			PATRIN, 00297		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			PETROLEUM DISTILLATES (7.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			104.00 F		
23	B. Boiling Point (BP)	644.00 F			Not Listed		
24	Flammable Combustible Liquids Points		8			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			31	
28	**10. Material Selection Recommendation**	1675 TRINIDAD RED					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			1670 ACP-50 RED		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting tires			Painting tires		
5	D. National Stock Number (NSN), if any	8010012214815			8010012419735		
6	E. MSDS, Cage Number	PAADCB, 1HK86			PAAACP, 00297		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			N-BUTYL ALCOHOL (12.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		23	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			92.00 F		
23	B. Boiling Point (BP)	644.00 F			Not Listed		
24	Flammable Combustible Liquids Points		8			8	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		5.50 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			35	
28	**10. Material Selection Recommendation**	1670 ACP-50 RED					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			1618 UNEPOXY PLUS RED		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting tires			Painting tires		
5	D. National Stock Number (NSN), if any	8010012214815			8010012419735		
6	E. MSDS, Cage Number	PAADCB, 1HK86			PAUNEP, 00297		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			PETROLEUM DISTILLATES (12.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		N/K	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			85.00 F		
23	B. Boiling Point (BP)	644.00 F			Not Listed		
24	Flammable Combustible Liquids Points		8			8	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			32	
28	**10. Material Selection Recommendation**	1618 UNEPOXY PLUS RED					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	DEVOE ABC #3 RED AF PAINT			NEPTUNE 710A ROYAL RED ANTIFOULING PAINT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Painting tires			Painting tires		
5	D. National Stock Number (NSN), if any	8010012214815			801000D002472		
6	E. MSDS, Cage Number	PAADCB, 1HK86			PBHBVZ, 00297		
7	F. Specific Chemical Constituent Analyzed	N-BUTYL ALCOHOL (10.00%)			CUPROUS OXIDE (68.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	5		0.10 mg/m3	7	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		31	I		23	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	80.00 F			80.00 F		
23	B. Boiling Point (BP)	644.00 F			Not Listed		
24	Flammable Combustible Liquids Points		8			8	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	5.50 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			35	
28	**10. Material Selection Recommendation**	NEPTUNE 710A ROYAL RED ANTIFOULING PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCQUIC PRIMER T			ACCRABOND GRADE A MIL-S-22473		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Applied to nuts and bolts			Applied to nuts and bolts		
5	D. National Stock Number (NSN), if any	8030LLDM10156			8030000676744		
6	E. MSDS, Cage Number	PAAFAZ, 05972			PBJYQN, 5V071		
7	F. Specific Chemical Constituent Analyzed	TERT-BUTYL ALCOHOL (2.00%)			ETHYLENE GLYCOL METHACRYLATE MONOMER		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	5		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	147.00 F			251.00 F		
23	B. Boiling Point (BP)	180.00 F			393.00 F		
24	Flammable Combustible Liquids Points		5			2	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		One Point Skin Protection	1	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	100.00 mmHg	10		0.01 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		36			9	
28	**10. Material Selection Recommendation**	ACCRABOND GRADE A MIL-S-22473					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCQUIC PRIMER T			NUTS N' BOLTS 227		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Applied to nuts and bolts			Applied to nuts and bolts		
5	D. National Stock Number (NSN), if any	8030LLDM10156			8030000812339		
6	E. MSDS, Cage Number	PAAFAZ, 05972			PBHQSC, 61603		
7	F. Specific Chemical Constituent Analyzed	TERT-BUTYL ALCOHOL (2.00%)			1-METHYL-1-PHENYLETHYL HYDROPEROXIDE (2.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	5		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		No medical	0	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		10.00 lbs	8	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		18	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	147.00 F			201.00 F		
23	B. Boiling Point (BP)	180.00 F			301.00 F		
24	Flammable Combustible Liquids Points		5			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	100.00 mmHg	10		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		36			22	
28	**10. Material Selection Recommendation**	NUTS N' BOLTS 227					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
		INFORMATION	Pts	Code	INFORMATION	Pts	Code
(1)	1. Information Needed						
(2)	A. Candidate Material/Product Name	LOCQUIC PRIMER T			SEALANT GRADE A 8831		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Applied to nuts and bolts			Applied to nuts and bolts		
(5)	D. National Stock Number (NSN), if any	8030LLDM10156			8030000812338		
(6)	E. MSDS, Cage Number	PAAFAZ, 05972			PBPRCD, 05972		
(7)	F. Specific Chemical Constituent Analyzed	TERT-BUTYL ALCOHOL (2.00%)			TRIBUTYLAMINE (2.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	5		2000.00 ppm	2	
(10)	B. Medical Effects (Table A-2d)	Temporary	4		No medical	0	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		10	III
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	147.00 F			201.00 F		
(23)	B. Boiling Point (BP)	180.00 F			301.00 F		
(24)	Flammable Combustible Liquids Points		5			3	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	100.00 mmHg	10		4.00 mmHg	1	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		36			18	
(28)	**10. Material Selection Recommendation**	SEALANT GRADE A 8831					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCQUIC PRIMER T			NUTS N' BOLTS 223		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Applied to nuts and bolts			Applied to nuts and bolts		
5	D. National Stock Number (NSN), if any	8030LLDM10156			8030000812339		
6	E. MSDS, Cage Number	PAAFAZ, 05972			PBHCXG, 61603		
7	F. Specific Chemical Constituent Analyzed	TERT-BUTYL ALCOHOL (2.00%)			SACCHARIN (0.90%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	5		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		100.00 lbs	6	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		20	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	147.00 F			201.00 F		
23	B. Boiling Point (BP)	180.00 F			301.00 F		
24	Flammable Combustible Liquids Points		5			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	100.00 mmHg	10		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		36			24	
28	**10. Material Selection Recommendation**	NUTS N' BOLTS 223					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCQUIC PRIMER T			ANAEROBIC SOLVENT LESS PRIMER		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Applied to nuts and bolts			Applied to nuts and bolts		
5	D. National Stock Number (NSN), if any	8030LLDM10156			8030001236955		
6	E. MSDS, Cage Number	PAAFAZ, 05972			PAASOL, SAFTL		
7	F. Specific Chemical Constituent Analyzed	TERT-BUTYL ALCOHOL (2.00%)			METHACRYLIC ESTER MONOMERS (90.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	5		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Temporary	4		No medical	0	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		2	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	147.00 F			200.00 F		
23	B. Boiling Point (BP)	180.00 F			301.00 F		
24	Flammable Combustible Liquids Points		5			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	100.00 mmHg	10		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		36			6	
28	**10. Material Selection Recommendation**	ANAEROBIC SOLVENT LESS PRIMER					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCQUIC PRIMER T			EF PRIMER 49		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Applied to nuts and bolts			Applied to nuts and bolts		
5	D. National Stock Number (NSN), if any	8030LLDM10156			8030013885604		
6	E. MSDS, Cage Number	PAAFAZ, 05972			PAEFPR, 61603		
7	F. Specific Chemical Constituent Analyzed	TERT-BUTYL ALCOHOL (2.00%)			ISOPROPYL ALCOHOL (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	5		400.00 ppm	3	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		15	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	147.00 F			17.00 F		
23	B. Boiling Point (BP)	180.00 F			Not Listed		
24	Flammable Combustible Liquids Points		5			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	100.00 mmHg	10		173.00 mmHg	12	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		36			31	
28	**10. Material Selection Recommendation**	EF PRIMER 49					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCQUIC PRIMER T			EF PRIMER 50		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Applied to nuts and bolts			Applied to nuts and bolts		
5	D. National Stock Number (NSN), if any	8030LLDM10156			8030013885606		
6	E. MSDS, Cage Number	PAAFAZ, 05972			PAAEFP, 61603		
7	F. Specific Chemical Constituent Analyzed	TERT-BUTYL ALCOHOL (2.00%)			ORGANO-COPPER COMPOUND (0.60%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	5		0.10 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	147.00 F			-4.00 F		
23	B. Boiling Point (BP)	180.00 F			133.00 F		
24	Flammable Combustible Liquids Points		5			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	100.00 mmHg	10		173.00 mmHg	12	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		36			42	
28	**10. Material Selection Recommendation**	LOCQUIC PRIMER T					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	LOCQUIC PRIMER T			LOCQUIC PRIMER T 7471		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Applied to nuts and bolts			Applied to nuts and bolts		
5	D. National Stock Number (NSN), if any	8030LLDM10156			803000N053086		
6	E. MSDS, Cage Number	PAAFAZ, 05972			PBVPKP, 05972		
7	F. Specific Chemical Constituent Analyzed	TERT-BUTYL ALCOHOL (2.00%)			ISOPROPYL ALCOHOL (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	5		400.00 ppm	3	
10	B. Medical Effects (Table A-2d)	Temporary	4		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		17	III		15	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	147.00 F			17.00 F		
23	B. Boiling Point (BP)	180.00 F			180.50 F		
24	Flammable Combustible Liquids Points		5			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	100.00 mmHg	10		172.00 mmHg	12	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		36			40	
28	**10. Material Selection Recommendation**	LOCQUIC PRIMER T					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL RED 11136			FIXALL BRITE RED 11136 (444-1304)		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010001412952			8010001412952		
6	E. MSDS, Cage Number	PAALAI, 0FTT5			PBHCXR, 8D764		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (37.18%)			TOLUENE (20.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			Not Listed		
23	B. Boiling Point (BP)	Not Listed			133.00 F		
24	Flammable Combustible Liquids Points		0			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			25	
28	**10. Material Selection Recommendation**	FIXALL BRITE RED 11136 (444-1304)					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL RED 11136			ECO SURE SPRAY PAINT RED 11136		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
(5)	D. National Stock Number (NSN), if any	8010001412952			8010013316109		
(6)	E. MSDS, Cage Number	PAALAI, 0FTT5			PBVBQF, 0FTT5		
(7)	F. Specific Chemical Constituent Analyzed	TOLUENE (37.18%)			AROMATIC 150 (2.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		5.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		25	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	Not Listed			Not Listed		
(23)	B. Boiling Point (BP)	Not Listed			Not Listed		
(24)	Flammable Combustible Liquids Points		0			0	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		63.00 mmHg	7	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			36	
(28)	**10. Material Selection Recommendation**	ECO SURE SPRAY PAINT RED 11136					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL RED 11136			ENAMEL, LOW VOC WATER-BASED ENAMEL RED		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010001412952			8010013505259		
6	E. MSDS, Cage Number	PAALAI, 0FTT5			PBTTNK, 0FTT5		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (37.18%)			2-BUTOXYETHANOL (4.33%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			-42.00 F		
23	B. Boiling Point (BP)	Not Listed			Not Listed		
24	Flammable Combustible Liquids Points		0			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		63.00 mmHg	7	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			36	
28	**10. Material Selection Recommendation**	ENAMEL, LOW VOC WATER-BASED ENAMEL RED 11136					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL RED 11136			11136 RED		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010001412952			8010001412952		
6	E. MSDS, Cage Number	PAALAI, 0FTT5			PBDBNM, NEWYO		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (37.18%)			METHYLENE CHLORIDE (35.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		50.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		22	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			156.00 F		
23	B. Boiling Point (BP)	Not Listed			43.70 F		
24	Flammable Combustible Liquids Points		0			5	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		85.00 mmHg	9	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			43	
28	**10. Material Selection Recommendation**	11136 RED					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL RED 11136			ENAMEL RED 11136		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010001412952			8010001412952		
6	E. MSDS, Cage Number	PAALAI, 0FTT5			PBDBNK, 07708		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (37.18%)			METHYLENE CHLORIDE (25.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			0.00 F		
23	B. Boiling Point (BP)	Not Listed			281.00 F		
24	Flammable Combustible Liquids Points		0			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		380.00 mmHg	15	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			53	
28	**10. Material Selection Recommendation**	SO-SURE LACQUER AEROSOL RED 11136					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL RED 11136			GP-0001-1670 RED 11136		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010001412952			8010001412952		
6	E. MSDS, Cage Number	PAALAI, 0FTT5			PBDBNP, 59581		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (37.18%)			EPOXYPROPANE (0.11%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		20.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		100.00 lbs	6	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		5.00 tons/yr	10	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		41	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			3
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			-10.00 F		
23	B. Boiling Point (BP)	Not Listed			Not Listed		
24	Flammable Combustible Liquids Points		0			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		400.00 mmHg	15	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			56	
28	**10. Material Selection Recommendation**	SO-SURE LACQUER AEROSOL RED 11136					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL RED 11136			301 RED 11A RUSTPROOF PAINT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010001412952			8010001412952		
6	E. MSDS, Cage Number	PAALAI, 0FTT5			PAERVO, 0UPL1		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (37.18%)			XYLENE (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			-18.40 F		
23	B. Boiling Point (BP)	Not Listed			-10.00 F		
24	Flammable Combustible Liquids Points		0			10	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		6.72 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			32	
28	**10. Material Selection Recommendation**	301 RED 11A RUSTPROOF PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL RED 11136			A-2000 SERIES AEROSOL LACQUER RED 11136		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010001412952			8010001412952		
6	E. MSDS, Cage Number	PAALAI, 0FTT5			PAARED, 65860		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (37.18%)			BUTYL CELLUSOLVE (2.40%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	50.00 ppm	6		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	1.00 Hrs/wk		D	1.00 Hrs/wk		D
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			3			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			-154.00 F		
23	B. Boiling Point (BP)	Not Listed			336.00 F		
24	Flammable Combustible Liquids Points		0			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		0.90 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			30	
28	**10. Material Selection Recommendation**	A-2000 SERIES AEROSOL LACQUER RED 11136					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL GRAY 16307			ENAMEL LOW VOC WATER-BASED GRAY 16307		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous touchup painting			Miscellaneous touchup painting		
5	D. National Stock Number (NSN), if any	8010007219750			8010013504749		
6	E. MSDS, Cage Number	PAALUP, 0FTT5			PBTTNC, 0FTT5		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (26.96%)			2-BUTYOXYETHANOL (4.33%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	6		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			-42.00 F		
23	B. Boiling Point (BP)	Not Listed			Not Listed		
24	Flammable Combustible Liquids Points		0			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		63.00 mmHg	7	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			40	
28	**10. Material Selection Recommendation**	ENAMEL LOW VOC WATER-BASED GRAY 16307					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL GRAY 16307			ECO SURE GRAY 16307 GLOSS VOC COMPLIANT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous touchup painting			Miscellaneous touchup painting		
5	D. National Stock Number (NSN), if any	8010007219750			8010013316117		
6	E. MSDS, Cage Number	PAALUP, 0FTT5			PBQSPP, 0FTT5		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (26.96%)			AROMATIC 150 (2.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	6		5.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			Not Listed		
23	B. Boiling Point (BP)	Not Listed			Not Listed		
24	Flammable Combustible Liquids Points		0			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		60.00 mmHg	6	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			39	
28	**10. Material Selection Recommendation**	ECO SURE GRAY 16307 GLOSS VOC COMPLIANT ENAMEL AEROSOL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL GRAY 16307			361 GRAY 11A RUSTPROOF PAINT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous touchup painting			Miscellaneous touchup painting		
5	D. National Stock Number (NSN), if any	8010007219750			8010007219750		
6	E. MSDS, Cage Number	PAALUP, 0FTT5			PAERVT, 0UPL1		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (26.96%)			XYLENE (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	6		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			-18.40 F		
23	B. Boiling Point (BP)	Not Listed			-10.00 F		
24	Flammable Combustible Liquids Points		0			10	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		6.72 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			32	
28	**10. Material Selection Recommendation**	361 GRAY 11A RUSTPROOF PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	SO-SURE LACQUER AEROSOL GRAY 16307			A-2000 SERIES AEROSOL LACQUER GRAY 16307		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous touchup painting			Miscellaneous touchup painting		
5	D. National Stock Number (NSN), if any	8010007219750			8010007219750		
6	E. MSDS, Cage Number	PAALUP, 0FTT5			PAAGRA, 65860		
7	F. Specific Chemical Constituent Analyzed	TOLUENE (26.96%)			BUTYL CELLUSOLVE (2.40%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	6		25.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	1000.00 lbs	4		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		34	I		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	Not Listed			-154.00 F		
23	B. Boiling Point (BP)	Not Listed			336.00 F		
24	Flammable Combustible Liquids Points		0			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	60.00 mmHg	6		0.90 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		44			30	
28	**10. Material Selection Recommendation**	A-2000 SERIES AEROSOL LACQUER GRAY 16307					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246			TT-E-489H ENAMEL, ALKYD GLOSS LOW VOC ORANGE		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010005273201			8010005985215		
6	E. MSDS, Cage Number	PBVBBC, 61196			PBQYFN, 60189		
7	F. Specific Chemical Constituent Analyzed	METHYL ETHYL KETONE (10.00%)			MINERAL SPIRITS (19.70%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	200.00 ppm	4		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		30	I		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	24.00 F			110.00 F		
23	B. Boiling Point (BP)	390.00 F			260.00 F		
24	Flammable Combustible Liquids Points		9			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		10.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			44	
28	**10. Material Selection Recommendation**	TT-E-489H ENAMEL, ALKYD GLOSS LOW VOC ORANGE 12246					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246			ENAMEL 12246 ORANGE ALKYD GLOSS		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010005273201			8010005273201		
6	E. MSDS, Cage Number	PBVBBC, 61196			PBHDMV, 60189		
7	F. Specific Chemical Constituent Analyzed	METHYL ETHYL KETONE (10.00%)			MOLYBDATE ORANGE PIGMENT (24.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	200.00 ppm	4		0.05 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		30	I		9	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	24.00 F			105.00 F		
23	B. Boiling Point (BP)	390.00 F			323.00 F		
24	Flammable Combustible Liquids Points		9			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory and Eye Protection	6	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		2.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF · Sum of 18 + 24 + 25 + 26		50			23	
28	**10. Material Selection Recommendation**	ENAMEL 12246 ORANGE ALKYD GLOSS					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246			ENAMEL ORANGE 12246 TT-E-2784		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010005273201			8010013338912		
6	E. MSDS, Cage Number	PBVBBC, 61196			PBSSFD, 39934		
7	F. Specific Chemical Constituent Analyzed	METHYL ETHYL KETONE (10.00%)			EKTASOLVE EEH SOLVENT (3.32%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	200.00 ppm	4		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		30	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	24.00 F			Not Listed		
23	B. Boiling Point (BP)	390.00 F			644.00 F		
24	Flammable Combustible Liquids Points		9			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			13	
28	**10. Material Selection Recommendation**	ENAMEL ORANGE 12246 TT-E-2784					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246			EXTERIOR TRIM ENAMEL ORANGE 12246		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010005273201			8010013339812		
6	E. MSDS, Cage Number	PBVBBC, 61196			PBSHPN, 6F266		
7	F. Specific Chemical Constituent Analyzed	METHYL ETHYL KETONE (10.00%)			TEXANOL (ESTER ALCOHOL) (4.50%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	200.00 ppm	4		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		30	I		9	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	24.00 F			Not Listed		
23	B. Boiling Point (BP)	390.00 F			212.00 F		
24	Flammable Combustible Liquids Points		9			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		23.80 mmHg	3	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			15	
28	**10. Material Selection Recommendation**	EXTERIOR TRIM ENAMEL ORANGE 12246					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246			ENAMEL, ORANGE 12246, TT-E-2784		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
(5)	D. National Stock Number (NSN), if any	8010005273201			8010013339812		
(6)	E. MSDS, Cage Number	PBVBBC, 61196			PBVZNF, 3V763		
(7)	F. Specific Chemical Constituent Analyzed	METHYL ETHYL KETONE (10.00%)			SILICON DIOXIDE (4.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	200.00 ppm	4		0.10 mg/m3	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		30	I		9	IV
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	24.00 F			167.00 F		
(23)	B. Boiling Point (BP)	390.00 F			471.00 F		
(24)	Flammable Combustible Liquids Points		9			5	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			21	
(28)	**10. Material Selection Recommendation**	ENAMEL, ORANGE 12246, TT-E-2784					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246			305 ORANGE 11A RUSTPROOF PAINT		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010005273201			8010005985215		
6	E. MSDS, Cage Number	PBVBBC, 61196			PAERVQ, 0UPL1		
7	F. Specific Chemical Constituent Analyzed	METHYL ETHYL KETONE (10.00%)			XYLENE (10.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	200.00 ppm	4		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		30	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	24.00 F			-18.40 F		
23	B. Boiling Point (BP)	390.00 F			-10.00 F		
24	Flammable Combustible Liquids Points		9			10	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		6.72 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			32	
28	**10. Material Selection Recommendation**	305 ORANGE 11A RUSTPROOF PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246			6407-6409 SERIES GLOSS HIGH SOLIDS		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010005273201			8010005985215		
6	E. MSDS, Cage Number	PBVBBC, 61196			PAAORA, 65860		
7	F. Specific Chemical Constituent Analyzed	METHYL ETHYL KETONE (10.00%)			METHYL AMYL KETONE (15.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	200.00 ppm	4		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		30	I		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	24.00 F			24.00 F		
23	B. Boiling Point (BP)	390.00 F			304.00 F		
24	Flammable Combustible Liquids Points		9			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		2.10 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			30	
28	**10. Material Selection Recommendation**	6407-6409 SERIES GLOSS HIGH SOLIDS POLYURETHANE PAINT COMPONENT 1					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246			ENAMEL, VOC COMPLIANT ORANGE 12246		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010005273201			8010006167494		
6	E. MSDS, Cage Number	PBVBBC, 61196			PBPPCF, 00297		
7	F. Specific Chemical Constituent Analyzed	METHYL ETHYL KETONE (10.00%)			LEAD CHROMATE (AS LEAD) (17.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	200.00 ppm	4		0.05 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		30	I		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	24.00 F			24.00 F		
23	B. Boiling Point (BP)	390.00 F			Not Listed		
24	Flammable Combustible Liquids Points		9			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			29	
28	**10. Material Selection Recommendation**	ENAMEL, VOC COMPLIANT ORANGE 12246					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS LOW VOC ORANGE 12246			6-282 SPEEDHIDE INT / EXT GLOSS ENAMEL		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010005273201			801000F032173		
6	E. MSDS, Cage Number	PBVBBC, 61196			PAAPPG, PPGIN		
7	F. Specific Chemical Constituent Analyzed	METHYL ETHYL KETONE (10.00%)			XYLENE (3.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	200.00 ppm	4		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	5000.00 lbs	2		1000.00 lbs	4	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		30	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	24.00 F			110.00 F		
23	B. Boiling Point (BP)	390.00 F			468.00 F		
24	Flammable Combustible Liquids Points		9			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Multiple Point Skin Protection	2	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	70.00 mmHg	7		2.20 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		50			31	
28	**10. Material Selection Recommendation**	6-282 SPEEDHIDE INT / EXT GLOSS ENAMEL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			TT-E-2484 ENAMEL YELLOW 13538		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010013339450		
6	E. MSDS, Cage Number	PBHCND, 61196			PBVYLD, 39934		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			EKTASOLVE EEH SOLVENT (3.32%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			212.00 F		
23	B. Boiling Point (BP)	388.00 F			644.00 F		
24	Flammable Combustible Liquids Points		7			3	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			16	
28	**10. Material Selection Recommendation**	TT-E-2484 ENAMEL YELLOW 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			SO SURE ENAMEL ID 44-130-P YELLOW 13538		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010008529033		
6	E. MSDS, Cage Number	PBHCND, 61196			PBJDTC, 0FTT5		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			TRIETHYLAMINE (0.90%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		10.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		31	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			20.00 F		
23	B. Boiling Point (BP)	388.00 F			193.10 F		
24	Flammable Combustible Liquids Points		7			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		54.00 mmHg	6	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			49	
28	**10. Material Selection Recommendation**	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			742-312 ENAMEL ALKYD GLOSS YELLOW 13538		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010005843081		
6	E. MSDS, Cage Number	PBHCND, 61196			PBFGKY, 09869		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			NAPHTHA (44.60%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		100.00 ppm	6	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		18	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			85.00 F		
23	B. Boiling Point (BP)	388.00 F			373.00 F		
24	Flammable Combustible Liquids Points		7			8	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory Protection	5	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			31	
28	**10. Material Selection Recommendation**	742-312 ENAMEL ALKYD GLOSS YELLOW 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			742-328 ENAMEL ALKYD GLOSS YELLOW 13538		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010002982294		
6	E. MSDS, Cage Number	PBHCND, 61196			PBDWJP, 09869		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			LEAD CHROMATE (2.90%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.05 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			85.00 F		
23	B. Boiling Point (BP)	388.00 F			373.00 F		
24	Flammable Combustible Liquids Points		7			8	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory Protection	5	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			30	
28	**10. Material Selection Recommendation**	742-328 ENAMEL ALKYD GLOSS YELLOW 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			TT-E-489G YELLOW 13538 ENAMEL ALKYD GLOSS		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010005272045		
6	E. MSDS, Cage Number	PBHCND, 61196			PBPRHB, 60189		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			LEAD CHROMATE (27.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.05 mg/m3	6	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		22	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			105.00 F		
23	B. Boiling Point (BP)	388.00 F			323.00 F		
24	Flammable Combustible Liquids Points		7			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory and Eye Protection	6	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			35	
28	**10. Material Selection Recommendation**	TT-E-489G YELLOW 13538 ENAMEL ALKYD GLOSS					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			TT-E-2784 ULTRA DEEP TINT BASE ENAMEL YELLOW 13538		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010013337763		
6	E. MSDS, Cage Number	PBHCND, 61196			PBQDTM, 3Z268		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			PROPYLENE GLYCOL (5.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		6	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			241.00 F		
23	B. Boiling Point (BP)	388.00 F			471.00 F		
24	Flammable Combustible Liquids Points		7			2	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			12	
28	**10. Material Selection Recommendation**	TT-E-2784 ULTRA DEEP TINT BASE ENAMEL YELLOW 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			600 INDUSTRIAL ENAMEL 13538		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010005272045		
6	E. MSDS, Cage Number	PBHCND, 61196			PBNCFS, 3Z268		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			SILICA, QUARTZ (0.14%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.10 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			104.00 F		
23	B. Boiling Point (BP)	388.00 F			315.00 F		
24	Flammable Combustible Liquids Points		7			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			32	
28	**10. Material Selection Recommendation**	600 INDUSTRIAL ENAMEL 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			YELLOW GLOSS ENAMEL ALKYD 13538		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010005272045		
6	E. MSDS, Cage Number	PBHCND, 61196			PBFCQY, 72988		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			LEAD CHROMATE (4.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.50 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		13	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			105.00 F		
23	B. Boiling Point (BP)	388.00 F			390.00 F		
24	Flammable Combustible Liquids Points		7			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			27	
28	**10. Material Selection Recommendation**	YELLOW GLOSS ENAMEL ALKYD 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			ENAMEL ALKYD GLOSS YELLOW 13538		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010002867758		
6	E. MSDS, Cage Number	PBHCND, 61196			PBKBCQ, 6F266		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			SOLVENT: ALIPHATIC HYDROCARBON (56.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		100.00 ppm	7	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		15	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			100.00 F		
23	B. Boiling Point (BP)	388.00 F			390.00 F		
24	Flammable Combustible Liquids Points		7			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		2.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			27	
28	**10. Material Selection Recommendation**	ENAMEL ALKYD GLOSS YELLOW 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			EXTERIOR TRIM ENAMEL YELLOW 13538		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010013339450		
6	E. MSDS, Cage Number	PBHCND, 61196			PBSHPM, 6F266		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			TEXANOL (4.50%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		9	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			Not Listed		
23	B. Boiling Point (BP)	388.00 F			212.00 F		
24	Flammable Combustible Liquids Points		7			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		23.80 mmHg	3	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			16	
28	**10. Material Selection Recommendation**	EXTERIOR TRIM ENAMEL YELLOW 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			SO-SURE YELLOW 13538		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010008529033		
6	E. MSDS, Cage Number	PBHCND, 61196			PBSSJX, 0FTT5		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			MEHTYL ETHYL KETONE (3.01%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		5000.00 lbs	2	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		31	I
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			4
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			Not Listed		
23	B. Boiling Point (BP)	388.00 F			Not Listed		
24	Flammable Combustible Liquids Points		7			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		60.00 mmHg	6	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			41	
28	**10. Material Selection Recommendation**	SO-SURE YELLOW 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			ECO SURE YELLOW 13538 VOC COMPLIANT ENAMEL		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
(5)	D. National Stock Number (NSN), if any	8010002867758			8010013316115		
(6)	E. MSDS, Cage Number	PBHCND, 61196			PBQYNZ, 0FTT5		
(7)	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			1,2,4-TRIMETHYLBENZENE (2.90%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		25.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		29	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	102.00 F			Not Listed		
(23)	B. Boiling Point (BP)	388.00 F			Not Listed		
(24)	Flammable Combustible Liquids Points		7			0	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		60.00 mmHg	6	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			39	
(28)	**10. Material Selection Recommendation**	ECO SURE YELLOW 13538 VOC COMPLIANT ENAMEL AEROSOL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			N5223 YELLOW A/D ENAMEL 13538		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010005272045		
6	E. MSDS, Cage Number	PBHCND, 61196			PBQYCX, 02388		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			COBALT COMPOUNDS (0.90%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.05 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		25	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			72.00 F		
23	B. Boiling Point (BP)	388.00 F			398.00 F		
24	Flammable Combustible Liquids Points		7			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			38	
28	**10. Material Selection Recommendation**	N5223 YELLOW A/D ENAMEL 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
		INFORMATION	Pts	Code	INFORMATION	Pts	Code
1	1. Information Needed						
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			INDUSTRIAL ALL PURPOSE SPRAY ENAMEL		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010008529033		
6	E. MSDS, Cage Number	PBHCND, 61196			PBTKRY, 07708		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			DIACETONE ALCOHOL (7.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		29	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			0.00 F		
23	B. Boiling Point (BP)	388.00 F			331.00 F		
24	Flammable Combustible Liquids Points		7			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		1.10 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			43	
28	**10. Material Selection Recommendation**	INDUSTRIAL ALL PURPOSE SPRAY ENAMEL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			ENAMEL GLOSS YELLOW 13538, TT-E-489		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010005985945		
6	E. MSDS, Cage Number	PBHCND, 61196			PBFHLT, 77672		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			PRIMER PIGMENT (30.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		2000.00 ppm	2	
10	B. Medical Effects (Table A-2d)	Permanent,	16		No medical	0	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		2	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			45.00 F		
23	B. Boiling Point (BP)	388.00 F			231.00 F		
24	Flammable Combustible Liquids Points		7			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		0.00 mmHg	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			11	
28	**10. Material Selection Recommendation**	ENAMEL GLOSS YELLOW 13538, TT-E-489					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
		INFORMATION	Pts	Code	INFORMATION	Pts	Code
(1)	1. Information Needed						
(2)	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			ENAMEL YELLOW 13538		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
(5)	D. National Stock Number (NSN), if any	8010002867758			8010013339450		
(6)	E. MSDS, Cage Number	PBHCND, 61196			PBSFVR, 3V763		
(7)	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			SILICON DIOXIDE (4.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.10 mg/m3	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		No	0	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		9	IV
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	102.00 F			167.00 F		
(23)	B. Boiling Point (BP)	388.00 F			471.00 F		
(24)	Flammable Combustible Liquids Points		7			5	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		1.00 mmHg	1	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			22	
(28)	**10. Material Selection Recommendation**	ENAMEL YELLOW 13538					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			ENAMEL ALKYD GLOSS TYPE II YELLOW 13538 AEROSOL		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010008529033		
6	E. MSDS, Cage Number	PBHCND, 61196			PBHMWZ, 59581		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			LEAD CHROMATE (12.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.05 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			10.00 F		
23	B. Boiling Point (BP)	388.00 F			Not Listed		
24	Flammable Combustible Liquids Points		7			0	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		400.00 mmHg	15	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			36	
28	**10. Material Selection Recommendation**	ENAMEL ALKYD GLOSS TYPE II YELLOW 13538 AEROSOL					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
		INFORMATION	Pts	Code	INFORMATION	Pts	Code
(1)	1. Information Needed						
(2)	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			302 YELLOW 11A RUSTPROOF PAINT		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
(5)	D. National Stock Number (NSN), if any	8010002867758			8010002867758		
(6)	E. MSDS, Cage Number	PBHCND, 61196			PAERVP, 0UPL1		
(7)	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			XYLENE (10.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		100.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		1000.00 lbs	4	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		21	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	102.00 F			-18.40 F		
(23)	B. Boiling Point (BP)	388.00 F			-10.00 F		
(24)	Flammable Combustible Liquids Points		7			10	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		No PPE Requirements Available	0	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		6.72 mmHg	1	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			32	
(28)	**10. Material Selection Recommendation**	302 YELLOW 11A RUSTPROOF PAINT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			6407-6409 SERIES GLOSS HIGH SOLIDS		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002867758			8010005985945		
6	E. MSDS, Cage Number	PBHCND, 61196			PAAYEL, 65860		
7	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			METHYL AMYL KETONE (15.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		17	III
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	102.00 F			24.00 F		
23	B. Boiling Point (BP)	388.00 F			304.00 F		
24	Flammable Combustible Liquids Points		7			9	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		2.10 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			30	
28	**10. Material Selection Recommendation**	6407-6409 SERIES GLOSS HIGH SOLIDS POLYURETHANE PAINT - COMPONENT					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	ENAMEL ALKYD GLOSS AIR DRYING YELLOW 13538			TT-E-489G TYPE I 13538 YELLOW ORANGE PAINT /		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
(5)	D. National Stock Number (NSN), if any	8010002867758			8010002867758		
(6)	E. MSDS, Cage Number	PBHCND, 61196			PAAKOP, 00297		
(7)	F. Specific Chemical Constituent Analyzed	LEAD (20.00%)			LEAD CHROMATE (AS CR+ VI) (2.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	0.05 mg/m3	5		0.01 mg/m3	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	Yes	8		Yes	8	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	10.00 lbs	8		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		37	I		25	II
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			4			5
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	102.00 F			110.00 F		
(23)	B. Boiling Point (BP)	388.00 F			Not Listed		
(24)	Flammable Combustible Liquids Points		7			7	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye Protection Only	3	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	1.00 mmHg	1		Not Listed	0	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		49			35	
(28)	**10. Material Selection Recommendation**	TT-E-489G TYPE I 13538 YELLOW ORANGE PAINT / COATING					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL DECK INTERIOR GRAY 26231			ENAMEL GRAY 26231		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002854870			8010013446702		
6	E. MSDS, Cage Number	PBKLJL, 61196			PBSHZF, 55849		
7	F. Specific Chemical Constituent Analyzed	MINERAL SPIRITS (30.00%)			METHYL N-AMYL KETONE (16.94%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	6		50.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	16	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		22	II		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	109.00 F			95.00 F		
23	B. Boiling Point (BP)	388.00 F			315.00 F		
24	Flammable Combustible Liquids Points		7			8	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Respiratory, Eye, and Skin	7	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	2.00 mmHg	1		4.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		34			37	
28	**10. Material Selection Recommendation**	ENAMEL DECK INTERIOR GRAY 26231					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
(1)	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
(2)	A. Candidate Material/Product Name	ENAMEL DECK INTERIOR GRAY 26231			MIL-E-24635A ENAMEL GRAY 26231		
(3)	B. Located on AUL?	Yes			No		
(4)	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
(5)	D. National Stock Number (NSN), if any	8010002854870			8010013446702		
(6)	E. MSDS, Cage Number	PBKLJL, 61196			PBPGLX, 3Z268		
(7)	F. Specific Chemical Constituent Analyzed	MINERAL SPIRITS (30.00%)			METHYL N-AMYL KETONE (20.00%)		
(8)	2. Hazard Severity Code (HSC) Element						
(9)	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	6		50.00 ppm	5	
(10)	B. Medical Effects (Table A-2d)	Permanent,	16		Permanent,	12	
(11)	C. Environmental Impact Attributes						
(12)	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		No	0	
(13)	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
(14)	(3) Federal/State Permits	No	0		No	0	
(15)	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
(16)	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
(17)	(6) Total Environmental Impact Attributes						
(18)	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		22	II		17	III
(19)	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
(20)	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
(21)	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
(22)	A. Flash Point (FP)	109.00 F			102.00 F		
(23)	B. Boiling Point (BP)	388.00 F			315.00 F		
(24)	Flammable Combustible Liquids Points		7			7	
(25)	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
(26)	8. Volatility (Table A-8) Vapor Pressure (VP)	2.00 mmHg	1		2.60 mmHg	1	
(27)	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		34			29	
(28)	**10. Material Selection Recommendation**	MIL-E-24635A ENAMEL GRAY 26231					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL DECK INTERIOR GRAY 26231			N-5356 SILICONE ALKYD ENAMEL GRAY 26231		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002854870			8010013562941		
6	E. MSDS, Cage Number	PBKLJL, 61196			PBTCPR, 02388		
7	F. Specific Chemical Constituent Analyzed	MINERAL SPIRITS (30.00%)			COBALT COMPOUNDS (0.90%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	6		0.10 mg/m3	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	8	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		Yes	8	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		22	II		21	II
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	109.00 F			107.00 F		
23	B. Boiling Point (BP)	388.00 F			398.00 F		
24	Flammable Combustible Liquids Points		7			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Eye and Skin Protection	4	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	2.00 mmHg	1		Not Listed	0	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		34			32	
28	**10. Material Selection Recommendation**	N-5356 SILICONE ALKYD ENAMEL GRAY 26231					

HAZARDOUS MATERIAL SUBSTITUTION ALGORITHM WORKSHEET

Line #	ALGORITHM STEP FOR EVALUATION	Material A			Material B		
1	1. Information Needed	INFORMATION	Pts	Code	INFORMATION	Pts	Code
2	A. Candidate Material/Product Name	ENAMEL DECK INTERIOR GRAY 26231			97-480 SILICONE ALKYD		
3	B. Located on AUL?	Yes			No		
4	C.Similar Operational Use	Miscellaneous applications			Miscellaneous applications		
5	D. National Stock Number (NSN), if any	8010002854870			801000F004528		
6	E. MSDS, Cage Number	PBKLJL, 61196			PAAPPI, PPGIN		
7	F. Specific Chemical Constituent Analyzed	MINERAL SPIRITS (30.00%)			NAPHTHA (15.00%)		
8	2. Hazard Severity Code (HSC) Element						
9	A. Exposure Restrictions (PEL/TLV) Tables A-2a, A-2b, & A-2c	100.00 ppm	6		100.00 ppm	5	
10	B. Medical Effects (Table A-2d)	Permanent,	16		Temporary	4	
11	C. Environmental Impact Attributes						
12	(1) EPA/State/Local Regulations Lists (Tbl A-2e(1))	No	0		No	0	
13	(2) RCRA Wastes Not Otherwise Listed (Tbl A-2e(2))	No	0		No	0	
14	(3) Federal/State Permits	No	0		No	0	
15	(4) Reportable Quantities (RQ))Table A-2f) RQ in EPA "List of Lists" (Fig A1)	Not On List	0		Not On List	0	
16	(5) Permissible Air Emissions (Table A-2g) Air Emissions in 40 CFR 52.21(b)(23) (Fig A2)	Not On List	0		Not On List	0	
17	(6) Total Environmental Impact Attributes						
18	3. Hazard Severity Code (HSC) Elements Sum of 9 + 10 + 12 + 13 + 14 + 15 + 16		22	II		9	IV
19	4. Hazard Probability Code (HPC) Length of Exposure (Table A-1)	N/K		E	N/K		E
20	5. Hazard Risk Index (HRI) (Figures A3 & A4)			5			5
21	6. Flammable Combustible Liquids (Tables A-6a & A-6b)						
22	A. Flash Point (FP)	109.00 F			107.00 F		
23	B. Boiling Point (BP)	388.00 F			468.00 F		
24	Flammable Combustible Liquids Points		7			7	
25	7. Personal Protective Equipment (PPE) (Table A-7) PPE Requirements	Eye and Skin Protection	4		Multiple Point Skin Protection	2	
26	8. Volatility (Table A-8) Vapor Pressure (VP)	2.00 mmHg	1		2.00 mmHg	1	
27	9. Hazardous Material Selection Factor (HMSF Sum of 18 + 24 + 25 + 26		34			19	
28	**10. Material Selection Recommendation**	97-480 SILICONE ALKYD					

APPENDIX F

LIST OF POLLUTION PREVENTION ALTERNATIVES IDENTIFIED FOR PORTSMOUTH NAVAL SHIPYARD

List of Pollution Prevention Alternatives Identified for Ports

	Hazardous Material	Bldg.	Product	Manufacturer	HMSF	Price ($)	Per Unit	Total Annual Material Costs ($)
1	Neoprene Primer	240	**Neoprene N-11 Primer**	Haartz-Mason Inc	43	11.40	quart	160.80
			N-700A-Black Corrosion Preventive Cmpnd	Gates Engineering Co, Inc.	33	13.40	pint	321.60
			N-700-A Gray Neoprene Maintenance Coating	Haartz-Mason Inc	47	13.40	pint	321.60
			Pliobond 20 Adhesive	Ashland Chemical Co	66	14.41	quart	172.92
			Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	4.95	1 oz btl	1,900.80
			EF Primer 49	Hernon Manufacturing	31	4.80	1.75 oz btl	1,056.00
			EF Primer 50	Hernon Manufacturing	42	4.80	1.75 oz btl	1,056.00
			Blue Resin Solution - G7526F	Glyptal, Inc.	31	19.45	pint	466.80
			Neoprene Adhesive N-1051	Shore Chemical Co	40	5.26	pint	126.24
			Black Max Black Tough Adhesive	Loctite Corp	26	17.60	1 oz btl	6,758.40
			3M 90 High Strength Adhesive	3M	22	12.70	23.25 oz can	218.06
			3M Spray 80 Neoprene Contact Adhesive	3M	24	12.93	23.25 oz can	222.01
			2141 Rubber & Gasket Adhesive	3M	51	48.97	gallon	148.38
			Scotch-Grip 1300 Rubber & Gasket Adhesive	3M	52	57.06	gallon	172.89
2	Corrosion Inhibitor	240	**Neolube No.1 Graphite, Colloidal**	Huron Industries Inc.	35	5.10	2 oz btl	8,148.50
			DAG 156 Graphite, Colloidal	Acheson Colloids Co	28	5.65	2 oz btl	8,672.75
			(55A) 591 Cosmoline	Aervoe-Pacific Co	43	2.41	pint	462.72
			Pelco Colloidal Graphite, 16053	Ted Pella Inc.	25	5.95	30 gr btl	16,035.25
			Lock-Ease	AGS Company	25	24.90	gallon	597.60
			Siloxirane 2032	Advance Polymer Sciences	33	197.00	gallon	4,925.00
3	Black Paint	60	**IB No.2652 Acrylic Lacquer Aerosol**	Ill Bronze Powder & Paint	41	1.89	pint	45.36
			DR038 Concentrate Aerosol Lacquer	Devoe & Raynolds Co, Inc.	29	1.92	pint	46.08
			A-4100 Acrylic Aerosol Black	Cardninal Industrial Finishes	30	5.95	12 oz can	190.40
4	Neoprene Primer	60	**Neoprene N-11 Primer**	Haartz-Mason Inc	43	11.40	quart	402.00
			N-700A-Black Corrosion Preventive Cmpnd	Gates Engineering Co, Inc.	33	13.40	pint	817.40
			N-700-A Gray Neoprene Maintenance Coating	Haartz-Mason Inc	47	13.40	pint	817.40
			Pliobond 20 Adhesive	Ashland Chemical Co	66	14.41	quart	432.30
			Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	4.95	1 oz btl	4,786.65
			EF Primer 49	Hernon Manufacturing	31	4.80	1.75 oz btl	2,654.40
			EF Primer 50	Hernon Manufacturing	42	4.80	1.75 oz btl	2,654.40

* Due to a lack of data provided, the highest alternative price was used as the status quo price.
Shaded materials represent status quo.

es Identified for Portsmouth Naval Shipyard

Per Unit	Total Annual Material Costs ($)	Annual PPE Costs ($)	Total Annual Costs ($)	Discounted Cost ($)	Notes
quart	160.80	42.96	203.76	843.37	Material costs include a $12 per 6-quart package HM fee; shipping additional and must be prepaid, UPS
pint	321.60	1,016.00	1,337.60	5,536.39	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
pint	321.60	42.96	364.56	1,508.93	GSA product
quart	172.92	19.52	192.44	796.52	GSA product
1 oz btl	1,900.80	0.00	1,900.80	7,867.51	10 bottles in a case; 1 case minimum order; shipping additional, UPS
1.75 oz btl	1,056.00	19.52	1,075.52	4,451.63	Shipping additional
1.75 oz btl	1,056.00	19.52	1,075.52	4,451.63	Shipping additional
pint	466.80	0.00	466.80	1,932.11	GSA product
pint	126.24	15.36	141.60	586.09	GSA product
1 oz btl	6,758.40	26.64	6,785.04	28,083.62	Commercial purchase required from Ralph's Truck World, Portsmouth, NH
23.25 oz can	218.06	15.36	233.42	966.14	Shipping included
23.25 oz can	222.01	15.36	237.37	982.49	Shipping included
gallon	148.38	17.70	166.08	687.41	Shipping included
gallon	172.89	35.82	208.71	863.86	Shipping included
2 oz btl	8,148.50	17.70	8,166.20	33,800.31	Material costs include a $10 per 48-bottle carton HM fee; shipped FOB Port Huron, MI; freight prepaid
2 oz btl	8,672.75	17.28	8,690.03	35,968.47	Minimum order is $100; shipping additional and must be prepaid, UPS
pint	462.72	19.50	482.22	1,995.93	Minimum order is $50; shipped FOB Gardnerville, NV; freight collect on orders less that $1000
30 gr btl	16,035.25	17.70	16,052.95	66,443.96	Shipping additional
gallon	597.60	1,008.44	1,606.04	6,647.48	Minimum order is $100; shipping additional and prepaid on shipments over $300; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
gallon	4,925.00	1,008.44	5,933.44	24,558.80	Price is based on a purchase of 5-gallon kits. Shipping is FOB Avon, Ohio. PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
pint	45.36	0.00	45.36	187.75	Manufacturer is longer in business; price taken from the GSA catalog
pint	46.08	15.36	61.44	254.30	GSA product
12 oz can	190.40	17.70	208.10	861.34	Minimum order is 1 20-can case; shipping additional from California
quart	402.00	128.88	530.88	2,197.34	Material costs include a $12 per 6-quart package HM fee; shipping additional and must be prepaid, UPS
pint	817.40	3,048.00	3,865.40	15,999.08	GSA product; PPE costs include 3 hours per week for issue of respirators, at $15.25 per hour labor rate
pint	817.40	128.88	946.28	3,916.70	GSA product
quart	432.30	58.56	490.86	2,031.69	GSA product
1 oz btl	4,786.65	0.00	4,786.65	19,812.18	10 bottles in a case; 1 case minimum order; shipping additional, UPS
1.75 oz btl	2,654.40	58.56	2,712.96	11,229.08	Shipping additional
1.75 oz btl	2,654.40	58.56	2,712.96	11,229.08	Shipping additional

	Hazardous Material	Bldg.	Product	Manufacturer	HMSF	Price ($)
4	Neoprene Primer	60	Neoprene N-11 Primer	Haartz-Mason Inc	43	11.40
	CONTINUED		Blue Resin Solution - G7526F	Glyptal, Inc.	31	19.45
			Neoprene Adhesive N-1051	Shore Chemical Co	40	5.26
			Black Max Black Tough Adhesive	Loctite Corp	26	17.60
			3M 90 High Strength Adhesive	3M	22	12.70
			3M Spray 80 Neoprene Contact Adhesive	3M	24	12.93
			2141 Rubber & Gasket Adhesive	3M	51	48.97
			Scotch-Grip 1300 Rubber & Gasket Adhesive	3M	52	57.06
5	Dichloromethane	60	Dichloromethane, Technical	Ashland Chemical Co	72	357.32*
			Ardrox 5300-W Hot Tank Stripper	Ardrox Inc.	38	144.45
			Bio T 200A Cleaning Compound	Biochem Systems	14	234.53
			Bio T Max Cleaning Compound	Biochem Systems	15	236.64
			Brulin SD 1291 Cleaning Compound	Brulin and Co., Inc.	20	204.48
			Safety Strip HT Cleaning Compound	Brulin and Co., Inc.	12	2,460.88
			Nature-Sol 100	Brulin and Co., Inc.	19	2,083.15
			Safe-Strip Cleaning Compound	Ecolink, Inc.	24	1,702.25
			Envirosolv CRX	Fine Organics Corp	26	1,723.61
			Envirosolve 654CR	Fine Organics Corp	16	151.23
			Teksol EP Cleaning Compound	Inland Technology	15	231.05
			X-Caliber, FX153 Cleaning Compound	Inland Technology	29	344.32
			Citrex EB, FC154 Cleaning Compound	Inland Technology	33	301.22
			Citrex, FC153 Cleaning Compound	Inland Technology	27	357.32
			FA009 Aero-Strip Cleaning Compound	Inland Technology	29	172.20
			Citra Soak, FC058	Inland Technology	15	1,600.00
			Preprite Coating Remover	ISP Management Co., Inc.	25	216.00
			FoamFlush Urethane Remover	ISP Management Co., Inc.	27	154.98
			Ship Shape Resin Cleaner	ISP Management Co., Inc.	31	228.96
			Pur-O-Shine Heavy Duty Cleaner	American Puro-Shine Ind	12	74.75
			Alfa Kleen AK-037	Alfa Kleen	22	27.14
6	Silver Paint	64	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	44	1.82
			GP-0001-7178, Silver Lacquer	Seymour of Sycamore Inc.	48	1.82
			Aerosol Coatings 01947, Lacquer 17178	Sprayon Products	34	1.82
			310 Silver 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	2.65
			A-2000 Lacquer Aerosol Silver 17178	Cardinal Industrial Finishes	30	5.95

* Due to a lack of data provided, the highest alternative price was used as the status quo price
Sh naterials represent status quo.

es Identified for Portsmouth Naval Shipyard

Per Unit	Total Annual Material Costs ($)	Annual PPE Costs ($)	Total Annual Costs ($)	Discounted Cost ($)	Notes
quart	402.00	128.88	530.88	2,197.34	Material costs include a $12 per 6-quart package HM fee; shipping additional and must be prepaid, UPS
pint	1,186.45	0.00	1,186.45	4,910.78	GSA product
pint	320.86	46.08	366.94	1,518.78	GSA product
1 oz btl	17,019.20	79.92	17,099.12	70,774.11	Commercial purchase required from Ralph's Truck World, Portsmouth, NH
23.25 oz can	538.73	46.08	584.81	2,420.56	Shipping included
23.25 oz can	548.49	46.08	594.57	2,460.95	Shipping included
gallon	395.68	53.10	448.78	1,857.52	Shipping included
gallon	461.04	107.46	568.50	2,353.05	Shipping included
5 gal can	3,930.52*	71.64	4,002.16*	16,565.14*	Per the manufacturer, this product has not been manufactured since 1993; no material costs were available. The highest material annual costs for the P2 alternatives identified was used for the analysis
5 gal can	1,588.95	35.40	1,624.35	6,723.27	A DLA environmental product; shipping is included
5 gal can	2,579.83	35.40	2,615.23	10,824.57	A DLA environmental product; shipping is included
5 gal can	2,603.04	49.68	2,652.72	10,979.74	A DLA environmental product; shipping is included
5 gal can	2,249.28	49.68	2,298.96	9,515.51	A DLA environmental product; shipping is included
55 gal drum	2,460.88	71.64	2,532.52	10,482.23	A DLA environmental product; shipping is included
55 gal drum	2,083.15	24.76	2,107.91	8,724.74	A DLA environmental product; shipping is included
55 gal drum	1,702.25	0.00	1,702.25	7,045.70	Prices FOB shipping point; also a DLA environmental product
55 gal drum	1,723.61	85.92	1,809.53	7,489.74	A DLA environmental product; shipping is included
5 gal can	1,663.53	39.04	1,702.57	7,047.02	A DLA environmental product; shipping is included
5 gal can	2,541.55	16.44	2,557.99	10,587.65	A DLA environmental product; shipping is included
5 gal can	3,787.52	197.40	3,984.92	16,493.78	A DLA environmental product; shipping is included
5 gal can	3,313.42	8.32	3,321.74	13,748.85	A DLA environmental product; shipping is included
5 gal can	3,930.52	49.68	3,980.20	16,474.25	A DLA environmental product; shipping is included
5 gal can	1,894.20	49.68	1,943.88	8,045.82	A DLA environmental product; shipping is included
55 gal drum	1,600.00	35.40	1,635.40	6,769.00	A product listed in the Tri-Service Pollution Prevention Opportunity Handbook
5 gal can	2,376.00	16.44	2,392.44	9,902.43	A DLA environmental product; shipping is included
5 gal can	1,704.78	71.64	1,776.42	7,352.69	A DLA environmental product; shipping is included
5 gal can	2,518.56	35.40	2,553.96	10,570.97	A DLA environmental product; shipping is included
5 gal can	822.25	0.00	822.25	3,403.33	Prices FOB shipping point; also a DLA environmental product
5 gal can	298.54	18.96	317.50	1,314.15	GSA product
pint	70.98	8.85	79.83	330.42	Manufacturer could not be reached; price taken from the GSA catalog
pint	70.98	7.68	78.66	325.58	GSA product
pint	70.98	7.68	78.66	325.58	GSA product
pint	103.35	0.00	103.35	427.77	Minimum order is $50; shipped FOB Gardnerville, NV; freight collect on orders less that $1000
12 oz can	303.45	8.85	312.30	1,292.63	Minimum order is 1 20-can case; shipping additional from California

List of Pollution Prevention Alternativ

	Hazardous Material	Bldg	Product	Manufacturer	HMSF	Price ($)
7	Anaerobic Adhesive	92	**Loctite Grade A Anaerobic Adhesive**	Loctite Corp	7	107.00
			Pliobond 20 Adhesive	Ashland Chemical Co	66	14.41
			Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	8.19
			Nuts N' Bolts 223	Heron Manufacturing Inc.	22	9.28
			Nuts N' Bolts 227	Heron Manufacturing Inc.	20	9.28
			Sealant Grade A 8831	Loctite Corp	16	2.73
			Anaerobic Adhesive/Sealant Grade A	Saf-T-Lok Chemical Corp	18	9.28
			Anaerobic Adhesive/Sealant	Saf-T-Lok Chemical Corp	7	9.28
			TB 1361A Sealing Compound	Three Bond of America, Inc.	11	2.73
			Grade A Red Sealing Compound	Three Bond of America, Inc.	11	9.28
			Blue Resin Solution - G7526F	Glyptal, Inc.	31	19.45
			Neoprene Adhesive N-1051	Shore Chemical Co	40	5.26
			3M 90 High Strength Adhesive	3M	22	12.70
			3M Spray 80 Neoprene Contact Adhesive	3M	24	12.93
			2141 Rubber & Gasket Adhesive	3M	51	48.97
			Scotch-Grip 1300 Rubber & Gasket Adhesive	3M	52	57.06
8	Yellow Primer	92	**So-Sure Yellow Primer (84-331) Aerosol**	LHB Industries	37	2.20
			4560-30F A/D Primer Chromate Free	Cardinal Industrial Finishes	45	36.00
			TT-P-645B Primer, PC H2-016	Crawford Laboratories, Inc.	33	24.39
			Formula 84 H2-017 Primer Yellow 33793	Crawford Laboratories, Inc.	52	24.38
			TT-P-1757A Type I Yellow Primer Coating	Davlin Paint Co., Inc.	42	21.76
			TT-P-645B Formula 84 No 33793	Davlin Paint Co., Inc.	37	24.38
			TT-P-1757A Type I Yellow P759A-66	Kop-Coat Inc.	33	21.76
			TT-P-1757A VOC Compliant Primer	Kop-Coat Inc.	33	2.20
			P-441A Zinc Chromate Primer	Koppers Co., Inc.	29	2.20
			Zinc Chromate Primer P-441P	Koppers Co., Inc.	33	2.20
			TT-P-1757 Yellow Zinc Chromate Primer	Plasti-Kote Co., Inc.	42	2.20
			Primer Coating Zinc Chromate Comp L	Pratt and Lambert	28	21.76
			X-3917Y TT-P-1757 Yellow Primer	Sentry Paint & Chemical Co.	41	102.26
			Zinc Chromate Primer GP-0004-1757	Seymour of Sycamore	17	2.20
			F-84 TT-P-645B Zinc Molybdate Primer	Seagrave Coatings Corp	27	44.24
			16A Primer, 119 Yellow	Aervoe-Pacific Co., Inc.	40	2.48
			TT-P-645B Alkyd Yellow Primer	Kop-Coat, Inc.	23	120.00
			4560-30F Yellow Primer Chromate Free	Cardinal Industrial Finishes	33	19.60
			6-204 Zinc Chromate Metal Primer	PPG Industries	21	20.89
9	Black Paint	92	**01920 Black Lacquer 17038 Aerosol**	Sprayon Products	50	1.92
			A-4308-17038 Aerosol Gloss Black	Cardinal Industrial Finishes	38	6.42

* Due to a lack of data provided, the highest alternative price was used as the status quo price.
Shaded materials represent status quo.

es Identified for Portsmouth Naval Shipyard

Per Unit	Total Annual Material Costs ($)	Annual PPE Costs ($)	Total Annual Costs ($)	Discounted Cost ($)	Notes
250 ml btl	2,568.00	0.00	2,568.00	10,629.08	Commercial purchase required from Ralph's Truck World, Portsmouth, NH
quart	100.87	37.14	138.01	571.23	GSA product
250 cc btl	196.56	12.48	209.04	865.23	GSA product
10 10-cc btls	547.52	0.00	547.52	2,266.21	GSA product
10 10-cc btls	547.52	0.00	547.52	2,266.21	GSA product
50 cc btl	322.14	58.56	380.70	1,575.74	GSA product
10 10-cc btls	547.52	0.00	547.52	2,266.21	GSA product
10 10-cc btls	547.52	0.00	547.52	2,266.21	GSA product
50 cc btl	322.14	53.10	375.24	1,553.14	GSA product
10 10-cc btls	547.52	53.10	600.62	2,486.00	GSA product
pint	252.85	0.00	252.85	1,046.56	GSA product
pint	68.38	24.66	93.04	385.10	GSA product
13.25 oz can	115.44	46.08	161.52	668.54	Shipping included
13.25 oz can	117.53	46.08	163.61	677.19	Shipping included
gallon	98.92	53.10	152.02	629.22	Shipping included
gallon	115.26	107.46	222.72	921.85	Shipping included
pint	2,745.60	32.98	2,778.58	11,500.68	Manufacturer could not be reached; price taken from the GSA catalog
gallon	5,616.00	107.46	5,723.46	23,689.69	Also available in 5 gallon cans for $24 / gallon; shipping additional
gallon	3,804.84	54.40	3,859.24	15,973.59	GSA product
gallon	3,803.28	54.40	3,857.68	15,967.13	GSA product
gallon	3,394.56	53.10	3,447.66	14,270.04	GSA product
gallon	3,803.28	56.70	3,859.98	15,976.65	GSA product
gallon	3,394.56	56.70	3,451.26	14,284.94	GSA product
pint	2,745.60	354.06	3,099.66	12,829.65	GSA product
pint	2,745.60	32.98	2,778.58	11,500.68	GSA product
pint	2,745.60	128.88	2,874.48	11,897.62	GSA product
pint	2,745.60	53.10	2,798.70	11,583.96	GSA product
gallon	3,394.56	2,062.50	5,457.06	22,587.04	GSA product; PPE costs include 2 hours per week for issue of respirators, at $15.25 per hour labor rate
5 gal can	3,170.06	53.10	3,223.16	13,340.82	GSA product
pint	2,745.60	0.00	2,745.60	11,364.18	GSA product
gallon	6,901.44	24.66	6,926.10	28,667.47	Shipping additional
pint	3,095.04	74.52	3,169.56	13,118.97	Minimum order is $50; shipped FOB Gardnerville, NV; freight collect on orders less that $1000
gallon	18,720.00	2,413.32	21,133.32	87,471.87	Minimum order is 10 gallons; shipped FOB Vernon, CA; PPE costs include 2 hours per week for issue of respirators, at $15.25 per hour labor rate
gallon	3,057.60	107.46	3,165.06	13,100.34	Shipping additional, from California
gallon	3,258.84	90.72	3,349.56	13,864.00	Delivery included
pint	46.08	7.68	53.76	222.52	Distributor unknown and costs could not be obtained; price taken from the GSA catalog
pint	154.08	17.91	171.99	711.88	GSA product

List of Pollution Prevention Alternatives Identified for Portsn

	Hazardous Material	Bldg.	Product	Manufacturer	HMSF	Price ($)	Per Unit	Total Annual Material Costs ($)	P
9	Black Paint	92	**01920 Black Lacquer 17038 Aerosol**	Sprayon Products	50	1.92	pint	46.08	
	CONTINUED		So Sure Lacquer Gloss Black 17038	LHB Industries	35	1.92	pint	46.08	
			Eco-Sure Black 17038 Aerosol	LHB Industries	32	6.42	pint	154.08	
			Eco-Sure Black 17038 Enamel	LHB Industries	32	5.24	pint	125.76	
			Lacquer, Aerosol Black 17038	Seymour of Sycamore	37	1.92	pint	46.08	
			306 Black 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	2.65	pint	63.60	
			A-2000 Series Lacquer Black 17038	Cardinal Industrial Finishes	30	5.95	12 oz can	190.40	
10	Paint Remover	18	**Omega 3812 SN 313-2 Paint Remover**	Omega Chemical Corp.	59	12.40	gallon	744.00	
			Paint Remover	hemical Commodities Agenc	38	17.00	gallon	1,020.00	
			Crest Paint Stripper #29A	Crest Industrial Chemicals	57	36.97	5 gal can	443.64	
			Intex 8573 Paint Remover	Eze Products Inc.	32	12.40	gallon	744.00	
			TT-R-251J Type III Cl B Paint Remover	MSCI, Ltd	13	12.40	gallon	744.00	
			Nonflammable Paint Remover	Reliable Remover & Lacquer	49	12.40	gallon	744.00	
			Paint Remover, 400063 Nonflammable	W.M. Barr & Co	44	12.40	gallon	744.00	
			Paint Remover, High Viscosity	W.M. Barr & Co	47	12.40	gallon	744.00	
			Organic Paint Remover	4-Tek Industries, Inc.	40	7.80	quart	1,872.00	
11	Paint Thinner	18	**T-10 Paint Thinner**	Devoe Coatings Co	41	39.88	5 gal can	2,871.36	
			Mineral Spirits Odorless	Ashland Chemical Co	31	193.07	55 gal drum	1,351.49	
			Paint Thinner / Mineral Spirits	Preservative Paint Co	30	10.19	gallon	3,668.40	
			Chartersol 300-66 Petroleum Aliphatic	Charter International Oil Co	36	12.40	5 gal can	892.80	
			Paint Thinner	Chem Commodities Agency	40	12.40	5 gal can	892.80	
			Thinner Paint Ty I Regular Mineral Spirits	CSD Inc.	32	12.40	5 gal can	892.80	
			Mineral Spirits, TT-T-291F, Type I	CSD Inc.	29	3.09	gallon	1,112.40	
			Standard 350H TT-T-291 Thinner	Chevron Solvents & Chem	30	3.09	gallon	1,112.40	
			Chevron Thinner 350H	Chevron Environmental Hlth	37	3.09	gallon	1,112.40	
			350B Paint Thinner, Mineral Spirits	Chevron Chemical Corp	44	12.40	5 gal can	892.80	
			Solvent S-66 Thinner, Paint Products	Home Oil Company, Inc.	41	12.40	5 gal can	892.80	
			Paint Thinner	Home Oil Company	29	12.40	5 gal can	892.80	
			266D Thinner, Dope and Lacquer	Houston Solvents & Chem	50	3.09	gallon	1,112.40	
			Mineral Spirits Klean-Strip, PN-GMS44	lean-Strip Div of W.M. Barr	40	5.43	gallon	1,954.80	

* D[illegible]o a lack of data provided, the highest alternative price was used as the status quo price
SI materials represent status quo.

s Identified for Portsmouth Naval Shipyard

Per Unit	Total Annual Material Costs ($)	Annual PPE Costs ($)	Total Annual Costs ($)	Discounted Cost ($)	Notes
pint	46.08	7.68	53.76	222.52	Distributor unknown and costs could not be obtained; price taken from the GSA catalog
pint	46.08	8.85	54.93	227.36	GSA product
pint	154.08	8.85	162.93	674.38	GSA product
pint	125.76	8.85	134.61	557.16	GSA product
pint	46.08	0.00	46.08	190.73	GSA product
pint	63.60	0.00	63.60	263.24	Minimum order is $50; shipped FOB Gardnerville, NV; freight collect on orders less that $1000
12 oz can	190.40	8.85	199.25	824.71	Minimum order is 1 20-can case; shipping additional from California
gallon	744.00	5,460.20	6,204.20	25,679.49	Per manufacturer, this product is not actively made; no record of PNS order; price taken from GSA catalog; PPE costs include 5 hours per week for issue of respirators, at $15.25 per hour labor rate
gallon	1,020.00	1,311.90	2,331.90	9,651.85	Shipping and HM fees additional
5 gal can	443.64	5,743.16	6,186.80	25,607.47	GSA product; PPE costs include 5 hours per week for issue of respirators, at $15.25 per hour labor rate
gallon	744.00	5,276.90	6,020.90	24,920.81	GSA product; PPE costs include 5 hours per week for issue of respirators, at $15.25 per hour labor rate
gallon	744.00	45.46	789.46	3,267.61	GSA product
gallon	744.00	118.26	862.26	3,568.94	GSA product
gallon	744.00	53.10	797.10	3,299.24	GSA product
gallon	744.00	5,373.62	6,117.62	25,321.14	GSA product; PPE costs include 5 hours per week for issue of respirators, at $15.25 per hour labor rate
quart	1,872.00	74.52	1,946.52	8,056.74	GSA product
5 gal can	2,871.36	0.00	2,871.36	11,884.70	Manufacturer would not provide costs; price taken from the GSA catalog
55 gal drum	1,351.49	35.40	1,386.89	5,740.41	GSA product
gallon	3,668.40	1,167.28	4,835.68	20,015.12	Price includes approximately $3 per gallon for shipping; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
5 gal can	892.80	49.68	942.48	3,900.97	GSA product
5 gal can	892.80	20.60	913.40	3,780.61	GSA product
5 gal can	892.80	49.68	942.48	3,900.97	GSA product
gallon	1,112.40	1,172.92	2,285.32	9,459.05	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
gallon	1,112.40	1,148.32	2,260.72	9,357.23	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
gallon	1,112.40	0.00	1,112.40	4,604.28	GSA product
5 gal can	892.80	1,152.48	2,045.28	8,465.52	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
5 gal can	892.80	35.40	928.20	3,841.87	GSA product
5 gal can	892.80	35.40	928.20	3,841.87	GSA product
gallon	1,112.40	16.44	1,128.84	4,672.33	GSA product
gallon	1,954.80	35.40	1,990.20	8,237.54	GSA product

	Hazardous Material	Bldg.	Product	Manufacturer	HMSF	Price ($)	Per Unit	Total Annual Material Costs ($)	Pl
11	Paint Thinner	18	**T-10 Paint Thinner**	Devoe Coatings Co	41	39.88	5 gal can	2,871.36	
	CONTINUED		Thinner, Regular, Type I	Packaging Service Co., Inc.	43	12.40	5 gal can	892.80	
			Regular Mineral Spirits, Thinner	Puma Chemical Co., Inc.	36	12.40	5 gal can	892.80	
			TT-T-291F Paint Thinner	Stic-Adhesive Products Co	16	12.40	5 gal can	892.80	
			291E Paint Thinner	Three M Supply Co	39	12.40	5 gal can	892.80	
			Thinner (4-068) GTA435	International Paint Co., Inc.	33	56.55	5 gal can	4,071.60	
			Odorless Mineral Spirits	Shell Oil Co	15	193.07	55 gal drum	1,351.49	
			21-300 Odorless Paint Thinner	PPG Industries	16	7.97	gallon	2,869.20	
			Thin-X	PPG Industries	33	3.89	gallon	1,400.40	
			Odorless Thin-X	Sterling-Clarke-Lurton	13	3.89	gallon	1,400.40	
12	Antifouling Paint	18	**Devoe ABC #3 Red AF Paint**	Devoe Marine Coatings Co	44	171.99	5 gal can	3,439.80	
			BRA640 Interviron AF Red Paint	International Paint Co., Inc	38	247.85	5 gal can	4,957.00	
			N-5564 Gloss Red Silicone Enamel 11105	Niles Chemical Paint Co	36	141.91	5 gal can	2,838.20	
			888 Series Water Base AF Paint	Pro-Line Paint Co	25	56.13	gallon	5,613.00	
			AF Paint, 76600-51110 Red	Hempel Coatings USA, Inc	36	88.90	gallon	8,890.00	
			AF Paint, 76600-50300 Light Red	Hempel Coatings USA, Inc	46	70.24	gallon	7,024.00	
			F-121 Vinyl AF Red Paint	Seagrave Coatings Corp	33	276.95	5 gal can	5,539.00	
			Vinyl Red AF Paint	Seagrave Coatings Corp	39	276.95	5 gal can	5,539.00	
			Interclene AF Red, BRA540	International/Courtaulds	36	188.85	5 gal can	3,777.00	
			Super Bottomkote Red, 456	International Paint Co., Inc	39	72.55	gallon	7,255.00	
			MIL-P-15931F Red AF, Type I Cl 1 4050	International Paint Co., Inc	25	298.05	5 gal can	5,961.00	
			Woolsey Vinelast 720 Permanent Red	Kop-Coat, Inc.	36	72.80	gallon	7,280.00	
			Woolsey Neptune II WB 551 Red	Kop-Coat, Inc.	40	98.00	gallon	9,800.00	
			1675 Trinidad Red	Kop-Coat, Inc.	31	105.00	gallon	10,500.00	
			1670 ACP-50 Red	Kop-Coat, Inc.	35	119.00	gallon	11,900.00	
			1618 Unepoxy Plus Red	Kop-Coat, Inc.	32	77.00	gallon	7,700.00	
			Neptune 710A Royal Red AF Paint	Kop-Coat, Inc.	35	91.00	gallon	9,100.00	
13	Primer	300	**Locquic Primer T**	Loctite Corp	36	5.46	6 oz can	120.12	
			Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	8.19	250 cc btl	122.85	
			Nuts N' Bolts 227	Heron Manufacturing Inc	20	9.28	10 10-cc btls	352.64	
			Sealant Grade A 8831	Loctite Corp	16	2.73	50 cc btl	207.48	
			Nuts N' Bolts 223	Heron Manufacturing Inc	22	9.28	10 10-cc btls	352.64	
			Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	4.95	1 oz btl	633.60	
			EF Primer 49	Hernon Manufacturing	31	4.80	1.75 oz btl	350.40	
			EF Primer 50	Hernon Manufacturing	42	4.80	1.75 oz btl	350.40	
			Locquic Primer T 7471	Loctite Corp	40	8.80	1.75 oz btl	642.40	

* Due to a lack of data provided, the highest alternative price was used as the status quo price.
Shaded materials represent status quo.

ves Identified for Portsmouth Naval Shipyard

Per Unit	Total Annual Material Costs ($)	Annual PPE Costs ($)	Total Annual Costs ($)	Discounted Cost ($)	Notes
5 gal can	2,871.36	0.00	2,871.36	11,884.70	Manufacturer would not provide costs; price taken from the GSA catalog
5 gal can	892.80	1,167.28	2,060.08	8,526.77	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
5 gal can	892.80	18.96	911.76	3,773.82	GSA product
5 gal can	892.80	35.40	928.20	3,841.87	GSA product
5 gal can	892.80	20.60	913.40	3,780.61	GSA product
5 gal can	4,071.60	197.40	4,269.00	17,669.60	Shipping included in the total annual material costs
55 gal drum	1,351.49	49.68	1,401.17	5,799.51	GSA product
gallon	2,869.20	46.20	2,915.40	12,066.99	Delivery included
gallon	1,400.40	0.00	1,400.40	5,796.33	Delivery included
gallon	1,400.40	0.00	1,400.40	5,796.33	Delivery included
5 gal can	3,439.80	49.68	3,489.48	14,443.13	Manufacturer would not provide costs; price taken from the GSA catalog
5 gal can	4,957.00	1,329.28	6,286.28	26,019.23	Shipping included; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
5 gal can	2,838.20	35.40	2,873.60	11,893.97	GSA product
gallon	5,613.00	20.60	5,633.60	23,317.75	Shipping additional
gallon	8,890.00	0.00	8,890.00	36,796.15	Shipping additional
gallon	7,024.00	0.00	7,024.00	29,072.69	Shipping additional
5 gal can	5,539.00	178.44	5,717.44	23,664.77	Shipping additional
5 gal can	5,539.00	1,189.18	6,728.18	27,848.27	Shipping additional; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
5 gal can	3,777.00	35.40	3,812.40	15,779.71	Shipping included
gallon	7,255.00	197.40	7,452.40	30,845.86	Shipping included
5 gal can	5,961.00	0.00	5,961.00	24,672.88	Shipping included
gallon	7,280.00	30.72	7,310.72	30,259.44	Visa, Mastercard only; shipping additional and depends on weight
gallon	9,800.00	30.72	9,830.72	40,689.84	Visa, Mastercard only; shipping additional and depends on weight
gallon	10,500.00	30.72	10,530.72	43,587.18	Visa, Mastercard only; shipping additional and depends on weight
gallon	11,900.00	30.72	11,930.72	49,381.85	Visa, Mastercard only; shipping additional and depends on weight
gallon	7,700.00	30.72	7,730.72	31,997.84	Visa, Mastercard only; shipping additional and depends on weight
gallon	9,100.00	71.64	9,171.64	37,961.88	Visa, Mastercard only; shipping additional and depends on weight
6 oz can	120.12	8.64	128.76	532.94	This product has been replaced by another product; price taken from GSA catalog for the analysis
250 cc btl	122.85	4.74	127.59	528.10	GSA product
0 10-cc btls	352.64	0.00	352.64	1,459.59	GSA product
50 cc btl	207.48	8.64	216.12	894.53	GSA product
0 10-cc btls	352.64	0.00	352.64	1,459.59	GSA product
1 oz btl	633.60	0.00	633.60	2,622.50	Minimum order is 1 10-bottle case; shipping additional, UPS
.75 oz btl	350.40	8.64	359.04	1,486.08	Shipping additional
.75 oz btl	350.40	8.64	359.04	1,486.08	Shipping additional
.75 oz btl	642.40	8.64	651.04	2,694.69	Commercial purchase required from Ralph's Truck World, Portsmouth, NH

	Hazardous Material	Bldg.	Product	Manufacturer	HMSP	Price ($)	Per Unit	Total Annual Material Costs ($)
14	Red Paint	300	So-Sure Lacquer Aerosol Red 11136	LHB Industries	44	2.08	pint	27.04
			Fixall Brite Red 11136 (444-1304)	Chase Products Co	25	2.08	pint	27.04
			Eco Sure Spray Paint Red 11136	LHB Industries	36	6.42	pint	83.46
			Enamel, Low VOC Water-Based Red	LHB Industries	36	5.24	pint	62.88
			11136 Red	New York Bronze Powder	43	2.08	pint	27.04
			Enamel Red 11136	Plasti-Kote, Inc.	53	2.08	pint	27.04
			GP-0001-1670 Red 11136	Seymour of Sycamore Inc.	56	2.08	pint	27.04
			301 Red 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	2.65	pint	34.45
			A-2000 Aerosol Lacquer Red 11136	Cardinal Industrial Finishes	30	5.95	12 oz can	101.15
15	Gray Paint	65	So-Sure Lacquer Aerosol Gray 16307	LHB Industries	44	2.05	pint	246.00
			Enamel Low VOC Water-Based Gray 16307	LHB Industries	40	5.24	pint	628.80
			Eco Sure Gray 16307 VOC Compliant	LHB Industries	39	6.42	pint	770.40
			361 Gray 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	2.65	pint	318.00
			A-2000 Aerosol Lacquer Gray 16307	Cardinal Industrial Finishes	30	5.95	12 oz can	952.00
16	Orange Paint	158	Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	50	46.55	gallon	4,655.00
			TT-E-489H Enamel Alkyd Low VOC Orange	Con-Lux Coatings, Inc.	44	46.55	gallon	4,655.00
			Enamel 12246 Orange Alkyd Gloss	Con-Lux Coatings, Inc.	23	46.55	gallon	4,655.00
			Enamel Orange 12246 TT-E-2784	Del Paint Corp	11	23.61	gallon	2,361.00
			Exterior Trim Enamel Orange 12246	Farwest Paint Mfg Co	15	23.61	gallon	2,361.00
			Enamel, Orange, TT-E-2784, 495-12246	Scotch Paint	21	23.61	gallon	2,361.00
			305 Orange 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	2.65	pint	2,120.00
			6407-6409 Gloss High Solids	Cardinal Industrial Finishes	30	270.00	5 gal can	5,400.00
			Enamel, VOC Compliant Orange 12246	Kop-Coat Inc.	29	74.50	gallon	7,450.00
			6-282 Speedhide Int / Ext Gloss Enamel	PPG Industries	31	15.80	gallon	1,580.00
17	Yellow Paint	158	Enamel Alkyd Air Drying Yellow 13538	Pratt and Lambert	49	33.29	gallon	3,329.00
			TT-E-2784 Enamel Yellow 13538	Del Paint Mfg	14	17.05	gallon	1,705.00
			So Sure Enamel ID 44-130-P Yellow 13538	LHB Industries	49	2.73	pint	2,184.00
			742-312 Enamel Alkyd Yellow 13538	Ameron Industrial Coatings	31	22.18	gallon	2,218.00
			742-328 Enamel Alkyd Yellow 13538	Ameron Industrial Coatings	30	24.92	gallon	2,492.00

* Due to a lack of data provided, the highest alternative price was used as the status quo price.
Shr naterials represent status quo.

tives Identified for Portsmouth Naval Shipyard

$)	Per Unit	Total Annual Material Costs ($)	Annual PPE Costs ($)	Total Annual Costs ($)	Discounted Cost ($)	Notes
08	pint	27.04	5.07	32.11	132.90	Manufacturer could not be reached; price taken from the GSA catalog
08	pint	27.04	45.24	72.28	299.17	GSA product
42	pint	83.46	5.07	88.53	366.43	GSA product
24	pint	62.88	5.07	67.95	281.25	GSA product
08	pint	27.04	914.81	941.85	3,898.36	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
08	pint	27.04	11.55	38.59	159.73	GSA product
08	pint	27.04	0.00	27.04	111.92	GSA product
65	pint	34.45	0.00	34.45	142.59	Minimum order is $50; shipped FOB Gardnerville, NV; freight collect on orders less that $1000
95	12 oz can	101.15	8.85	110.00	455.30	Minimum order is 1 20-can case; shipping additional from California
05	pint	246.00	12.38	258.38	1,069.45	Manufacturer could not be reached; price taken from the GSA catalog
24	pint	628.80	12.38	641.18	2,653.88	GSA product
42	pint	770.40	12.38	782.78	3,239.97	GSA product
65	pint	318.00	0.00	318.00	1,316.22	Minimum order is $50; shipped FOB Gardnerville, NV; freight collect on orders less that $1000
95	12 oz can	952.00	17.70	969.70	4,013.64	Minimum order is 1 20-can case; shipping additional from California
55	gallon	4,655.00	49.68	4,704.68	19,472.91	Manufacturer could not be reached; price taken from the GSA catalog
55	gallon	4,655.00	1,349.08	6,004.08	24,851.19	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
55	gallon	4,655.00	1,162.60	5,817.60	24,079.34	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
61	gallon	2,361.00	1,166.76	3,527.76	14,601.58	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
61	gallon	2,361.00	30.72	2,391.72	9,899.45	GSA product
61	gallon	2,361.00	1,167.28	3,528.28	14,603.73	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
65	pint	2,120.00	0.00	2,120.00	8,774.79	Minimum order is $50; shipped FOB Gardnerville, NV; freight collect on orders less that $1000
00	5 gal can	5,400.00	16.44	5,416.44	22,418.92	Shipping additional from Warren, PA
50	gallon	7,450.00	96.72	7,546.72	31,236.25	25 gallon minimum order; shipped FOB Vernon, CA
80	gallon	1,580.00	29.76	1,609.76	6,662.88	Delivery included
29	gallon	3,329.00	49.68	3,378.68	13,984.53	Manufacturer could not be reached; price taken from the GSA catalog
05	gallon	1,705.00	1,166.76	2,871.76	11,886.36	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
73	pint	2,184.00	30.72	2,214.72	9,166.84	GSA product
18	gallon	2,218.00	1,131.88	3,349.88	13,865.32	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
92	gallon	2,492.00	1,131.88	3,623.88	14,999.42	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate

	Hazardous Material	Bldg.	Product	Manufacturer	HMSP	Price ($)	Per Unit	Total Annual Material Costs ($)
17	Yellow Paint	158	**Enamel Alkyd Air Drying Yellow 13538**	Pratt and Lambert	49	33.29	gallon	3,329.00
	CONTINUED		TT-E-489G Yellow 13538 Enamel Alkyd	Con-Lux Coatings, Inc.	35	33.29	gallon	3,329.00
			TT-E-2784 Ultra Deep Tint Yellow 13538	Davlin Paint Co	10	17.23	gallon	1,723.00
			600 Industrial Enamel 13538	Davlin Paint Co	32	33.29	gallon	3,329.00
			Yellow Gloss Enamel Alkyd 13538	Everseal Manufacturing Co	27	33.29	gallon	3,329.00
			Enamel Alkyd Gloss Yellow 13538	Farwest Paint Mfg Co	27	9.15	quart	3,660.00
			Exterior Trim Enamel Yellow 13538	Farwest Paint Mfg Co	16	17.05	gallon	1,705.00
			So-Sure Yellow 13538	LHB Industries	41	2.73	pint	2,184.00
			Eco Sure Yellow 13538 VOC Compliant	LHB Industries	39	6.42	pint	5,136.00
			N5223 Yellow A/D Enamel 13538	Niles Chemical Paint Co	38	33.29	gallon	3,329.00
			Industrial All Purpose Spray Enamel	Plasti-Kote Co., Inc.	43	2.73	pint	2,184.00
			Enamel Gloss Yellow 13538, TT-E-489	Randolph Products Co	9	38.81	gallon	3,881.00
			Enamel Yellow 13538	Scotch Paint	22	17.05	gallon	1,705.00
			Enamel Alkyd Type II Yellow 13538 Aerosol	Seymour of Sycamore Inc.	36	2.73	pint	2,184.00
			302 Yellow 11A Rustproof Paint	Aervoe-Pacific Co., Inc	32	2.65	pint	2,120.00
			6407-6409 Gloss High Solids	Cardinal Industrial Finishes	30	270.00	5 gal can	5,400.00
			TT-E-489G Type I 13538 Yellow Paint	Kop-Coat, Inc.	35	56.50	gallon	5,650.00
18	Gray Paint	158	**Enamel Deck Interior Gray 26231**	Pratt & Lambert Industrial Coatings	34	36.60*	gallon	3,660.00*
			Enamel Gray 26231	Ameron Protective Coatings	37	100.81	5 gal can	2,016.20
			MIL-E-24635A Enamel Gray 26231	Davlin Paint Co., Inc.	29	100.81	5 gal can	2,016.20
			N-5356 Silicone Alkyd Enamel Gray 26231	Niles Chemical Paint Co	32	16.98	gallon	1,698.00
			97-482 Silicone Alkyd	PPG Industries	19	36.60	gallon	3,660.00

* Due to a lack of data provided, the highest alternative price was used as the status quo price.
Shaded materials represent status quo.

es Identified for Portsmouth Naval Shipyard

Per Unit	Total Annual Material Costs ($)	Annual PPE Costs ($)	Total Annual Costs ($)	Discounted Cost ($)	Notes
gallon	3,329.00	49.68	3,378.68	13,984.53	Manufacturer could not be reached; price taken from the GSA catalog
gallon	3,329.00	1,162.60	4,491.60	18,590.96	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
gallon	1,723.00	35.40	1,758.40	7,278.11	GSA product
gallon	3,329.00	35.40	3,364.40	13,925.42	GSA product
gallon	3,329.00	1,167.28	4,496.28	18,610.33	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
quart	3,660.00	35.40	3,695.40	15,295.45	GSA product
gallon	1,705.00	49.68	1,754.68	7,262.71	GSA product
pint	2,184.00	35.40	2,219.40	9,186.21	GSA product
pint	5,136.00	35.40	5,171.40	21,404.68	GSA product
gallon	3,329.00	35.40	3,364.40	13,925.42	GSA product
pint	2,184.00	71.64	2,255.64	9,336.21	GSA product
gallon	3,881.00	0.00	3,881.00	16,063.65	GSA product
gallon	1,705.00	1,167.28	2,872.28	11,888.51	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
pint	2,184.00	0.00	2,184.00	9,039.69	GSA product
pint	2,120.00	0.00	2,120.00	8,774.79	Minimum order is $50; shipped FOB Gardnerville, NV; freight collect on orders less that $1000
5 gal can	5,400.00	16.44	5,416.44	22,418.92	Shipping additional from Warren, PA
gallon	5,650.00	30.72	5,680.72	23,512.78	Minimum order is $300; shipped FOB Vernon, CA
gallon	3,660.00*	49.68	3,709.68*	15,354.55*	Manufacturer could not be reached; no material costs are available. The highest material annual costs for the P2 alternatives identified was used for the analysis
5 gal can	2,016.20	1,256.32	3,272.52	13,545.12	GSA product; PPE costs include 1 hour per week for issue of respirators, at $15.25 per hour labor rate
5 gal can	2,016.20	46.20	2,062.40	8,536.38	GSA product
gallon	1,698.00	35.40	1,733.40	7,174.63	GSA product
gallon	3,660.00	29.76	3,689.76	15,272.10	Delivery included

APPENDIX G

THE POLLUTION PREVENTION PRIORITY NUMBER ANALYSIS

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	HMSF	HMSF[2] - HMSF[1]	Initial Cost	ICF
1	Neoprene Primer	240	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43			
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	39	0.00	10
			Proposed	EF Primer 49	Hernon Manufacturing	31	12	0.00	30
			Proposed	Blue Resin Solution - G7526F	Glyptal, Inc.	31	12	0.00	30
			Proposed	3M 90 High Strength Adhesive	3M	22	21	0.00	20
			Proposed	3M Spray 80 Neoprene Contact Adhesive	3M	24	19	0.00	30
2	Corrosion Inhibitor	240	Status Quo	Neolube No.1 Graphite, Colloidal	Huron Industries Inc.	35			
			Proposed	DAG 156 Graphite, Colloidal	Acheson Colloids Co	28	7	0.00	30
			Proposed	Pelco Colloidal Graphite, 16053	Ted Pella Inc.	25	10	0.00	30
			Proposed	Lock-Ease	AGS Company	25	10	0.00	30
			Proposed	Siloxirane 2032	Advance Polymer Sciences, Inc.	33	2	0.00	30
3	Black Paint	60	Status Quo	IB No 2652 Acrylic Lacquer Aerosol	Ill Bronze Powder & Paint	41			
			Proposed	DR038 Concentrate Aerosol Lacquer	Devoe & Raynolds Co, Inc.	29	12	0.00	30
			Proposed	A-4100 Acrylic Aerosol Black	Cardinal Industrial Finishes	30	11	0.00	30
4	Neoprene Primer	60	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43			
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	39	0.00	10
			Proposed	EF Primer 49	Hernon Manufacturing	31	12	0.00	30
			Proposed	Blue Resin Solution - G7526F	Glyptal, Inc.	31	12	0.00	30
			Proposed	3M 90 High Strength Adhesive	3M	22	21	0.00	20
			Proposed	3M Spray 80 Neoprene Contact Adhesive	3M	24	19	0.00	30
5	Dichloromethane	60	Status Quo	Dichloromethane, Technical	Ashland Chemical Co	72			
			Proposed	Safety Strip HT Cleaning Compound	Brulin and Co., Inc.	12	60	0.00	10
			Proposed	Envirosolve 654CR	Fine Organics Corp	16	56	0.00	10
			Proposed	Teksol EP Cleaning Compound	Inland Technology	15	57	0.00	10
			Proposed	Citra Soak, FC058	Inland Technology	15	57	0.00	10
			Proposed	Pur-O-Shine Heavy Duty Cleaner	American Puro-Shine Ind	12	60	0.00	10
6	Silver Paint	64	Status Quo	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	44			
			Proposed	Aerosol Coatings 01947, Lacquer 17178	Sprayon Products	34	10	0.00	30
			Proposed	310 Silver 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	12	0.00	30

HMSF=Hazardous Material Selection Factor
HMSF=Status Quo Alternative HMSF
HMSF=Pollution Prevention Alternative HMSF

Figure G-1. Investment Cost Factor (ICF)

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	HMSF	HMSF[2] - HMSF[1]	Initial Cost	ICF
6	Silver Paint	64	Status Quo	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	44			
	CONTINUED		Proposed	A-2000 Lacquer Aerosol Silver 17178	Cardinal Industrial Finishes	30	14	0.00	30
7	Anaerobic Adhesive	92	Status Quo	Loctite Grade A Anaerobic Adhesive	Loctite Corp	7			
			Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	0	0.00	30
			Proposed	Anaerobic Adhesive/Sealant	Saf-T-Lok Chemical Corp	7	0	0.00	30
			Proposed	TB 1361A Sealing Compound	Three Bond of America, Inc.	11	-4	0.00	40
			Proposed	Grade A Red Sealing Compound	Three Bond of America, Inc.	11	-4	0.00	40
			Proposed	Sealant Grade A 8831	Loctite Corp	16	-9	0.00	40
8	Yellow Primer	92	Status Quo	So-Sure Yellow Primer (84-331) Aerosol	LHB Industries	37			
			Proposed	TT-P-1757A VOC Compliant Primer	Kop-Coat Inc.	33	4	0.00	30
			Proposed	P-441A Zinc Chromate Primer	Koppers Co., Inc.	29	8	0.00	30
			Proposed	Zinc Chromate Primer P-441P	Koppers Co., Inc.	33	4	0.00	30
			Proposed	Zinc Chromate Primer GP-0004-1757	Seymour of Sycamore	17	20	0.00	30
			Proposed	6-204 Zinc Chromate Metal Primer	PPG Industries	21	16	0.00	30
9	Black Paint	92	Status Quo	01920 Black Lacquer 17038 Aerosol	Sprayon Products	50			
			Proposed	So Sure Lacquer Gloss Black 17038	LHB Industries	35	15	0.00	30
			Proposed	Eco-Sure Black 17038 Enamel	LHB Industries	32	18	0.00	30
			Proposed	Lacquer, Aerosol Black 17038	Seymour of Sycamore	37	13	0.00	30
			Proposed	306 Black 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	18	0.00	30
			Proposed	A-2000 Series Lacquer Black 17038	Cardinal Industrial Finishes	30	20	0.00	30
10	Paint Remover	18	Status Quo	Omega 3812 SN 313-2 Paint Remover	Omega Chemical Corp.	59			
			Proposed	Paint Remover	Chem Commodities Agency	38	21	0.00	20
			Proposed	Intex 8573 Paint Remover	Eze Products Inc.	32	27	0.00	20
			Proposed	TT-R-251J Type III Cl B Paint Remover	MSCI, Ltd	13	46	0.00	10
			Proposed	Paint Remover, 400063 Nonflammable	W.M. Barr & Co	44	15	0.00	30
			Proposed	Organic Paint Remover	4-Tek Industries, Inc.	40	19	0.00	30
11	Paint Thinner	18	Status Quo	T-10 Paint Thinner	Devoe Coatings Co	41			
			Proposed	Standard 350H TT-T-291 Thinner	Chevron Solvents & Chem	30	11	0.00	30
			Proposed	Paint Thinner	Home Oil Company	29	12	0.00	30

HMSF=Hazardous Material Selection Factor
HMSF=Status Quo Alternative HMSF
HMSF=Pollution Prevention Alternative HMSF

Figure G-1. Investment Cost Factor (ICF)

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	HMSF	$HMSF^2 - HMSF^1$	Initial Cost	ICF
11	Paint Thinner	18	Status Quo	T-10 Paint Thinner	Devoe Coatings Co	41			
	CONTINUED		Proposed	TT-T-291F Paint Thinner	Stic-Adhesive Products Co	16	25	0.00	20
			Proposed	Odorless Mineral Spirits	Shell Oil Co	15	26	0.00	20
			Proposed	Odorless Thin-X	Sterling-Clarke-Lurton	13	28	0.00	20
12	Antifouling Paint	18	Status Quo	Devoe ABC #3 Red AF Paint	Devoe Marine Coatings Co	44			
			Proposed	N-5564 Gloss Red Silicone Enamel 11105	Niles Chemical Paint Co	36	8	0.00	30
			Proposed	888 Series Water Base AF Paint	Pro-Line Paint Co	25	19	0.00	30
			Proposed	F-121 Vinyl AF Red Paint	Seagrave Coatings Corp	33	11	0.00	30
			Proposed	Interclene AF Red, BRA540	International/Courtaulds	36	8	0.00	30
			Proposed	MIL-P-15931F Red AF, Type I Cl 1 4050	International Paint Co., Inc	25	19	0.00	30
13	Primer	300	Status Quo	Locquic Primer T	Loctite Corp	36			
			Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	29	0.00	20
			Proposed	Nuts N' Bolts 227	Heron Manufacturing Inc	20	16	0.00	30
			Proposed	Sealant Grade A 8831	Loctite Corp	16	20	0.00	30
			Proposed	Nuts N' Bolts 223	Heron Manufacturing Inc	22	14	0.00	30
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	32	0.00	20
14	Red Paint	300	Status Quo	So-Sure Lacquer Aerosol Red 11136	LHB Industries	44			
			Proposed	Fixall Brite Red 11136 (444-1304)	Chase Products Co	25	19	0.00	30
			Proposed	Eco Sure Spray Paint Red 11136	LHB Industries	36	8	0.00	30
			Proposed	Enamel, Low VOC Water-Based Red	LHB Industries	36	8	0.00	30
			Proposed	301 Red 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	12	0.00	30
			Proposed	A-2000 Aerosol Lacquer Red 11136	Cardinal Industrial Finishes	30	14	0.00	30
15	Gray Paint	65	Status Quo	So-Sure Lacquer Aerosol Gray 16307	LHB Industries	44			
			Proposed	Enamel Low VOC Water-Based Gray 16307	LHB Industries	40	4	0.00	30
			Proposed	Eco Sure Gray 16307 VOC Compliant	LHB Industries	39	5	0.00	30
			Proposed	361 Gray 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	12	0.00	30
			Proposed	A-2000 Aerosol Lacquer Gray 16307	Cardinal Industrial Finishes	30	14	0.00	30
16	Orange Paint	158	Status Quo	Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	50			
			Proposed	Enamel Orange 12246 TT-E-2784	Del Paint Corp	11	39	0.00	10

HMSF=Hazardous Material Selection Factor
HMSF=Status Quo Alternative HMSF
HMSF=Pollution Prevention Alternative HMSF

Figure G-1. Investment Cost Factor (ICF)

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	HMSF	$HMSF^2 - HMSF^1$	Initial Cost	ICF
16	Orange Paint	158	Status Quo	Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	50			
	CONTINUED		Proposed	Exterior Trim Enamel Orange 12246	Farwest Paint Mfg Co	15	35	0.00	20
			Proposed	Enamel, Orange, TT-E-2784, 495-12246	Scotch Paint	21	29	0.00	20
			Proposed	305 Orange 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	18	0.00	30
			Proposed	6-282 Speedhide Int / Ext Gloss Enamel	PPG Industries	31	19	0.00	30
17	Yellow Paint	158	Status Quo	Enamel Alkyd Air Drying Yellow 13538	Pratt and Lambert	49			
			Proposed	TT-E-2784 Enamel Yellow 13538	Del Paint Mfg	14	35	0.00	20
			Proposed	TT-E-2784 Ultra Deep Tint Yellow 13538	Davlin Paint Co	10	39	0.00	10
			Proposed	Exterior Trim Enamel Yellow 13538	Farwest Paint Mfg Co	16	33	0.00	20
			Proposed	Enamel Gloss Yellow 13538, TT-E-489	Randolph Products Co	9	40	0.00	10
			Proposed	Enamel Yellow 13538	Scotch Paint	22	27	0.00	20
18	Gray Paint	158	Status Quo	Enamel Deck Interior Gray 26231	Pratt & Lambert Industrial	34			
			Proposed	MIL-E-24635A Enamel Gray 26231	Davlin Paint Co., Inc.	29	5	0.00	30
			Proposed	N-5356 Silicone Alkyd Enamel Gray 26231	Niles Chemical Paint Co	32	2	0.00	30
			Proposed	97-482 Silicone Alkyd	PPG Industries	19	15	0.00	30

HMSF=Hazardous Material Selection Factor
HMSF=Status Quo Alternative HMSF
HMSF=Pollution Prevention Alternative HMSF

Figure G-1. Investment Cost Factor (ICF)

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	UAC ($)	UAC[2] - UAC[1] ($)	% change*	UACF
1	Neoprene Primer	240	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	203.76			
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	1,900.80	-1,697.04	-832.86%	2.00
			Proposed	EF Primer 49	Hernon Manufacturing	1,075.52	-871.76	-427.84%	2.00
			Proposed	Blue Resin Solution - G7526F	Glyptal, Inc.	466.80	-263.04	-129.09%	2.00
			Proposed	3M 90 High Strength Adhesive	3M	233.42	-29.66	-14.56%	1.15
			Proposed	3M Spray 80 Neoprene Contact Adhesive	3M	237.37	-33.61	-16.49%	1.20
2	Corrosion Inhibitor	240	Status Quo	Neolube No.1 Graphite, Colloidal	Huron Industries Inc.	8,166.20			
			Proposed	DAG 156 Graphite, Colloidal	Acheson Colloids Co	8,690.03	-523.83	-6.41%	.1.10
			Proposed	Pelco Colloidal Graphite, 16053	Ted Pella Inc.	16,052.95	-7,886.75	-96.58%	2.00
			Proposed	Lock-Ease	AGS Company	1,606.04	6,560.16	80.33%	0.10
			Proposed	Siloxirane 2032	Advance Polymer Sciences	5,933.44	2,232.76	27.34%	0.70
3	Black Paint	60	Status Quo	IB No 2652 Acrylic Lacquer Aerosol	Ill Bronze Powder & Paint	45.36			
			Proposed	DR038 Concentrate Aerosol Lacquer	Devoe & Raynolds Co, Inc.	61.44	-16.08	-35.45%	1.35
			Proposed	A-4100 Acrylic Aerosol Black	Cardninal Industrial Finishes	208.10	-162.74	-358.77%	2.00
4	Neoprene Primer	60	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	530.88			
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4,786.65	-4,255.77	-801.64%	2.00
			Proposed	EF Primer 49	Hernon Manufacturing	2,712.96	-2,182.08	-411.03%	2.00
			Proposed	Blue Resin Solution - G7526F	Glyptal, Inc.	1,186.45	-655.57	-123.49%	2.00
			Proposed	3M 90 High Strength Adhesive	3M	584.81	-53.93	-10.16%	1.10
			Proposed	3M Spray 80 Neoprene Contact Adhesive	3M	594.57	-63.69	-12.00%	1.15
5	Dichloromethane	60	Status Quo	Dichloromethane, Technical	Ashland Chemical Co	4,002.16			
			Proposed	Safety Strip HT Cleaning Compound	Brulin and Co., Inc.	2,532.52	1,469.64	36.72%	0.60
			Proposed	Envirosolve 654CR	Fine Organics Corp	1,702.57	2,299.59	57.46%	0.25
			Proposed	Teksol EP Cleaning Compound	Inland Technology	2,557.99	1,444.17	36.08%	0.60
			Proposed	Citra Soak, FC058	Inland Technology	1,635.40	2,366.76	59.14%	0.25
			Proposed	Pur-O-Shine Heavy Duty Cleaner	American Puro-Shine Ind	822.25	3,179.91	79.45%	0.10
6	Silver Paint	64	Status Quo	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	79.83			
			Proposed	Aerosol Coatings 01947, Lacquer 17178	Sprayon Products	78.66	1.17	1.47%	0.95
			Proposed	310 Silver 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	103.35	-23.52	-29.46%	1.30

UAC=Uniform Annual Cost
UAC[2]=Status Quo UAC
UAC[1]=Proposed UAC
*=negative numbers mean price increase

Figure G-2. Uniform Annual Cost Factor (UACF)

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	UAC ($)	UAC^2 - UAC^1 ($)	% change*	UACF
6	Silver Paint	64	Status Quo	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	79.83			
	CONTINUED		Proposed	A-2000 Lacquer Aerosol Silver 17178	Cardinal Industrial Finishes	312.30	-232.47	-291.21%	2.00
7	Anaerobic Adhesive	92	Status Quo	Loctite Grade A Anaerobic Adhesive	Loctite Corp	2,568.00			
			Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	209.04	2,358.96	91.86%	0.10
			Proposed	Anaerobic Adhesive/Sealant	Saf-T-Lok Chemical Corp	547.52	2,020.48	78.68%	0.10
			Proposed	TB 1361A Sealing Compound	Three Bond of America, Inc.	375.24	2,192.76	85.39%	0.10
			Proposed	Grade A Red Sealing Compound	Three Bond of America, Inc.	600.62	1,967.38	76.61%	0.10
			Proposed	Sealant Grade A 8831	Loctite Corp	380.70	2,187.30	85.18%	0.10
8	Yellow Primer	92	Status Quo	So-Sure Yellow Primer (84-331) Aerosol	LHB Industries	11,500.68			
			Proposed	TT-P-1757A VOC Compliant Primer	Kop-Coat Inc.	12,829.65	-1,328.97	-11.56%	1.15
			Proposed	P-441A Zinc Chromate Primer	Koppers Co., Inc.	11,500.68	0.00	0.00%	1.00
			Proposed	Zinc Chromate Primer P-441P	Koppers Co., Inc.	11,897.62	-396.93	-3.45%	1.05
			Proposed	Zinc Chromate Primer GP-0004-1757	Seymour of Sycamore	11,364.18	136.51	1.19%	0.95
			Proposed	6-204 Zinc Chromate Metal Primer	PPG Industries	13,864.00	-2,363.31	-20.55%	1.25
9	Black Paint	92	Status Quo	01920 Black Lacquer 17038 Aerosol	Sprayon Products	53.76			
			Proposed	So Sure Lacquer Gloss Black 17038	LHB Industries	54.93	-1.17	-2.18%	1.05
			Proposed	Eco-Sure Black 17038 Enamel	LHB Industries	134.61	-80.85	-150.39%	2.00
			Proposed	Lacquer, Aerosol Black 17038	Seymour of Sycamore	46.08	7.68	14.29%	0.85
			Proposed	306 Black 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	63.60	-9.84	-18.30%	1.20
			Proposed	A-2000 Series Lacquer Black 17038	Cardinal Industrial Finishes	199.25	-145.49	-270.63%	2.00
10	Paint Remover	18	Status Quo	Omega 3812 SN 313-2 Paint Remover	Omega Chemical Corp.	6,024.20			
			Proposed	Paint Remover	Chem Commodities Agency	1,086.88	4,937.32	81.96%	0.10
			Proposed	Intex 8573 Paint Remover	Eze Products Inc.	6,020.90	3.30	0.05%	1.00
			Proposed	TT-R-251J Type III Cl B Paint Remover	MSCI, Ltd	789.46	5,234.74	86.90%	0.10
			Proposed	Paint Remover, 400063 Nonflammable	W.M. Barr & Co	797.10	5,227.10	86.77%	0.10
			Proposed	Organic Paint Remover	4-Tek Industries, Inc.	1,946.52	4,077.68	67.69%	0.25
11	Paint Thinner	18	Status Quo	T-10 Paint Thinner	Devoe Coatings Co	2,871.36			
			Proposed	Standard 350H TT-T-291 Thinner	Chevron Solvents & Chem	2,260.72	610.64	21.27%	0.75
			Proposed	Paint Thinner	Home Oil Company	928.20	1,943.16	67.67%	0.25

UAC=Uniform Annual Cost
UAC^2=Status Quo UAC
UAC^1=Proposed UAC
*=negative numbers mean price increase

Figure G-2. Uniform Annual Cost Factor (UACF)

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	UAC ($)	UAC^2 - UAC^1 ($)	% change*	UACF
11	Paint Thinner	18	Status Quo	T-10 Paint Thinner	Devoe Coatings Co	2,871.36			
	CONTINUED		Proposed	TT-T-291F Paint Thinner	Stic-Adhesive Products Co	928.20	1,943.16	67.67%	0.25
			Proposed	Odorless Mineral Spirits	Shell Oil Co	1,401.17	1,470.19	51.20%	0.25
			Proposed	Odorless Thin-X	Sterling-Clarke-Lurton	1,400.40	1,470.96	51.23%	0.25
12	Antifouling Paint	18	Status Quo	Devoe ABC #3 Red AF Paint	Devoe Marine Coatings Co	3,489.48			
			Proposed	N-5564 Gloss Red Silicone Enamel 11105	Niles Chemical Paint Co	2,873.60	615.88	17.65%	0.80
			Proposed	888 Series Water Base AF Paint	Pro-Line Paint Co	5,633.60	-2,144.12	-61.45%	2.00
			Proposed	F-121 Vinyl AF Red Paint	Seagrave Coatings Corp	5,717.44	-2,227.96	-63.85%	2.00
			Proposed	Interclene AF Red, BRA540	International/Courtaulds	3,812.40	-322.92	-9.25%	1.10
			Proposed	MIL-P-15931F Red AF, Type I Cl 1 4050	International Paint Co., Inc	5,961.00	-2,471.52	-70.83%	2.00
13	Primer	300	Status Quo	Locquic Primer T	Loctite Corp	128.76			
			Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	127.59	1.17	0.91%	0.95
			Proposed	Nuts N' Bolts 227	Heron Manufacturing Inc	352.64	-223.88	-173.87%	2.00
			Proposed	Sealant Grade A 8831	Loctite Corp	216.12	-87.36	-67.85%	2.00
			Proposed	Nuts N' Bolts 223	Heron Manufacturing Inc	352.64	-223.88	-173.87%	2.00
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	633.60	-504.84	-392.08%	2.00
14	Red Paint	300	Status Quo	So-Sure Lacquer Aerosol Red 11136	LHB Industries	32.11			
			Proposed	Fixall Brite Red 11136 (444-1304)	Chase Products Co	72.28	-40.17	-125.10%	2.00
			Proposed	Eco Sure Spray Paint Red 11136	LHB Industries	88.53	-56.42	-175.71%	2.00
			Proposed	Enamel, Low VOC Water-Based Red	LHB Industries	67.95	-35.84	-111.62%	2.00
			Proposed	301 Red 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	34.45	-2.34	-7.29%	1.10
			Proposed	A-2000 Aerosol Lacquer Red 11136	Cardinal Industrial Finishes	110.00	-77.89	-242.57%	2.00
15	Gray Paint	65	Status Quo	So-Sure Lacquer Aerosol Gray 16307	LHB Industries	258.38			
			Proposed	Enamel Low VOC Water-Based Gray 16307	LHB Industries	641.18	-382.80	-148.15%	2.00
			Proposed	Eco Sure Gray 16307 VOC Compliant	LHB Industries	782.78	-524.40	-202.96%	2.00
			Proposed	361 Gray 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	318.00	-59.62	-23.07%	1.25
			Proposed	A-2000 Aerosol Lacquer Gray 16307	Cardinal Industrial Finishes	969.70	-711.32	-275.30%	2.00

UAC=Uniform Annual Cost
UAC^2=Status Quo UAC
UAC^1=Proposed UAC
*=negative numbers mean price increase

Figure G-2. Uniform Annual Cost Factor (UACF)

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	UAC ($)	UAC^2 - UAC^1 ($)	% change*	UACF
16	Orange Paint	158	Status Quo	Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	4,704.68			
			Proposed	Enamel Orange 12246 TT-E-2784	Del PAint Corp	3,364.17	1,340.51	28.49%	0.70
			Proposed	Exterior Trim Enamel Orange 12246	Farwest Paint Mfg Co	2,391.72	2,312.96	49.16%	0.50
			Proposed	Enamel, Orange, TT-E-2784, 495-12246	Scotch Paint	3,528.28	1,176.40	25.00%	0.75
			Proposed	305 Orange 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	2,120.00	2,584.68	54.94%	0.25
			Proposed	6-282 Speedhide Int / Ext Gloss Enamel	PPG Industries	1,609.76	3,094.92	65.78%	0.25
17	Yellow Paint	158	Status Quo	Enamel Alkyd Air Drying Yellow 13538	Pratt and Lambert	3,378.68			
			Proposed	TT-E-2784 Enamel Yellow 13538	Del Paint Mfg	2,871.76	506.92	15.00%	0.85
			Proposed	TT-E-2784 Ultra Deep Tint Yellow 13538	Davlin Paint Co	1,758.40	1,620.28	47.96%	0.50
			Proposed	Exterior Trim Enamel Yellow 13538	Farwest Paint Mfg Co	1,754.68	1,624.00	48.07%	0.50
			Proposed	Enamel Gloss Yellow 13538, TT-E-489	Randolph Products Co	3,881.00	-502.32	-14.87%	1.15
			Proposed	Enamel Yellow 13538	Scotch Paint	2,872.28	506.40	14.99%	0.85
18	Gray Paint	158	Status Quo	Enamel Deck Interior Gray 26231	Pratt & Lambert Industrial	3,709.68			
			Proposed	MIL-E-24635A Enamel Gray 26231	Davlin Paint Co., Inc.	2,062.40	1,647.28	44.40%	0.55
			Proposed	N-5356 Silicone Alkyd Enamel Gray 26231	Niles Chemical Paint Co	1,733.40	1,976.28	53.27%	0.25
			Proposed	97-482 Silicone Alkyd	PPG Industries	3,689.76	19.92	0.54%	0.95

UAC=Uniform Annual Cost
UAC^2=Status Quo UAC
UAC^1=Proposed UAC
*=negative numbers mean price increase

Figure G-2. Uniform Annual Cost Factor (UACF)

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	HMSF	ICF	UACF	WF	PF	PPPN
1	Neoprene Primer	240	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43					
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	10	2.00	1	1	20
			Proposed	3M 90 High Strength Adhesive	3M	22	20	1.15	1	1	23
			Proposed	3M Spray 80 Neoprene Contact Adhesive	3M	24	30	1.20	1	1	36
			Proposed	Blue Resin Solution - G7526F	Glyptal, Inc.	31	30	2.00	1	1	60
			Proposed	EF Primer 49	Hernon Manufacturing	31	30	2.00	1	1	60
2	Corrosion Inhibitor	240	Status Quo	Neolube No.1 Graphite, Colloidal	Huron Industries Inc.	35					
			Proposed	Lock-Ease	AGS Company	25	30	0.10	1	1	3
			Proposed	DAG 156 Graphite, Colloidal	Acheson Colloids Co	28	30	1.10	1	1	33
			Proposed	Pelco Colloidal Graphite, 16053	Ted Pella Inc.	25	30	2.00	1	1	60
			Proposed	Siloxirane 2032	Advance Polymer Sciences	33	30	0.70	1	1	21
3	Black Paint	60	Status Quo	IB No 2652 Acrylic Lacquer Aerosol	Ill Bronze Powder & Paint	41					
			Proposed	DR038 Concentrate Aerosol Lacquer	Devoe & Raynolds Co, Inc.	29	30	1.35	1	1	40.5
			Proposed	A-4100 Acrylic Aerosol Black	Cardinal Industrial Finishes	30	30	2.00	1	1	60
4	Neoprene Primer	60	Status Quo	Neoprene N-11 Primer	Haartz-Mason Inc.	43					
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	10	2.00	1	1	20
			Proposed	3M 90 High Strength Adhesive	3M	22	20	1.10	1	1	22
			Proposed	3M Spray 80 Neoprene Contact Adhesive	3M	24	30	1.15	1	1	34.5
			Proposed	Blue Resin Solution - G7526F	Glyptal, Inc.	31	30	2.00	1	1	60
			Proposed	EF Primer 49	Hernon Manufacturing	31	30	2.00	1	1	60
5	Dichloromethane	60	Status Quo	Dichloromethane, Technical	Ashland Chemical Co	72					
			Proposed	Pur-O-Shine Heavy Duty Cleaner	American Puro-Shine Ind	12	10	0.10	1	1	1
			Proposed	Citra Soak, FC058	Inland Technology	15	10	0.25	1	1	2.5
			Proposed	Envirosolve 654CR	Fine Organics Corp	16	10	0.25	1	1	2.5
			Proposed	Safety Strip HT Cleaning Compound	Brulin and Co., Inc.	12	10	0.60	1	1	6
			Proposed	Teksol EP Cleaning Compound	Inland Technology	15	10	0.60	1	1	6
6	Silver Paint	64	Status Quo	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	44					
			Proposed	Aerosol Coatings 01947, Lacquer 17178	Sprayon Products	34	30	0.95	1	1	28.5
			Proposed	310 Silver 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	30	1.30	1	1	39

HMSF=HM Selection Factor
ICF=Investment Cost Factor
UACF=Uniform Annual Cost Factor
PF=Population Factor

Figure G-3. Pollution Prevention Priority Number Analysis - Ranked Alternatives

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	HMSF	ICF	UACF	WF	PF	PPPN
6	Silver Paint	64	Status Quo	So-Sure Lacquer, Aerosol Silver 17178	LHB Industries	44					
	CONTINUED		Proposed	A-2000 Lacquer Aerosol Silver 17178	Cardinal Industrial Finishes	30	30	2.00	1	1	60
7	Anaerobic Adhesive	92	Status Quo	Loctite Grade A Anaerobic Adhesive	Loctite Corp	7					
			Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	30	0.10	1	1	3
			Proposed	Anaerobic Adhesive/Sealant	Saf-T-Lok Chemical Corp	7	30	0.10	1	1	3
			Proposed	TB 1361A Sealing Compound	Three Bond of America, Inc.	11	40	0.10	1	1	4
			Proposed	Grade A Red Sealing Compound	Three Bond of America, Inc.	11	40	0.10	1	1	4
			Proposed	Sealant Grade A 8831	Loctite Corp	16	40	0.10	1	1	4
8	Yellow Primer	92	Status Quo	So-Sure Yellow Primer (84-331) Aerosol	LHB Industries	37					
			Proposed	Zinc Chromate Primer GP-0004-1757	Seymour of Sycamore	17	30	0.95	1	1	28.5
			Proposed	P-441A Zinc Chromate Primer	Koppers Co., Inc.	29	30	1.00	1	1	30
			Proposed	Zinc Chromate Primer P-441P	Koppers Co., Inc.	33	30	1.05	1	1	31.5
			Proposed	TT-P-1757A VOC Compliant Primer	Kop-Coat Inc.	33	30	1.15	1	1	34.5
			Proposed	6-204 Zinc Chromate Metal Primer	PPG Industries	21	30	1.25	1	1	37.5
9	Black Paint	92	Status Quo	01920 Black Lacquer 17038 Aerosol	Sprayon Products	50					
			Proposed	Lacquer, Aerosol Black 17038	Seymour of Sycamore	37	30	0.85	1	1	25.5
			Proposed	So Sure Lacquer Gloss Black 17038	LHB Industries	35	30	1.05	1	1	31.5
			Proposed	306 Black 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	30	1.20	1	1	36
			Proposed	A-2000 Series Lacquer Black 17038	Cardinal Industrial Finishes	30	30	2.00	1	1	60
			Proposed	Eco-Sure Black 17038 Enamel	LHB Industries	32	30	2.00	1	1	60
10	Paint Remover	18	Status Quo	Omega 3812 SN 313-2 Paint Remover	Omega Chemical Corp.	59					
			Proposed	TT-R-251J Type III Cl B Paint Remover	MSCI, Ltd	13	10	0.10	1	1	1
			Proposed	Paint Remover	Chem Commodities Agency	38	20	0.10	1	1	2
			Proposed	Paint Remover, 400063 Nonflammable	W.M. Barr & Co	44	30	0.10	1	1	3
			Proposed	Organic Paint Remover	4-Tek Industries, Inc.	40	30	0.25	1	1	7.5
			Proposed	Intex 8573 Paint Remover	Eze Products Inc.	32	20	1.00	1	1	20
11	Paint Thinner	18	Status Quo	T-10 Paint Thinner	Devoe Coatings Co	41					
			Proposed	Odorless Thin-X	Sterling-Clarke-Lurton	13	20	0.25	1	1	5
			Proposed	Odorless Mineral Spirits	Shell Oil Co	15	20	0.25	1	1	5

HMSF=HM Selection Factor
ICF=Investment Cost Factor
UACF=Uniform Annual Cost Factor
PF=Population Factor

Figure G-3. Pollution Prevention Priority Number Analysis - Ranked Alternatives

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	HMSF	ICF	UACF	WF	PF	PPPN
11	Paint Thinner	18	Status Quo	T-10 Paint Thinner	Devoe Coatings Co	41					
	CONTINUED		Proposed	TT-T-291F Paint Thinner	Stic-Adhesive Products Co	16	20	0.25	1	1	5
			Proposed	Paint Thinner	Home Oil Company	29	30	0.25	1	1	7.5
			Proposed	Standard 350H TT-T-291 Thinner	Chevron Solvents & Chem	30	30	0.75	1	1	22.5
12	Antifouling Paint	18	Status Quo	Devoe ABC #3 Red AF Paint	Devoe Marine Coatings Co	44					
			Proposed	N-5564 Gloss Red Silicone Enamel 11105	Niles Chemical Paint Co	36	30	0.80	1	1	24
			Proposed	Interclene AF Red, BRA540	International/Courtaulds	36	30	1.10	1	1	33
			Proposed	888 Series Water Base AF Paint	Pro-Line Paint Co	25	30	2.00	1	1	60
			Proposed	MIL-P-15931F Red AF, Type I Cl 1 4050	International Paint Co., Inc	25	30	2.00	1	1	60
			Proposed	F-121 Vinyl AF Red Paint	Seagrave Coatings Corp	33	30	2.00	1	1	60
13	Primer	300	Status Quo	Locquic Primer T	Loctite Corp	36					
			Proposed	Accrabond Grade A MIL-S-22473	Accrabond, Inc.	7	20	0.95	1	1	19
			Proposed	Anaerobic Solventless Primer	Saf-T-Lok Chemical Corp	4	20	2.00	1	1	40
			Proposed	Sealant Grade A 8831	Loctite Corp	16	30	2.00	1	1	60
			Proposed	Nuts N' Bolts 227	Heron Manufacturing Inc	20	30	2.00	1	1	60
			Proposed	Nuts N' Bolts 223	Heron Manufacturing Inc	22	30	2.00	1	1	60
14	Red Paint	300	Status Quo	So-Sure Lacquer Aerosol Red 11136	LHB Industries	44					
			Proposed	301 Red 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	30	1.10	1	1	33
			Proposed	Fixall Brite Red 11136 (444-1304)	Chase Products Co	25	30	2.00	1	1	60
			Proposed	A-2000 Aerosol Lacquer Red 11136	Cardinal Industrial Finishes	30	30	2.00	1	1	60
			Proposed	Eco Sure Spray Paint Red 11136	LHB Industries	36	30	2.00	1	1	60
			Proposed	Enamel, Low VOC Water-Based Red	LHB Industries	36	30	2.00	1	1	60
15	Gray Paint	65	Status Quo	So-Sure Lacquer Aerosol Gray 16307	LHB Industries	44					
			Proposed	361 Gray 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	30	1.25	1	1	37.5
			Proposed	A-2000 Aerosol Lacquer Gray 16307	Cardinal Industrial Finishes	30	30	2.00	1	1	60
			Proposed	Eco Sure Gray 16307 VOC Compliant	LHB Industries	39	30	2.00	1	1	60
			Proposed	Enamel Low VOC Water-Based Gray 16307	LHB Industries	40	30	2.00	1	1	60
16	Orange Paint	158	Status Quo	Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	50					
			Proposed	Enamel Orange 12246 TT-E-2784	Del Paint Corp	11	10	0.70	1	1	7

HMSF=HM Selection Factor
ICF=Investment Cost Factor
UACF=Uniform Annual Cost Factor
PF=Population Factor

Figure G-3. Pollution Prevention Priority Number Analysis - Ranked Alternatives

	HAZARDOUS MATERIAL	BLDG		PRODUCT	MANUFACTURER	HMSF	ICF	UACF	WF	PF	PPPN
16	Orange Paint	158	Status Quo	Enamel Alkyd Low VOC Orange 12246	Pratt and Lambert	50					
	CONTINUED		Proposed	6-282 Speedhide Int / Ext Gloss Enamel	PPG Industries	31	30	0.25	1	1	7.5
			Proposed	305 Orange 11A Rustproof Paint	Aervoe-Pacific Co., Inc.	32	30	0.25	1	1	7.5
			Proposed	Exterior Trim Enamel Orange 12246	Farwest Paint Mfg Co	15	20	0.50	1	1	10
			Proposed	Enamel, Orange 12246, TT-E-2784	Scotch Paint	21	20	0.75	1	1	15
17	Yellow Paint	158	Status Quo	Enamel Alkyd Air Drying Yellow 13538	Pratt and Lambert	49					
			Proposed	TT-E-2784 Ultra Deep Tint Yellow 13538	Davlin Paint Co	10	10	0.50	1	1	5
			Proposed	Exterior Trim Enamel Yellow 13538	Farwest Paint Mfg Co	16	20	0.50	1	1	10
			Proposed	Enamel Gloss Yellow 13538, TT-E-489	Randolph Products Co	9	10	1.15	1	1	11.5
			Proposed	TT-E-2784 Enamel Yellow 13538	Del Paint Mfg	14	20	0.85	1	1	17
			Proposed	Enamel Yellow 13538	Scotch Paint	22	20	0.85	1	1	17
18	Gray Paint	158	Status Quo	Enamel Deck Interior Gray 26231	Pratt & Lambert Industrial	34					
			Proposed	N-5356 Silicone Alkyd Enamel Gray 26231	Niles Chemical Paint Co	32	30	0.25	1	1	7.5
			Proposed	MIL-E-24635A Enamel Gray 26231	Davlin Paint Co., Inc.	29	30	0.55	1	1	16.5
			Proposed	97-482 Silicone Alkyd	PPG Industries	19	30	0.95	1	1	28.5

HMSF=HM Selection Factor
ICF=Investment Cost Factor
UACF=Uniform Annual Cost Factor
PF=Population Factor

Figure G-3. Pollution Prevention Priority Number Analysis - Ranked Alternatives

APPENDIX H

PRODUCT INFORMATION

STATUS QUO MATERIAL:	Neoprene N-11 Primer
Manufacturer:	Haartz-Mason Inc.
Building:	240
PROPOSED MATERIAL:	3M 90 High Strength Adhesive
Manufacturer:	3M

MSDS

3M 90 High Strength Adhesive	Page H1-1

Product Information

3M 90 High Strength Adhesive	Page H1-8

Cost Data

3M 90 High Strength Adhesive	Page H1-44

MATERIAL SAFETY DATA SHEET

3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

Copyright, 1996, Minnesota Mining and Manufacturing Company. All rights reserved. Copying and/or downloading of this information for the purpose of properly utilizing 3M products is allowed provided that:
1) the information is copied in full with no changes unless prior agreement is obtained from 3M, and
2) neither the copy nor the original is resold or otherwise distributed with the intention of earning a profit thereon.

DIVISION: INDUSTRIAL TAPE AND SPECIALTIES DIVISION
TRADE NAME:
3M 90 High Strength Adhesive
ID NUMBER/U.P.C.:
62-4441-4830-8 00-21200-85852-9 62-4441-4925-6 00-21200-82219-3
62-4441-4930-6 00-21200-82219-3 62-4441-4932-2 00-21200-89352-0
62-4441-4935-5 - - -
ISSUED: August 26, 1996
SUPERSEDES: July 18, 1996
DOCUMENT: 11-0881-0

1. INGREDIENT

INGREDIENT	C.A.S. NO.	PERCENT	
DIMETHYL ETHER (PROPELLANT)	115-10-6	50.0	- 60.0
PENTANE	109-66-0	10.0	- 20.0
ACETONE	67-64-1	10.0	- 20.0
NON-VOLATILE COMPONENTS - NEW JERSEY TRADE SECRET (T.S.) REGISTRY NO. 04499600-5548P ++	TradeSecret	7.0	- 13.0
CYCLOHEXANE	110-82-7	3.0	- 7.0

++ synthetic elastomers, hydrocarbon resin, antioxidant, and u.v. absorber. Not hazardous according to Canadian WHMIS criteria. Non-WHMIS controlled.

This product contains the following toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR Part 372:
CYCLOHEXANE

2. PHYSICAL DATA

BOILING POINT: Compressed gas
VAPOR PRESSURE: Compressed gas
VAPOR DENSITY: N/D
EVAPORATION RATE: N/D
SOLUBILITY IN WATER: Nil
SPECIFIC GRAVITY: 0.70

Abbreviations: N/D - Not Determined N/A - Not Applicable

---

2. PHYSICAL DATA (continued)

PERCENT VOLATILE:..... ca. 89 % by wt
pH:..... N/A
VISCOSITY:..... N/A - aerosol
MELTING POINT:..... N/D

APPEARANCE AND ODOR:
Clear liquid in aerosol, solvent odor

---

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... <-40F (Closed Cup/Propellant)
FLAMMABLE LIMITS - LEL:..... N/A
FLAMMABLE LIMITS - UEL:..... Flammable Gas
AUTOIGNITION TEMPERATURE:..... N/D

EXTINGUISHING MEDIA:
Water spray, Carbon dioxide, Dry chemical, Foam

SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head. Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Closed containers exposed to heat from fire may build pressure and explode. Vapors may travel long distances along the ground or floor to an ignition source and flash back.

NFPA HAZARD CODES: HEALTH: 2 FIRE: 4 REACTIVITY: 1 AEROSOL STORAGE: 3
UNUSUAL REACTION HAZARD: none

---

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Heat.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

Abbreviations: N/D - Not Determined N/A - Not Applicable

---

4. REACTIVITY DATA (continued)

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon Monoxide and Carbon Dioxide, Aldehydes, Ketones, Hydrocarbons.

---

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Ventilate area. Extinguish all ignition sources. Cover with absorbent material. Collect using non-sparking tools. Place in a U.S. DOT-approved container.

RECOMMENDED DISPOSAL:
Incinerate in a permitted hazardous waste incinerator in the presence of a combustible material. Facility must be capable of handling aerosol cans. Dispose of empty cans in a sanitary landfill. Dispose of completely absorbed waste product in a facility permitted to accept chemical wastes.

RECYCLE EMPTY AEROSOL CONTAINERS WHERE AVAILABLE.

ENVIRONMENTAL DATA:
Not determined.

REGULATORY INFORMATION:
Volatile Organic Compounds: ca. 89 % (616 g/l), SCAQMD Rule 443.1, calculated.
VOC Less H20 & Exempt Solvents: ca. 89 % (616 g/l) SCAQMD Rule 443.1, calculated.

Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = D001 (Ignitable)

EPCRA HAZARD CLASS:
FIRE HAZARD: Yes PRESSURE: Yes REACTIVITY: No ACUTE: Yes CHRONIC: Yes

---

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

Abbreviations: N/D - Not Determined N/A - Not Applicable

---

6. SUGGESTED FIRST AID (continued)

SKIN CONTACT:
Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:
Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

---

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact with vapor, spray, or mist. Wear safety glasses with side shields.

SKIN PROTECTION:
Avoid prolonged or repeated skin contact.

RECOMMENDED VENTILATION:
Do not use in a confined area or areas with little or no air movement. If exhaust ventilation is not adequate, use appropriate respiratory protection. Provide ventilation adequate to control vapor concentrations below recommended exposure limits and/or control spray or mist.

RESPIRATORY PROTECTION:
Avoid breathing of vapors, mists or spray. Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: half-mask organic vapor respirator.

PREVENTION OF ACCIDENTAL INGESTION:
Do not ingest.

RECOMMENDED STORAGE:
Store at temperatures below 120 degrees F (49 degrees C). Store out of direct sunlight. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE:
Aerosol container contains flammable gas under pressure. Keep away from heat, sparks, open flame, and other sources of ignition. Extremely flammable liquid and vapor. Do not pierce or burn container, even after use. No smoking while handling this material. Avoid static discharge.

Abbreviations: N/D - Not Determined N/A - Not Applicable

7. PRECAUTIONARY INFORMATION (continued)

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
DIMETHYL ETHER (PROPELLANT).....	1000	PPM	TWA	CMRG	
DIMETHYL ETHER (PROPELLANT).....	500	PPM	TWA	AIHA	
DIMETHYL ETHER (PROPELLANT).....	942	MG/M3	TWA	AIHA	
PENTANE.....	600	PPM	TWA	ACGIH	
PENTANE.....	750	PPM	STEL	ACGIH	
PENTANE.....	600	PPM	TWA	OSHA	
PENTANE.....	750	PPM	STEL	OSHA	
ACETONE.....	750	PPM	TWA	ACGIH	
ACETONE.....	1000	PPM	STEL	ACGIH	
ACETONE.....	750	PPM	TWA	OSHA	
ACETONE.....	1000	PPM	STEL	OSHA	
NON-VOLATILE COMPONENTS - NEW JERSEY TRADE SECRET (T.S.) REGISTRY NO. 04499600-5548P ++.....	NONE	NONE	NONE	NONE	
CYCLOHEXANE.....	300	PPM	TWA	ACGIH	
CYCLOHEXANE.....	300	PPM	TWA	OSHA	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- ACGIH: American Conference of Governmental Industrial Hygienists
- OSHA: Occupational Safety and Health Administration
- CMRG: Chemical Manufacturer Recommended Exposure Guidelines
- NONE: None Established
- AIHA: American Industrial Hygiene Assoc. Workplace Environmental Exposure Level Guideline

8. HEALTH HAZARD DATA

EYE CONTACT:
Moderate Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

SKIN CONTACT:
Mild Skin Irritation (after prolonged or repeated contact): signs/symptoms can include redness, swelling, and itching.

Abbreviations: N/D - Not Determined N/A - Not Applicable

8. HEALTH HAZARD DATA (continued)

INHALATION:
Intentional concentration and inhalation may be harmful or fatal.

Kidney Effects: signs/symptoms can include reduced urine volume, blood in urine and back pain.

Liver Effects: signs/symptoms can include yellow skin(jaundice) and tenderness of upper abdomen.

Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

WHILE THE FOLLOWING EFFECTS ARE ASSOCIATED WITH ONE OR MORE OF THE INDIVIDUAL INGREDIENTS IN THIS PRODUCT AND ARE REQUIRED TO BE INCLUDED ON THE MSDS BY THE U.S. OSHA HAZARD COMMUNICATION STANDARD, THEY ARE NOT EXPECTED EFFECTS DURING FORESEEABLE USE OF THIS PRODUCT.

Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.

SECTION CHANGE DATES

HEADING	SECTION CHANGED SINCE July 18, 1996	ISSUE

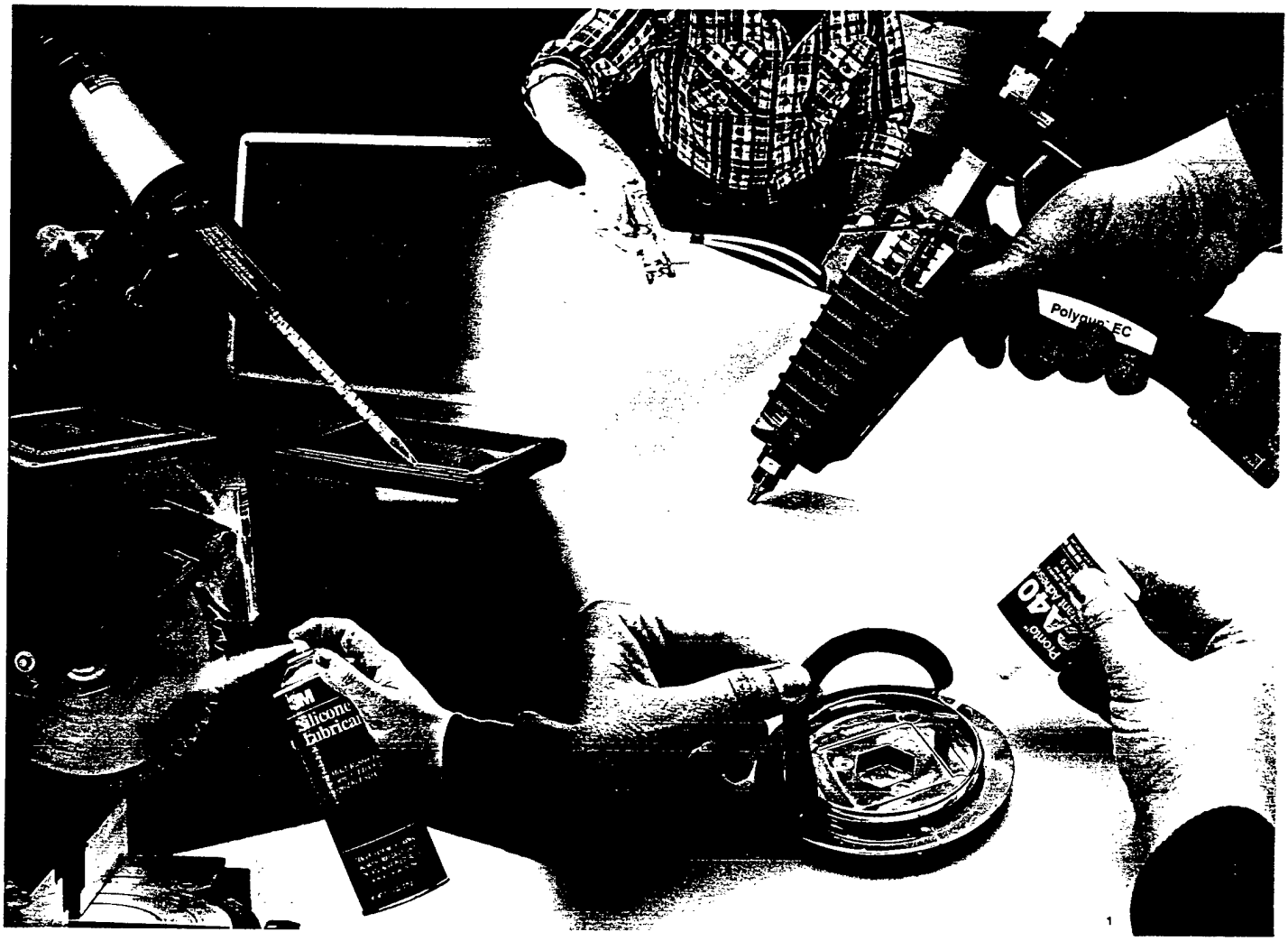
Abbreviations: N/D - Not Determined N/A - Not Applicable

The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3M provides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information, 3M makes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the MSDS available directly from 3M.

3M

Designer's Reference Guide To Adhesive Technology



Look to 3M to help make your products stronger, lighter, better looking, longer lasting, less costly and easier to manufacture.

Adhesives technology – helping people get more out of life.

Wherever you look, you'll likely find 3M adhesive technology helping people get more out of life at home, leisure and work. Chair cushions, kitchen counter tops, cars, computer components, aircraft, light fixtures, musical instruments, toys, washing machines, golf clubs, watchbands, cellular phones, vinyl luggage, speaker fabric, packaging, trains, athletic shoes, and air conditioners – there are 3M adhesives used in each of these applications, and adhesives for thousands more.

Today, product designers and manufacturing engineers are relying on adhesives more than ever for **greater design flexibility, more efficient production and improved end-use performance.**

And the demand for new and better adhesives is continually growing.

3M has long been recognized as a pioneer in industrial adhesives, but to meet the growing demand doesn't just mean providing the right chemical formula. Or even new innovative formulations such as Jet-Weld™ Thermoset Adhesives.

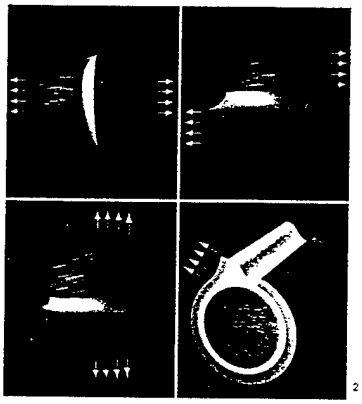
We also apply ourselves to the business end. Which is why we don't just develop adhesives, but whole application systems designed to facilitate production.

Our goal is to help make your product stronger, lighter, better looking, longer lasting...less costly and easier to manufacture.

You can continue to look to 3M for the advanced adhesive performance and quality that contribute to how you and your customers want to live.

Table of Contents

4 **The Benefits of Adhesive Technology:** To help you get full value and performance from adhesive technology.



5 **3M Structural Adhesives**

6 **Scotch-Weld™ Adhesives:** Structural adhesives and applicators with proven performance.

10 **Pronto™ Instant Adhesives:** Performance matched to production and end use requirements.

12 **Jet-Weld™ Thermoset Adhesives:** New line of one-part, moisture-curing urethane adhesives and dispensing equipment.

15 **3M Non-Structural Adhesives**

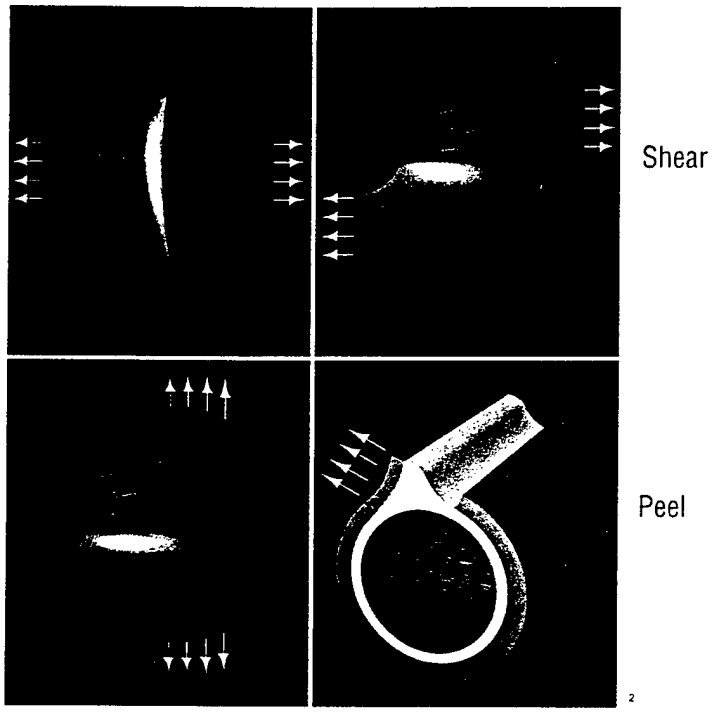
16 **Scotch-Grip™ and Fastbond™ Products:** Industrial-quality adhesives for reliable non-structural bonding.

22 **3M Aerosol Products:** Handy spray applicators for speed, convenience and economy.

26 **Hot Melt Systems:** Wide line of solvent-free adhesives and applicators for assembly and packaging.

30 **Adhesive Selection Guide:** To help you select the right joining system for the job.

Stress resistance, simplification, economy and more.



One of the primary benefits of adhesive is that it holds something together resisting the stress trying to pull it apart.

Tensile stress is exerted equally over the entire joint straight and away from the adhesive bond.

Shear stress is across the adhesive bond. The bonded materials are being forced to slide over each other.

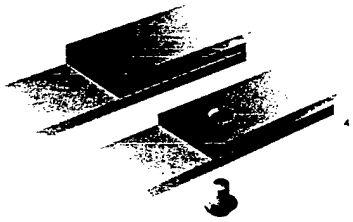
Cleavage stress is concentrated at one edge and exerts a prying force on the bond.

Peel stress is concentrated along a thin line at the bond's edge. One surface is flexible,

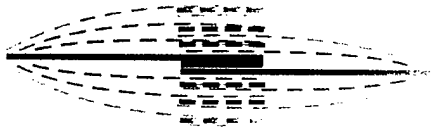
Most applications combine stresses.

The following six points elaborate on the advantages of using adhesives for stress resistance and more.

1. Uniform distribution of stress over the entire bonded area can **eliminate stress concentration** caused by rivets, spot welds and similar mechanical fastening. Lighter, thinner materials can often be used without sacrificing strength.



2. Bonding laminates of **dissimilar materials** can produce combinations superior in strength and performance to either adherent alone. **Adhesive flexibility** compensates for differences in coefficients of expansion.
3. Elastomeric flexibility **improves resistance to vibration** fatigue.



4. Holes are eliminated to **maintain the integrity** of the bonded material. This can reduce finishing and increase design flexibility.
5. Continuous contact between mating surfaces can effectively **bond and seal** against many environmental conditions.
6. **Costs can be cut** by reducing material requirements and weight; eliminating drilling, welding, screwing, and similar operations.

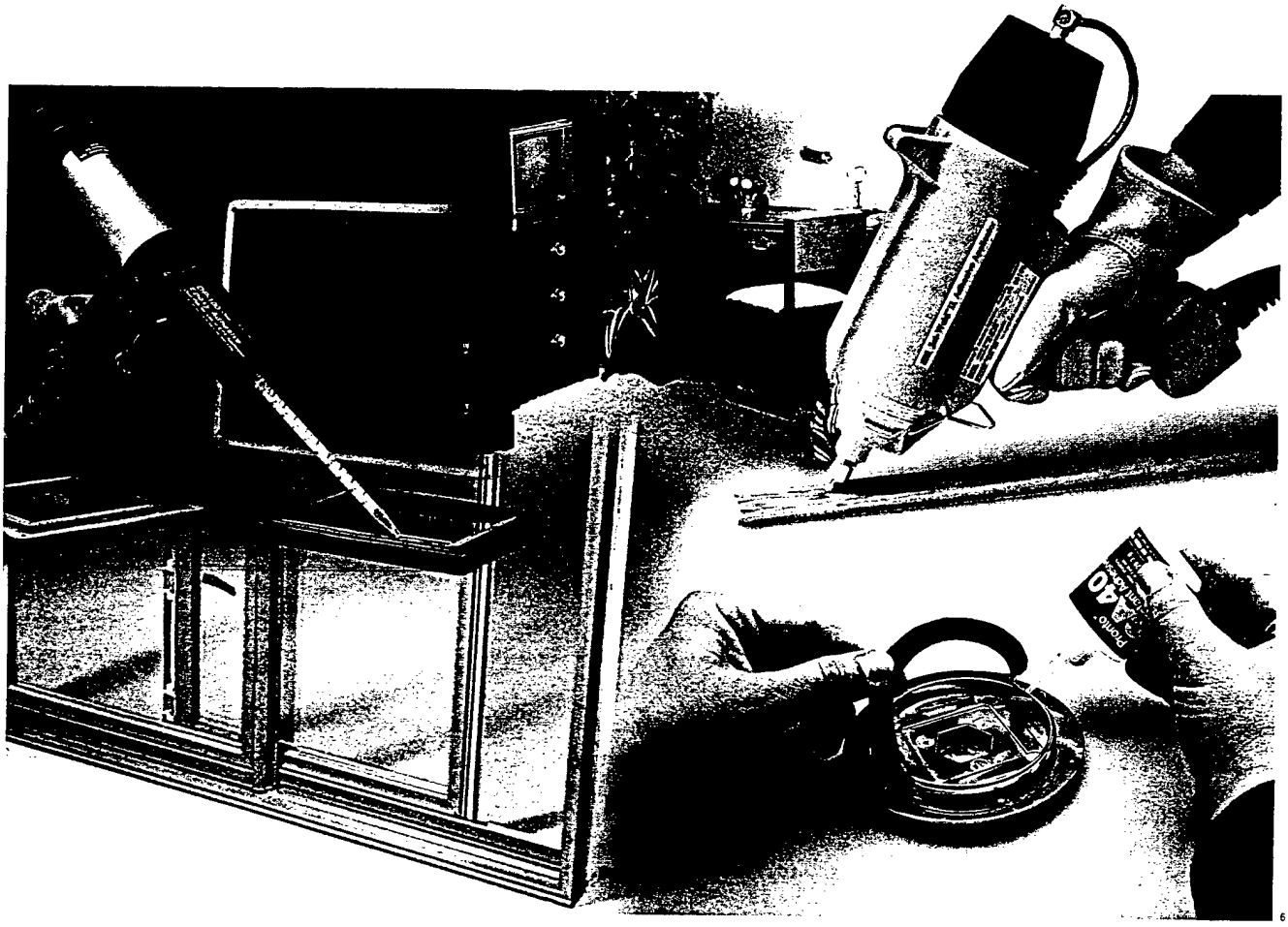
Choice of 3M structural or non-structural formulations.

To meet requirements for stress resistance, specific substrates, application efficiency and cost, 3M offers a wide range of easy-to-use adhesives in handy sizes with practical dispensing systems.

Structural adhesives (pages 5 to 14) bond the load-bearing parts of a product. Usually these are metal, but wood, glass and rigid plastics can also be structurally bonded.

Non-structural adhesives (pages 15 to 29) bond materials for insulation, cushioning and paneling; rubber, plastic, fabric, leather, wood, cardboard, and other substrates used in non load-bearing applications.

Structural Adhesives



3M high-strength structural adhesives are fundamentally load-bearing formulations. Bond strength is often as strong as, or stronger than the materials joined.

These adhesives are generally cross-linked or thermosetting, and include epoxies, phenolics, urethanes, acrylics and cyanoacrylates.

The aircraft industry is one of the pioneers in use of structural adhesives. And structural adhesives still play an integral role in the aerospace industry. But many other industries have also been taking advantage of 3M's advanced formulations and innovative dispensing.

For example: bushing assembly in appliances, headlight assembly in cars, fiberglass decks in boats, relays and controls in electronic equipment, lawn sprinklers, window frames, office partitions, pump casting components, golf clubs, home furniture, and surgical instruments.

The 3M structural adhesives product line includes the following:

- Scotch-Weld one and two-part epoxy adhesives, and two-part urethanes and acrylics.
- Scotch-Weld™ EPX™ Applicator System with Duo-Pak two-part adhesive cartridges.
- Pronto™ Instant Adhesives.
- Jet-Weld™ Thermoset Adhesive System

Load-bearing formulations for metals, rubber, glass and more.

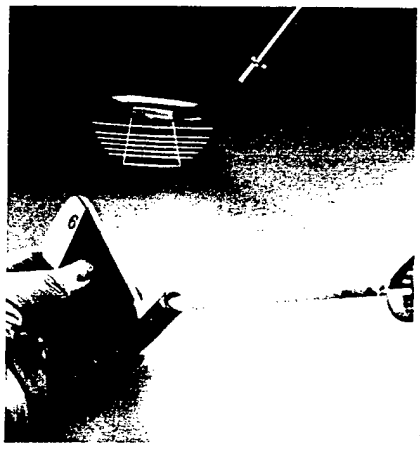
More and more manufacturers are using high strength, load-bearing adhesives in lieu of mechanical or fusion methods for structural joining and fastening. The reasons are many: greater design latitude, cleaner lines, material substitution, less machining, lighter weight, more durability and often less cost.

All of this adds up to potential increased profitability and contributes to the ongoing satisfaction of the end-use customers.

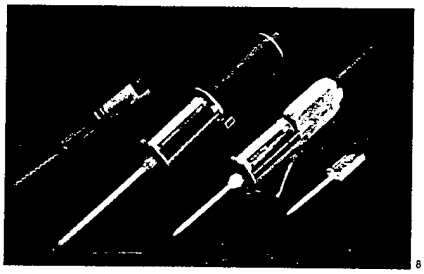
And with Scotch-Weld Structural Adhesives, you get a line backed by more than 50 years experience in adhesives engineering, and performance-proven by manufacturers worldwide.

To meet application and end-use requirements you can select from one-part heat-curing epoxies, and two-part room-temperature curing epoxies, acrylics and urethanes. There are formulations for bonding steel, aluminum, copper, engineering plastics, rubber, glass, wood, masonry and more.

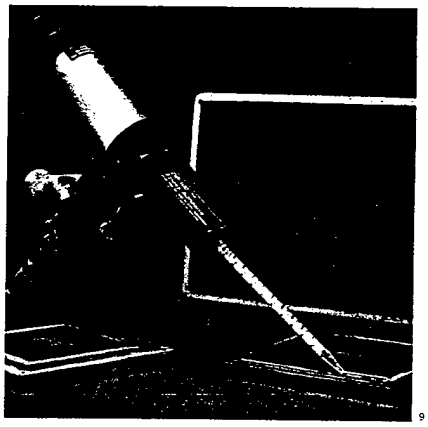
Whatever properties you need—durable adhesion, flexibility, creep resistance, heat and environmental resistance, void-filling—you'll likely find a Scotch-Weld product to meet your requirements and expectations.



Bonds made with Scotch-Weld adhesive are high strength with void-filling properties that secure loose-fitting parts and help seal against the environment.



The EPX line of reliable hand-held dispensers include (l to r) 50ml Pneumatic, 200ml Pneumatic, 200ml Manual, and improved 50ml Manual Dispensers. Not shown, 400ml Pneumatic Dispenser.



EPX Pneumatic Applicator System delivers consistent air pressure for easy uniform application of Scotch-Weld structural adhesives in Duo-Pak cartridges. Adjustable flow rate of 5 to 40 g/minute.

DIN: 14-2-5/#03
31 December 1996

Product Information:
Scotch-Weld Two-Part Epoxy Adhesives

Two-part, room-temperature or heat curing epoxy adhesives provide high-strength bonds on a wide variety of substrates. Bond is often stronger than the parts being bonded.

Product (Color)[1]	Features	Mix Ratio (Volume) B:A	Approximate[2] Viscosity 75°F (24°C) (CPS)	Approximate[3] Worklife At 75°F (24°C)	Average[4] T-Peel At 75°F (24°C) PIW	Overlap Shear Strength[5] PSI -67°F (-55°C)	75°F (24°C)	180°F (82°C)	250°F (121°C)
1648 B/A Green	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • Higher performing product at elevated temperatures	6:5	275,000	60 Min.	4	2000	2500	700	400
1751 B/A Gray	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • Excellent void filler and machinable for many "Body Solder" applications	3:2	700,000	45 Min.	4	1400	2000	500	300
1838 B/A Green	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • Meets MIL-A-23941A • Excellent Environmental Resistance	4:5	400,000	60 Min.	4	1500	3000	500	300
1838 B/A Tan	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • Tan version of 1838 Green Adhesive	6:5	250,000	60 Min.	5	1500	3000	500	300
1838-L B/A Translucent	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • Translucent, low viscosity version of 1838 Green Adhesive	1:1	10,000	60 Min.	5	2000	3000	400	200
2158 B/A Gray	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • General purpose product	1:1	375,000	120 Min.	4	1700	2000	400	300
2216 B/A Gray	• Long worklife adhesive • Flexible epoxy • 8-12 hrs. handling strength • Can bond plastic, metal and other dissimilar materials	2:3	80,000	90 Min.	25	2000	2500	400	200
2216 B/A Tan Non-Sag	• Long worklife adhesive • Flexible epoxy • 8-12 hrs.. handling strength • Tan version of 2216 B/A Gray Adhesive	2:3	350,000	90 Min.	25	2000	2500	400	200
2216 B/A Translucent	• Long worklife adhesive • Flexible epoxy • 16-20 hrs. handling strength • Translucent version of 2216 B/A Gray Adhesive	1:1	10,000	120 Min.	25	3000	2000	200	100
3501 B/A Gray	• Fast cure adhesive • Rigid epoxy • 20-30 minutes handling strength • Rapid room temp. curing material that can bond metal, wood, most plastics and masonry products	1:1	500,000	7 Min.	5	1500	2400	300	200

Scotch-Weld Two-Part Urethane Adhesives

Two-part urethane adhesives cure at room-temperature or with heat to provide tough, impact resistant bonds with high peel strength.

3532 B/A Brown	• Fast cure adhesive • 20-30 min. handling strength • Semi-rigid urethane • Rapid cure, for flexible bonds of many plastics, wood and rubber	1:1	30,000	7 Min.	25	2500	2000	300	150
3535 B/A Off-white	• Very fast cure adhesive • 15-20 min. handling strength • Semi-rigid urethane • Faster setting version of 3532 B/A Adhesive	1:1	30,000	3 Min.	25	2500	2000	300	150
3549 B/A Brown	• Long worklife adhesive • 2-4 hrs. handling strength • Semi-rigid urethane • Longer worklife version of 3532 B/A Adhesive	1:1	30,000	60 Min.	25	2500	2000	300	150

Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

(1) Color is mixed if two-part product.
(2) Brookfield viscometer viscosity values are typical values for the mixed product.
(3) The time during which an adhesive will adequately wet-out on a substrate.
(4) 180° peel tested on .030" aluminum per ASTM D 1876-61T.
(5) Tested per ASTM D 1002-64.

Product Information:
Scotch-Weld One-Part Epoxy Adhesives

One-part epoxy adhesives are structural-strength products that eliminate the mixing and weighing of two-part systems. These products must be heat cured.

Product (Color)	Features	Viscosity	Optimum Cure			Average[1] T-Peel At	Overlap Shear Strength[2] PSI				
			Time (Min.)	Temp (°F/°C)	Pressure (PSI)	75°F (24°C)	-67°F (-55°C)	75°F (24°C)	180°F (82°C)	250°F (121°C)	350°F (177°C)
1386 Cream	A 350°F (177°C) curing epoxy for metal to metal bonding provides exceptionally high strength, impact resistant bonds. Meets requirements of MMM-A-134 Type III	150,000 cps	60	350/177	10	10 (Alum.)	3000	5500	4500	2500	400
1469 Cream	A 350°F (177°C) curing epoxy with excellent performance at elevated temperatures.Meets requirements of MMM-A-132 Type II, Class 3, Group 4	60,000 cps	120	350/177	10	2 (Alum.)	3150	3700	3700	3600	1000
2086 Gray	A 350°F (177°C) curing epoxy similar to 1386 Adhesive but filled to provide excellent flow control.	Paste	60	350/177	10	5 (Alum.)	3000	5000	5000	2200	500
2214 Regular Gray	Aluminum filled heat curing (250°F, 121°C) structural adhesive of paste consistency. Can bond metals, glass and many plastics.	Paste	60	250/121	10	5 (Alum.) 50 (Steel)	3000	4500	4500	1500	400
2214 Hi-Dense Gray	Similar to 2214 regular adhesive but deaerated and formulated to provide dense, void-free bond lines.	Paste	60	250/121	10	5 (Alum.) 50 (Steel)	3000	4500	4500	1700	400
2214 Hi-Temp Gray	Formulated to provide outstanding performance at elevated temperatures and excellent sag control.	Paste	60	250/121	10	2 (Alum.) 5 (Steel)	2000	2000	3000	2500	900
2214 Hi-Temp New Formula Gray	A version of 2214 Hi-Temp Adhesive with exceptional performance at elevated temperatures and excellent performance under high temperature, high humidity conditions. Resists attack by hot ethylene glycol.	Paste	60	250/121	10 5	5 (Alum.) (Steel)	2800	2800	2500	2000	1200
2214 Hi-Flex Gray	Similar to 2214 Regular Adhesive but deaerated and formulated to provide bonds featuring outstanding shock resistance.	Paste	60	250/121	10	10 (Alum.) 65 (Steel)	2500	4000	2000	450	250
2214 Non-metallic filled Cream	A cream colored non-metallic version of 2214 Regular Adhesive suggested for electrical applications where insulating qualities are desired.	Paste	60	250/121	10	7 (Alum.) 12 (Steel)	3000	4000	4500	1500	400
2290 Amber	A 21% solids liquid epoxy. B-stageable. Can be used in laminating steel cores for motor stators and rotors. Excellent for many thin metal stack laminations such as those used in magnetic tape heads.	60 cps	30	350/177	50	10 (Alum.)	5000	5000	3500	1200	200

Note: The technical information and data on these pages should be considered representative or typical only and should not be used for specification purposes.

(1) Tested per ASTM D 1876-61T.
(2) Tested per ASTM D 1002-64.

Scotch-Weld Metal Primers

One and two-part metal primers that can be used to help improve adhesion and provide better environmental resistance when used with Scotch-Weld Adhesives.

Product Color	Features	Viscosity	Comments
3901 Red	• Adhesion promoter • Organo-silane base • Brush or spray application	5 cps	A primer for film and liquid adhesives in those applications where it is desired to obtain improved metal and glass adhesion or improved resistance to environmental exposure with epoxy and urethane adhesives. It can help simplify production scheduling by protecting the cleaned surfaces until the bonding operations can be completed and imparts improved corrosion protection to metal.
1945 B/A Green	• 1:1 mix ratio two-part epoxy primer • 8 hour potlife • Brush, spray or dip application	500 cps	It is a two-part chemically curing, corrosion resistant primer to improve adhesion of urethanes and epoxies to many metals as well as offering increased corrosion protection. It cures at room temperature and has excellent adhesion to many metals.

Scotch-Weld Adhesives in Duo-Pak cartridges.

Two-part, room-temperature curing epoxy, urethane and acrylic adhesives especially formulated and packaged for use in the EPX Applicator.

Product (Color) [1]	Features	Mix Ratio (Volume) B:A	Approximate [2] Viscosity 75°F (24°C) (CPS)	Approximate [3] Worklife At 75°F (24°C)	Average [4] T-Peel At 75°F (24°C) PIW	Overlap Shear Strength [5][2] PSI			
						-67°F (-55°C)	75°F (24°C)	180°F (82°C)	250°F (121°C)
DP-100 Clear	• Fast cure adhesive • Rigid epoxy • 15-20 min. handling strength • Machinable product	1:1	13,000	4 Min.	2	900	1500	300	200
DP-100Plus Clear	• Water clear • Fast cure • Good peel and shear strength	1:1	8,500	4 Min.	13	3000	3500	200	150
DP-100NS Translucent	• Fast cure adhesive • Rigid epoxy • 25-30 min. handling strength • Translucent low flow version of DP-100 Adhesive	1:1	95,000	6 Min.	2	900	1500	300	200
DP-100 FR White	• Fast cure adhesive • Rigid epoxy • 25-30 min. handling strength • Meets UL94V-0 rating • Self-extinguishing version of DP-100 Adhesive	1:1	50,000	6 Min.	2	800	1400	400	200
DP-105 Clear	• Water clear • Fast cure • Very flexible • Excellent peel strength	1:1	6,500	5 Min.	35	3500	2000	150	100
DP-105 Gray	• Gray • Fast cure • Very flexible • Excellent peel strength	1:1	50,000	5 Min.	45	3000	2500	300	200
DP-110 Gray	• Fast cure adhesive • Flexible epoxy • 30 min. handling strength	1:1	55,000	9 Min.	15	2000	2500	200	150
DP-110 Translucent	• Fast cure adhesive • Flexible epoxy • 30 min. handling strength • Translucent version of DP-110 Gray Adhesive	1:1	50,000	9 Min.	10	2000	2500	200	150
DP-125 Gray	• Medium worklife • Good peel strength	1:1	52,500	25 Min.	35	3400	4300	400	200
DP-125 Translucent	• Medium worklife • Good peel strength	1:1	15,000	25 Min.	35	4000	2500	150	100
DP-190 Gray	• Long worklife adhesive • Flexible epoxy • 8-12 hrs. handling strength • Can bond metals, plastics and many other dissimilar materials	1:1	80,000	90 Min.	20	1500	2500	400	300
DP-190 Translucent	• Long worklife • Good peel strength	1:1	10,000	90 Min.	30	3500	1700	160	100
DP-270 Black	• Long worklife potting compound • 8-12 hrs. handling strength • Rigid epoxy	1:1	19,000	70 Min.	2	1200	2500	300	200
DP-270 Clear	• Long worklife potting compound • 8-12 hrs. handling strength • Rigid epoxy • Clear product for many electronic applications • Black version of DP-270 Clear Adhesive	1:1	19,000	70 Min.	2	1200	2500	300	200
DP-420 Off-White	• Medium worklife adhesive • Toughened epoxy • 1-2 hrs. handling strength • High performance product	2:1	45,000	20 Min.	50	4500	4500	450	200
DP-460 Off-White	• Long worklife adhesive • Toughened epoxy • 2-4 hrs. handling strength • Meets MIL-A-23941A • Longer worklife DP-420 Adhesive type product • High-performance product	2:1	45,000	60 Min.	60	4500	4500	700	200
DP-605NS Off-White	• Fast cure adhesive • Semi-rigid urethane • 15-20 min. handling strength • Excellent gap filler and non sag product for wood and plastic	1:1	150,000	4 Min.	15	1000	1250	325	100
DP-805 Lt. Yellow	• High peel and shear strength • Can bond slightly oily material • Good elevated temperature performance • Excellent plastic adhesion	1:1	110,000	4 Min.	35	2500	3500	2200	200

Note: The technical information and data on these pages should be considered representative or typical only, and should not be used for specification purposes.

(1) Color is mixed if two-part product.
(2) Brookfield viscometer viscosity values are typical values for the mixed product.
(3) The time during which an adhesive will adequately wet-out on a substrate.
(4) 180° peel tested on .030" aluminum per ASTM D 1876-61T.
(5) Tested per ASTM D 1002-64.

Fast bonding with the right combination of strength, cure time and viscosity.

For speed and performance, you'll likely find a product in this line with precisely the right combination of bond strength, cure time and viscosity.

These one-part cyanoacrylate adhesives rapidly reach handling strength at room temperature without a catalyst. Bonds achieve 80% of full strength in an hour. A single drop per square inch can bond many plastics, rubber, metal and more with tensile strength up to 5,000 PSI.

Depending on the specific formulation, you have the following features: resistance to fuels, lubricating oils and other chemicals from -40°F to 200°F (-40F to 93°C); gap filling; extended cure rates for repositionability; high peel and impact strength; conformance to MIL-Spec A-46050C.

Application is easy from their own containers or through intermediate manual dispensers or automated systems. Curing requires no expensive equipment or fixturing.

Product Information:
Pronto™ Instant Adhesives

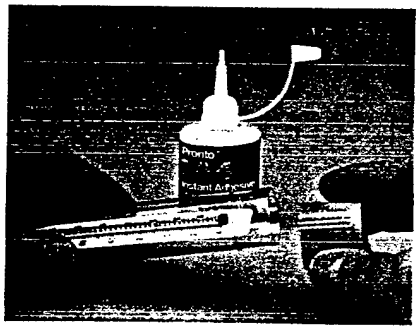
One-part, room-temperature curing adhesives that are ready-to-use without metering or mixing. Bonded parts reach handling strength in 5-10 seconds on many applications.

Product	Features	Base	Time[1] To Handling Strength (Sec.)	Viscosity (CPS)	Average[2] T-Peel At 75°F (24°C)	Overlap Shear Strength[3] @ 75° (24°C) (PSI) Steel	Aluminum	Nitrile Rubber	Neoprene Rubber	ABS	Rigid PVC
CA-4	Fast setting multi-purpose cyanoacrylate adhesive for bonding a variety of plastics and rubbers. Meets MIL-A-46050C Type II, Class 2.	ethyl	5-40	60-120	1-2	1500	1500	35*	55*	900*	1000*
CA-5	A higher viscosity, slower setting version of CA-4 Adhesive.Better adapted for filling gaps and uneven surfaces. Meets MIL-A-46050C Type II, Class 3.	ethyl	20-70	2000-3000	1-2	2000	1100	35*	55*	900*	1000*
CA-7	Very fast setting product with excellent adhesion to a variety of metals, plastics and rubbers. Meets MIL-A-46050C Type I, Class 1.	methyl	1-30	15-40	2-4	2500	2400	35*	55*	900*	1000*
CA-8	Fast setting adhesive with excellent adhesion to many metals, plastics and rubbers. Slower setting than CA-7 Adhesive. Meets MIL-A-46050C Type II, Class 2.	ethyl	5-40	70-120	2-4	2000	2100	35*	55*	900*	1000*
CA-9	A slower setting version of CA-8 Adhesive ideal for wire tacking and coil terminating in conjunction with surface activator. Meets MIL-A-46050C Type II, Class 3.	ethyl	20-70	1000-1700	2-4	2000	2440	35*	55*	900*	1000*
CA-40	Very fast setting adhesive with excellent adhesion to many substrates including flexible vinyl and EPDM rubber. Meets MIL-A-46050C Type II, Class 1.	ethyl	1-30	2-10	1-2	1400	1400	35*	55*	900*	1000*
CA-40H	A higher viscosity, slower setting version of CA-40 Adhesive, with better void filling capabilities. Meets MIL-A-46050C Type II, Class 3.	ethyl	5-40	400-600	1-2	1500	1500	35*	55*	900*	1000*
CA-50 Gel	A high-viscosity gel consistency CA for many applications needing non-sag properties. Less sensitive to acidic surfaces.	ethyl	60-120	45,000-85,000	1-2	2000	900	105*	130*	850*	690*
CA-100	Toughened material that provides high peel and impact strength, thermal shock resistance and improved heat resistance. Meets MIL-A-46050C Type II, Class 3.	ethyl	20-70	2500-4500	15	2000	2900	95*	120*	600*	710*
SURFACE ACTIVATOR	A clear, colorless organic-based liquid, which can be applied by brush or spray.	This product helps speed curing and primes surfaces when cyanoacrylate adhesives are unable to cure properly due to surface activity. Also can be used for wire tacking and coil terminating in combination with CA-5, CA-9, CA-50, or CA-100 Adhesives. Bottle container comes with brush in lid and spray pump.									

Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

(1) The time it takes assembled parts to reach a strength where further handling and processing can take place. Times will depend on surface to be bonded, temperature and humidity.

(2) Tested per ASTM D 1876-61T.
(3) Tested per ASTM D 1002-64.
* Substrate failure.



12

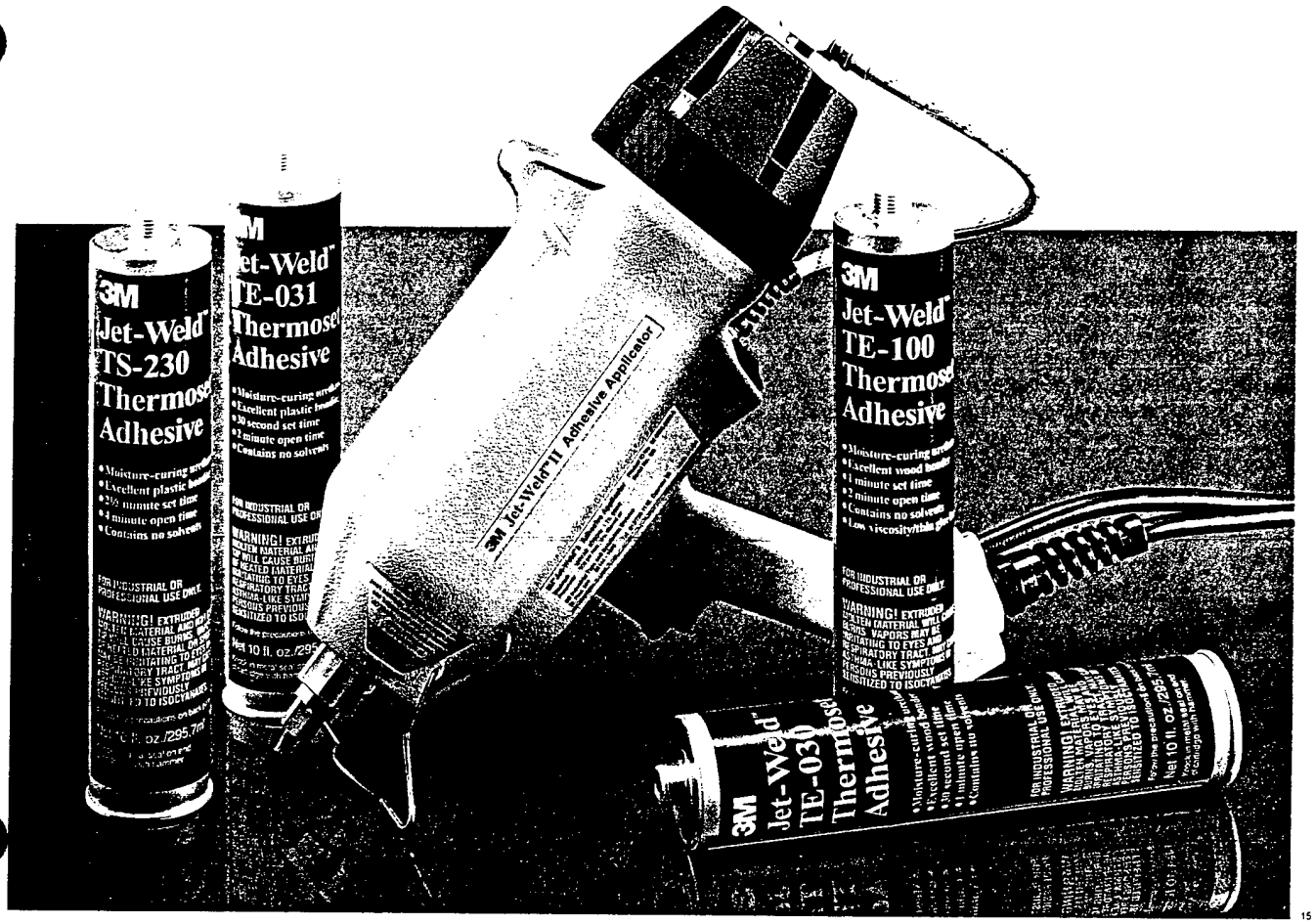
A single drop of Pronto Instant Adhesive per square inch quickly bonds many plastics, rubber, metal and more.

13

Pronto CA-40 Instant Adhesive works on many problem surfaces where other adhesives may fail, such as bonding EPDM rubber.

14

Pronto CA-8 Instant Adhesive is an excellent multi-purpose product for use in a variety of assembly applications.



Hot melt speed and structural strength performance in the palm of your hand.

The Jet-Weld II Applicator and moisture-curing urethane adhesives put a powerful production capability in your assembly operation. This single system combines many production benefits typical of hot melt adhesives and bond performance usually associated with two-part structural adhesives.

Speed and 100% solids

Fast initial set of Jet-Weld adhesives can help you reduce costs. **Fast handling strength** helps eliminate or minimize fixturing and speed assembly.

With a **one-component**, moisture-curing formulation, you also eliminate metering, mixing and curing equipment. That can help simplify production as well as save energy.

100% solids give you a low-VOC adhesive system with no drying equipment and no attack on plastics.

Unique high strength and application versatility

Jet-Weld adhesives approach the high strength end of the performance range, exceeding many conventional hot melt and PVA (polyvinyl acetate) adhesives.

Based on proprietary 3M urethane technology, Jet-Weld adhesives can bond a wide **variety of substrates**, including wood, plastics, rubber, dissimilar materials, and plasticized vinyls.

With the **long bonding range** and initial repositionability of Jet-Weld adhesives, assembly of complex parts is easier. **Bond lines are thin, flexible and tough** for improved part fit, appearance and rugged performance.

Combine this versatility with the applicator's portability and you have a system that can adapt readily to many of your production requirements.

Jet-Weld Adhesive Selection Guide

Substrate	Adhesive TE-030	Adhesive TE-031	Adhesive TE-100	Adhesive TS-230	Adhesive TS-115HGS
ABS	Good	Excellent	Good	Excellent	Excellent
Aluminum (1) (2)	Poor	Fair	Poor	Excellent	Excellent
EPDM rubber	Poor	Poor	Poor	Poor	Poor
Fabric/felt/cork	Excellent	Excellent	Excellent	Excellent	Excellent
FRP – epoxy based	Good	Excellent	Good	Excellent	Excellent
FRP – polyester based	Good	Excellent	Good	Excellent	Excellent
Glass/ceramic	Poor	Fair	Poor	Excellent	Excellent
Leather	Excellent	Excellent	Excellent	Excellent	Excellent
Neoprene rubber (3)	Poor	Fair/poor	Poor	Good/fair	Good/fair
Nitrile rubber (3)	Good	Excellent	Good	Excellent	Excellent
Nylon	Poor	Fair/poor	Poor	Fair/poor	Fair/poor
Painted metal (1)	Poor	Good/fair	Poor	Excellent	Excellent
Polyacrylic	Fair	Excellent	Fair	Excellent	Excellent
Polycarbonate (4)	Good	Excellent	Good	Excellent	Excellent
Polyolefins (5)	Poor	Poor	Poor	Poor	Poor
Polystyrene	Poor	Excellent	Poor	Excellent	Poor
Polystyrene (beadboard)	Excellent	Excellent	Excellent	Excellent	Excellent
PVC (rigid or flexible)	Good	Excellent	Good	Excellent	Excellent
Steel (1) (2)	Poor	Fair	Poor	Good	Good
Styrene Butadiene Rubber	Good	Excellent	Good	Excellent	Excellent
Wood/hardboard	Excellent	Good	Excellent	Good	Good

(1) Not recommended for bonding metal, glass and ceramic to itself or each other due to low moisture transmission of substrates.

(2) Abrade uncoated aluminum. Not for use on uncoated aluminum subjected to hot/humid conditions.

(3) Rubbers vary in composition. Adhesion to specific rubber must be evaluated by user.

(4) Adhesive may partially delaminate from polycarbonate at elevated temperatures.

(5) Polypropylene, polyethylene. Corona or plasma treatment may improve adhesion.

Photo courtesy of The Rose Hill Co., Inc

16

Decorator tables – Jet-Weld adhesive performs multiple tasks including V-groove bonding at the table joints, and laminating tops.

17

Job-matched tips –

1) Threaded cap for sealing tip after use.
2) Extension tip for improved sight line in hard-to-reach areas.
3) .062" tip for low flow applications.
4) .125" tip for high flow applications.

Note: This technical information and data should be considered representative or typical only, and should not be used for specification purposes.

18

Container sizes to meet your production volume –

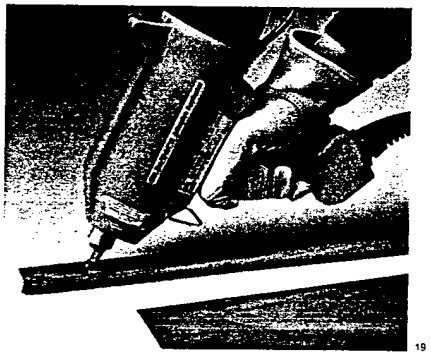
- 10 fl.oz. cartridges
- Gallon pail
- 5 gallon pail
- 55 gallon drum

Product Information:
Jet-Weld Adhesives

A complete line of warm applied, moisture-curing polyurethane adhesives for the woodworking, laminating and plastic component assembly markets.

Product	Description	Application temperature	Vis-cosity	Color	Open time	Set time	Shore D	Tensile strength	Elongation %	Modulus
TE-030	Extrudable grade with fast set time ideal for bonding **wood.** Can bond selected plastics.	250°F (121°C)	16,000 cps	White/ Off White	1 min.	30 sec.	60	3800 psi	725%	11,200 psi
TE-031	Extrudable grade with fast set time ideal for bonding a wide variety of **plastics**, including polystyrene and polyacrylic.	250°F (121°C)	13,000 cps	White/ Off White	2 min.	30 sec.	50	3900 psi	725%	5600 psi
TE-100	Extrudable grade with medium set time and low viscosity ideal for bonding **wood**. Can bond selected plastics. Yields thin glue lines.	250°F (121°C)	7,000 cps	White/ Off White	2 min.	1 min.	61	4200 psi	675%	12,200 psi
TS-230	Sprayable/extrudable grade with long set time ideal for bonding a wide variety of **plastics**, including polystyrene and polyacrylic. Can bond **aluminum** and **glass** to plastic and wood.	250°F (121°C)	9,000 cps	White/ Off White	4 min.	2.5 min.	45	3300 psi	700%	5400 psi
TS-115 HGS	Sprayable/extrudable/roll coatable grade with fast set time, ideal for bonding a variety of substrates including wood, fiber, reinforced plastic and other **plastics** to themselves, **metal** and **glass**.	250°F (121°C)	16,000 cps	White/ Off White	10 min.	1 min.	47	3200 psi	600%	3300 psi

Note: This technical information and data should be considered representative or typical only, and should not be used for specification purposes.



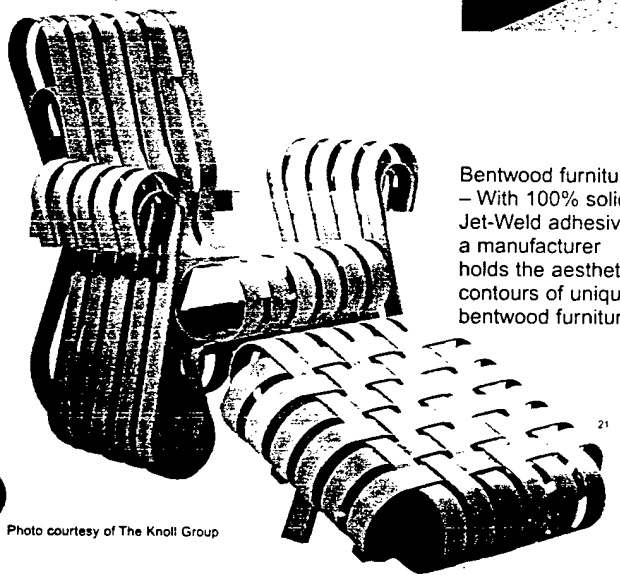
19

Easily applied bead of 100% solids Jet-Weld adhesive is applied molten at only 250°F (121°C).

Photo courtesy of Othmar Klem Furniture Co..

20

Wood furniture – Jet-Weld adhesive reliably bonds a wide variety of wood components in furniture ranging from headboards to desks and TV cabinets.

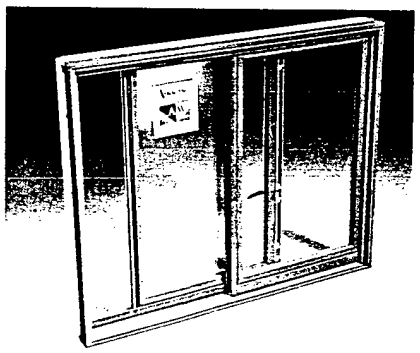


21

Photo courtesy of The Knoll Group

Bentwood furniture – With 100% solids Jet-Weld adhesives, a manufacturer holds the aesthetic contours of unique bentwood furniture.

Photo courtesy of Andersen Windows, Inc.



22

High performance gliding windows – With fast handling strength, Jet-Weld adhesive helps speed the bonding of interior wood trim to the vinyl sash.

Non-Structural Adhesives

3M non-structural strength adhesives bond substrates used in insulation applications, cushioning, decorative trim, packaging, paneling, sealing, gasketing, countertops, furniture, woodworking and general assembly. Materials include rubber, plastics, fabric, leather, wood, metal, and glass. A range of bond strength is available to help meet specific requirements wherever structural strength is not required.

Each substrate has an individual bonding "profile" determined by the degree of porosity, absorbency, surface texture, strength, solvent sensitivity, and reaction to environmental conditions such as humidity. And with 3M adhesives, you have a wide selection to help find the best balance of end-use performance, application ease and cost effectiveness.

Non-structural adhesives are generally rubber or resin-based thermoplastic formulations. Forms can be liquid with different viscosities, solid hot melts, or supplied in a convenient aerosol.

The 3M non-structural adhesives product line includes the following:

- 3M Scotch-Grip™ and Fastbond™ liquid adhesives including many advanced water-based formulations.
- 3M Aerosol Adhesives and chemicals for industrial and packaging applications.
- Jet-melt™ Adhesives with Polygun™ Hot Melt Applicators.

Innovative answers to a wide variety of non-structural bonding problems.

Scotch-Grip and Fastbond brand Adhesives are industrial-quality products designed to provide innovative answers to a wide variety of non-structural bonding problems. Some formulations are tailored to specific types of applications. Others are multi-purpose and used worldwide in hundreds of different product assembly operations.

24

In general assembly, these products are used to bond rubber, gasketing materials, insulation, decorative trim and many other non-load-bearing materials to themselves and metal, wood, plastics and more.

In lamination, they can bond plastic sheets and films to numerous substrates. And in panel assembly, they can bond such "skins" as steel, aluminum and high pressure laminate to a wide variety of materials.

Many of these adhesive products are now available in water dispersed formulations, which can be extremely important in today's highly-regulated production environment.

If you're looking for a reliable non-structural adhesive, you're likely to find just what you need in the Scotch-Grip and Fastbond lines backed with more than 50 years of 3M adhesives engineering.

25

Fastbond 2000-NF Contact Adhesives cover more area than the same amount of typical solvent-based contact adhesives.

26

This low-cost, hand-held applicator offers significant savings over many typical application systems currently available, making it ideal for small shops or off-line applications.

27

For bonding insulation, water-based Fastbond 42-NF Plus Adhesive provides a low VOC content and resists elevated temperatures and humidity.

Product Information:
Scotch-Grip™ and Fastbond™ Water-Based Adhesives

A versatile selection of water-dispersed adhesives that offer low or no VOCs (Volatile Organic Compounds) and nonflammability (in the wet state) to bond a wide variety of substrates.

Product	Features	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Consistency	Color (Dry Film)	Application Method	Bonding Range	Peel Strength (PIW) 75°F (24°C)
30-NF Green Contact Adhesive	Long bonding range with high immediate bond strength. Economical high coverage. Low VOC content. Meets MIL-A-24179A, Type I.	50%	None	Thin liquid	Green	Spray, roller, brush	Up to 4 hours	5.9(1)
30-NF Neutral Contact Adhesive	Neutral colored version of 30-NF Adhesive. Low VOC content. Meets MIL-A-24179A, Type I.	50%	None	Thin liquid	Clear	Spray, roller, brush	Up to 4 hours	5.9(1)
42-NF Plus NV Insulation Adhesive	Fast tacking with resistance to elevated temperature and humidity. No VOC content. Covered by Underwriter's Laboratories Inc. component recognition program guide MAGW2, file MH 6288(N) component-adhesive (miscellaneous) to secure insulating materials to sheet metals.	63%	None	Thixotropic liquid	Black	Spray	Up to 15 minutes	19.9(1)
2000-NF Blue Adhesive (with spray Activator #1)	Water-dispersed, activated adhesive which provides immediate bonding and handling strength without forced drying.	49%	None	Thin liquid	Blue	Co-Spray	Up to 2 hours	4.1(1)
2000-NF Light Orange	Light orange version of 2000-NF Adhesive.	49%	None	Thin liquid	Light Orange	Co-Spray	Up to 2 hours	4.1(1)
2000-NF Neutral	Neutral colored version of 2000-NF Adhesive.	49%	None	Thin liquid	Clear	Co-Spray	Up to 2 hours	4.1(1)
4213-NF Industrial Adhesive	Resists staining and discoloration. Dries clear. No VOC content. Not recommended for exterior applications.	54%	None	Medium liquid	Clear	Brush, roller, trowel	5 minutes	12.0(2)
4224-NF Industrial Adhesive	Permanently pressure sensitive with aggressive tack. Plasticizer resistant. Low VOC content.	40%	None	Thick liquid	Blue	Spray, brush, roller trowel, roll coat, knife coat	30 days plus	4.4(3)
4224-NF Clear Industrial Adhesive	Neutral colored version of 4224-NF Adhesive.	40%	None	Thick liquid	Clear	Spray, brush, roller trowel, roll coat, knife coat	30 days plus	4.4(3)
4268-NF Industrial Adhesive	High-coverage pressure-sensitive adhesive with repositionability. Low VOC content and low odor.	48%	None	Medium liquid	Clear	Spray, brush, roller trowel, roll coat, knife coat	30 days plus	6.3(3)
4289-NF Industrial Mastic Adhesive	High strength bonds for styrene and beadboard without cavitation. Non-sag on vertical surfaces. Freeze-thaw stable. Low VOC content.	69%	None	Mastic	Black	Caulk, flow, trowel	30 minutes	N/A

(1) Canvas to cold rolled steel @ 2.0 inches/minute separation rate.

(2) Supported vinyl to wood @ 2.0 inches/minute separation rate.

(3) Primed polyester to steel @ 2.0 inches/min. separation rate.

Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

Product Information:
Scotch-Grip™ and Fastbond™ High Performance Contact Adhesives

A complete line of high strength "contact" type adhesives with years of successful history in a wide range of industrial product assembly applications.

Product	Features	Solids Wt. (Approx.)	Flash Point	Consis-tency	Color (Dry Film)	Applica-tion Method	Bonding Range	Overlap Shear Strength (PSI) 75°F (24°C)	Overlap Shear Strength (PSI) 180°F (82°C)	Peel Strength (PIW) 75°F (24°C)
5 Green	Rapid strength build-up. Heat and creep resistant bond. Meets mil spec MMM-A-121.	19%	-14°F (-26°C)	Thin liquid	Green	Spray	30 min. minimum	482(1)	65(1)	19 (2)
5 Neutral	Neutral colored version of Fastbond 5 Adhesive.	19%	-14°F (-26°C)	Thin liquid	Light yellow	Spray	30 min. minimum	482(1)	65(1)	19 (2)
10 Neutral	Similar performance to 5 Neutral Adhesive. Brushable with higher coverage. Meets mil spec MMM-A-121.	22%	-14°F (-26°C)	Thin liquid	Light yellow	Brush roller	30 min. minimum	482(1)	65(1)	19 (2)
1357	Rapid strength build-up to a very high strength bond for metal. Resists heat and continuous load stress. Meets MIL-A-21366A, MMM-A-121.	25%	-14°F (-26°C)	Thin liquid	Gray-green	Brush, spray	30 min. minimum	536(1)	199(1)	42 (2)
1357 Neutral	Neutral colored version of 1357 Adhesive.	25%	-14°F (-26°C)	Thin liquid	Light yellow	Brush, spray	30 min. minimum	536(1)	199(1)	42 (2)
1357-L	Lower solids, lower viscosity version of 1357 Adhesive for automatic spray applications.	18%	-14°F (-26°C)	Thin liquid	Gray-green	Spray	30 min. minimum	536(1)	199(1)	42 (2)

Scotch-Grip™ Rubber and Gasket Adhesives

A versatile line of high strength adhesives that are used throughout industry to bond many rubber and gasket materials to themselves and to other substrates.

Product	Features	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Consis-tency	Color (Dry Film)	Applica-tion Method	Bonding Range	Overlap Shear Strength (PSI) 75°F (24°C)	Overlap Shear Strength (PSI) 180°F (82°C)	Peel Strength (PIW) 75°F (24°C)
847	Quick drying and flexible with fuel and oil resistance. Heat and solvent reactivatable. Curable with heat.	36%	0°F (-18°C)	Medium liquid	Brown	Brush, flow	Up to 15 minutes	200(1)	9(1)	40(2)
847-L	Lower viscosity version of 847 Adhesive for spray application.	24%	0°F (-18°C)	Thin syrup	Brown	Spray, brush	Up to 20 minutes	200(1)	9(1)	40(2)
847-H	Higher viscosity version of 847 Adhesive.	50%	0°F (-18°C)	Thick syrup	Brown	Brush, flow	Up to 10 minutes	200(1)	9(1)	40(2)
1300	High immediate strength, fast-drying, and heat resistant for rubber and metal.	37%	-14°F (-26°C)	Medium liquid	Yellow	Brush, flow	Up to 12 minutes	549(1)	136(1)	52 (2)
1300-L	Lower viscosity version of 1300 Adhesive. Sprayable. Meets Mil Spec MMM-A-121.	29%	-14°F (-26°C)	Thin liquid	Yellow	Spray, brush	Up to 8 minutes	549(1)	136(1)	52 (2)
1300 Roll Coatable	Slower drying, roll coatable version of 1300 Adhesive.	32%	-40°F (4°C)	Thin liquid	Yellow	Spray, brush, flow, roll coat	Up to 15 minutes	549(1)	136(1)	52 (2)
2141	Easy-brushing general purpose rubber adhesive with excellent water resistance.	30%	-14°F (-26°C)	Medium liquid	Light yellow	Brush, flow	Up to 15 minutes	–	–	32 (2)

(1) Birch plywood to birch plywood @ 0.1 inches/ minute separation rate

(2) Canvas to cold rolled steel @ 2.0 inches/minute separation rate

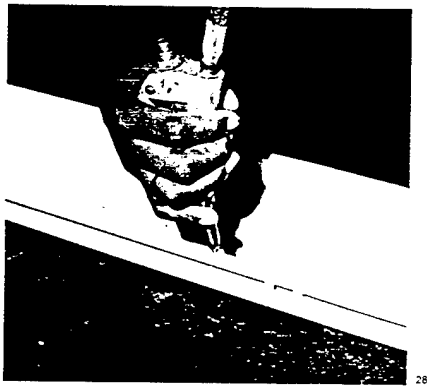
Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

Scotch-Grip™ and Fastbond™ Industrial Adhesives

A full line of adhesives with versatile substrate and application capabilities for a wide range of industrial product assembly applications.

Product	Features	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Consistency	Color (Dry Film)	Application Method	Bonding Range	Overlap Shear Strength (PSI) 75°F (24°C)	Peel Strength (PIW) 75°F (24°C)
959 Mastic	Dries to a tough, permanently flexible film that can bond mirrors (test for backing compatibility). Water resistant.	62%	-14°F (-26°C)	Thick paste	Cream	Caulk flow	Up to 20 minutes	–	N/A
1870 Industrial Adhesive	Single surface application with very long tack range. Resists bleed through. Flexible bond.	26%	-7°F (-22°C)	Thin liquid	Tan	Spray, brush	Up to 40 minutes	N/A	7(3)
4323 Construction Mastic	Resistant to wear, heat and dead load creep.	66%	1°F (-17°C)	Mastic	Gray	Caulk, flow, trowel	Up to 20 minutes	290+(1)	N/A
4550 Industrial Adhesive	Fast tacking, low pressure sprayable adhesive with long bonding range. Listed under UL INC.© Component Recognition Category MAGW2 (Adhesives, Insulation), File Number MH6288(N).	35%	Less than -20°F (-29°C)	Medium liquid	Clear/ trans-lucent	Spray	Up to 60 minutes	N/A	23(2)
4799 Industrial Adhesive	Brushable paste consistency with low soak-in on porous surfaces. Can bond EPDM rubber.	36%	-14°F (-26°C)	Thin paste	Black	Brush trowel	Up to 15 minutes	N/A	28(2)
5298 Industrial Adhesive	One part, 100% solids moisture curing liquid urethane adhesive which can bond wood, metal and many plastics without primers. Sets to handling strength in 4 to 6 hours or less.	100%	>395°F (>-203°C)	Thick liquid	Clear	Flow or trowel	Up to 15 minutes	400(3)	N/A
5497 Industrial Adhesive	One part, 100% solids moisture curing liquid urethane adhesive which can bond wood, metal and many plastics without primers. Sets to handling strength in 30 to 60 minutes.	100%	>300°F (>-149°C)	Thick liquid	Clear	Flow or trowel	5 minutes	30(3)	N/A

(1) Fir plywood to itself @ 2.0 inches/min. separation rate. Wood failure.
(2) Canvas to cold rolled steel @ 2.0 inches/min. separation rate.
(3) Maple to itself @ 50% R.H. Test at 0.1 inches/min. separation rate.



To prevent moisture penetration, a pressure flow gun applies Scotch-Grip Rubber and Gasket Adhesive to bond a rubber gasket in the cover of a commercial light fixture.

Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

Product Information:
Scotch-Grip™ Plastic Adhesives

A complete line of high-strength, fast-drying adhesives with unique plastic bonding capabilities for a wide variety of industries.

Product	Features	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Consistency	Color (Dry Film)	Application Method	Bonding Range	Overlap Shear Strength (PSI) 75°F (24°C)	Overlap Shear Strength (PSI) 180°F (82°C)	Peel Strength (PIW) 75°F (24°C)
826	Fast drying adhesive for many plastic films. Resists aromatic and aliphatic fuels, water, oil.	24%	35°F (3°C)	Thin liquid	Amber	Spray, brush	Up to 45 minutes	198(1)	59(1)	27(3)
1099	Fast drying and heat curable. Resists weathering, water, oil, plasticizer migration, aliphatic fuels. Meets MIL-A-13883B, Type I and MMM-A-189C, Class 2.	32%	0°F (-18°C)	Medium liquid	Light Tan	Brush, flow	Up to 40 minutes	1306(1)(2)	643(1)(2)	31(3)
1099-L	A sprayable version of 1099 Adhesive.	24%	0°F (-18°C)	Thin liquid	Tan	Spray, brush	Up to 20 minutes	1306(1)(2)	643(1)(2)	31(3)
2262	Quick tack, clear and non-staining. Resists plasticizer migration for bonding many flexible vinyls.	25%	-0°F (-18°C)	Thin liquid	Clear	Brush, flow	Up to 20 minutes	N/A	N/A	17(4)
4475	Clear, fast tacking and dries quickly to a firm bond. Resists water, plasticizer migration, detergent, oils and grease.	42%	20°F (-7°C)	Medium liquid	Clear	Flow	Up to 10 minutes	N/A	N/A	44(3)
4693	Long tack range. Water and heat resistant bond for many plastics including polyethylene and polypropylene.	24%	-0°F (-18°C)	Thin liquid	Clear	Spray, brush	Up to 60 minutes	N/A	N/A	22(3)

(1) Aluminum to aluminum @ 0.1 inches/minute separation rate

(2) Bonds heat cured for 15 minutes @ 325°F, 150 PSI

(3) Canvas to cold rolled steel @ 2.0 inches/minute separation rate

(4) Unsupported vinyl to steel @ 2.0 inches/minute separation rate

Scotch-Grip™ Solvents

A line of solvents for clean-up, surface preparation, and solvent reactivation of many adhesives, coatings and sealers.

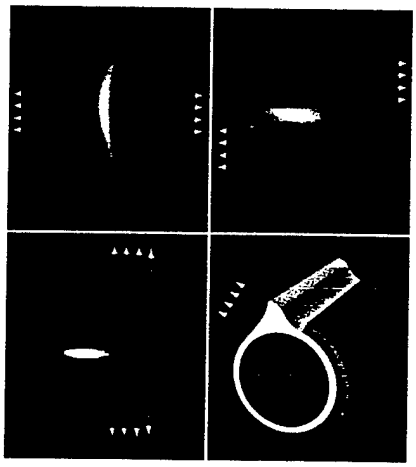
Product	Features	Base	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Consistency	Color	Application Method
No. 2	Contains petroleum distillate and toluene for removing many oil-soluble adhesives, coatings and sealers. Not recommended for surface preparation.	Toluene Aliphatic Blend	0%	-14°F (-26°C)	Very thin liquid	Clear	Brush, dip spray
No. 3	Contains methyl ethyl ketone for removing many oil-resistant adhesives, coatings and sealers and solvent reactivation of pre-applied adhesives. Cleans surfaces prior to bonding.	Methyl Ethyl Ketone	0%	-20°F (-7°C)	Very thin liquid	Clear	Brush, dip spray

Scotch-Seal™ and Weatherban™ Sealants

A versatile line of products for a wide variety of sealant applications.

Product	Features	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Consis-tency	Color (Dry)	Application Method	Cure or Dry Time	Service Temp. Range
606-NF Sealant	Smooth handling, weather resistant sealant for metal, wood, painted or primed surfaces and certain abraded plastics. Skins over in 20-40 minutes with low shrinkage. Permits weld-through and painting.	78%	None	Pumpable paste	White	Hand or pressure caulk	7 days (¼" dia. bead)	-20° to 180°F (-29° to 82°C)
800 Sealant	Air dries to a flexible, rubbery seal for aluminum, cold rolled steel, galvanized steel, glass, many plastics and other surfaces. Resists weather, water, oils, fuel, detergent and soap solutions.	51.5%	20°F (-7°C)	Heavy liquid	Reddish brown	Brush or flow	1-3 days	-65° to 200°F (-54° to 93°C)
900 Sealant	Firm, rubbery seal with gap filling properties for aluminum, galvanized steel, cold rolled steel and more. Economically seals medium and high pressure heating and air conditioning ducts.	66%	1°F (-17°C)	Mastic	Gray	Hand or pressure caulk	1-2 days	0° to 180°F (-18° to 82°C)
1103 Sealant	Weather resistant seal for glass, aluminum, cold rolled steel, galvanized steel, rubber and wood.	45%	40°F (4°C)	Medium liquid	Clear	Brush or flow	1-2 days (⅛" dia. bead)	-20° to 160°F (-29° to 71°C)
1252 Tamper proof Sealant	Fire retardant seal for aluminum, glass, galvanized steel, cold rolled steel and most plastics. Resists oil, gasoline, water, jet fuel and fungus. Will not corrode metal. Tack free in 20 seconds.	70%	20°F (-7°C)	Thin paste	White	Pressure flow gun	24 hours (⅛" dia. bead)	-20° to 250°F (-29° to 121°C)
2084 Sealant	Adheres to metal, wood and glass. Seals metal to glass in windows and doors. Resists weather, water, oil and gasoline.	46%	0°F (-18°C)	Heavy liquid	Aluminum	Brush or flow	24 hours (⅛" dia. bead)	-30° to 250°F (-34° to 121°C)
5200 Sealant	Rubbery, extremely strong sealant/adhesive for mahogany, teak, cedar, fir, plywood and fiberglass. Nonshrinking, one-part moisture cure. Resists weather, fresh and salt water.	Greater than 99%	Greater than 150°F (66°C)	Thixo-tropic paste	White, mahogany or tan	Hand or pressure caulk	7 days (¼" dia. bead)	-30° to 200°F (-1° to 93°C)
5354 Sealant Tape	High tack, adheres aggressively to porous and non-porous surfaces. Easy to compress and resists cold flow.	100%	None	Solid sealant tape	Black	Apply by hand	Non-drying or curing	-65° to 190°F (-54° to 88°C)
PF-5422 Sealant Tape	Thread reinforced for dimensional stability and die-cutting. Repositionable with virtually no cleanup. Weather resistant adhesion to glass, metal and many other non-porous surfaces.	100%	None	Solid sealant tape	Black	Apply by hand	Non-drying or curing	-40° to 200°F (-40° to 93°C)
PF-5423 Sealant Tape	Nonreinforced thinner product similar to PF 5422 Sealant Tape.	100%	None	Solid sealant tape	Black	Apply by hand	Non-drying or curing	-40° to 200°F (-40° to 93°C)

Note: The technical information and data on these pages should be considered representative or typical only, and should not be used for specification purposes.



Convenience, speed and a fistful of real work power.

3M aerosol products go to the job and are always ready when needed. Only a touch of the finger bonds, cleans, lubricates or handles a variety of other jobs. Most of our aerosol adhesives have a controlled spray pattern which helps minimize overspray and clean-up.

That's convenience and speed... and you get both without sacrificing performance. With job-matched formulations, you have a fistful of technology that gets jobs done reliably and cost effectively.

3M introduced the first industrial-grade aerosol adhesive over 30 years ago and continues to lead the way with lace spray technology and other product advancements.

User-friendly economics. As handy self-contained applicators, 3M aerosols often save the expense of complex application systems. The compact container size combined with storage stability can help to reduce your storage costs. And with clean, targeted application, you get more usable product for your money.

Convenience, speed, performance and cost effectiveness—that's real work power. And 3M combined it all in a full line of aerosol "power tools" that are proven "user-friendly" worldwide.

The line includes:

- Industrial-quality Aerosol Adhesives
- Aerosol Chemicals for Maintenance and Production (also available in spray pump)
- Shipping-Mate™ Aerosols for Packaging
- New, water-based General Purpose Spray Adhesive

These products contain no methylene chloride, chlorofluorocarbons (CFCs), or 1,1,1-trichloroethane (methyl chloroform).

DIN: 14-2-5/#03
31 December 1996

H1-29

A variety of ways to help speed assembly jobs, reduce costs.

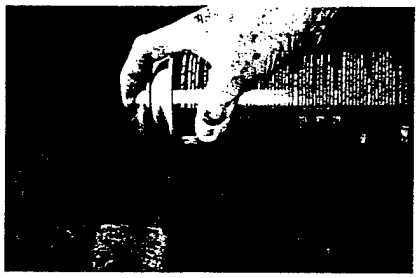
30

With fast tack, long bonding range and little or no soak-in, Super 77 Spray Adhesive is a versatile tool for bonding many lightweight materials.

Aerosol Adhesives

31

Super 74 FoamFast Adhesive quickly bonds flexible urethane or latex foams to themselves and many other lightweight materials.


32

Low-misting lace spray pattern of 72, 74, 76, 80 and 90 Adhesives target adhesive where you want it for clean, precise application.

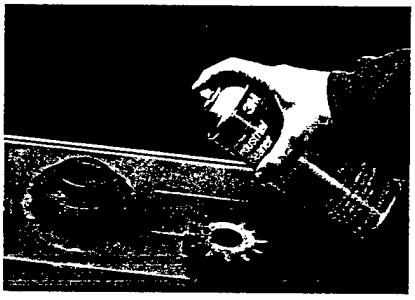
33

In edge banding, 90 Hi-Strength Adhesive typically bonds in 60 seconds compared to 15-20 minutes for many typical bulk contact adhesives.

Chemicals for maintenance and production

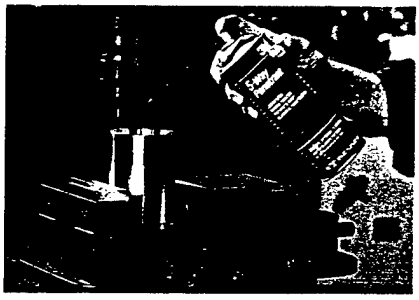
34

Silicone Lubricant lubricates cutting tools and tables. Helps prevent build-up of glues, wax, inks, paints. Won't stain or become gummy. Available in aerosol or spray pump.



35

Citrus Base Cleaner is a heavy-duty degreaser/cleaner for grease, oils, grime, inks, tape residue and most non-curing adhesives. Non-corrosive, it has a fresh citrus scent. Available in aerosol or spray pump.

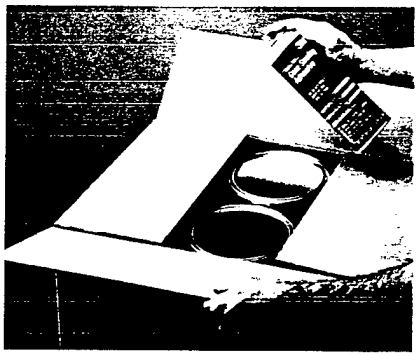

36

5-Way Penetrant helps free rusted bolts, lubricates and cleans, drives out moisture. Also excellent as a tapping liquid for stainless steel, aluminum. Available in aerosol or spray pump (as 5-Way Plus Penetrant).

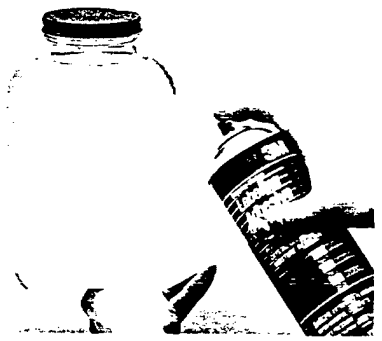
Shipping-Mate Aerosols for packaging

37

Box Re-Nu Coating covers most printing and labels with permanent tan color for reuse of corrugated cartons.


38

Case Sealing Adhesive can help save you time and money if you have cartons that come unglued...fill cartons by hand...open cartons for inspection...or fill miscellaneous orders.


39

Clear Labeling Adhesive sticks to many problem surfaces such as glass, rubber or metal where many other adhesives or gummed labels may fail.

Product Information:
3M Aerosol Adhesives

Based on 3M pioneering technology, these aerosol adhesives are precisely formulated for industrial performance requirements.

Product	Features	Spray Width	Bonding Range Surfaces One/Both	Shear[1] Initial/ Ultimate	Relative Adhesion Peel Strength (PIW)[2]	Relative Adhesion Temp. Resist.[3]	Coverage Sq. Ft./ Cont.[5] (typical)
72 Pressure Sensitive Adhesive	Repositionable with aggressive tack for bonding polyethylene film and foam; also carpet bonding. Blue color.	1"-3" variable	8 hr./7 days	20 PSI/ 85 PSI	8	120°F (49°C)	100
Super 74 FoamFast Adhesive	Fast tack with foam-tearing strength and soft, non-dimpling glue line. General upholstery foam bonding. Plus knife edge bonding, boxing, edge turning.	1"-3" variable	N/R / 15 min.	40/205	20	120°F (49°C)	260
75 Reposition-able Adhesive	Clear "tape-like" adhesive holds badges during stitching and patterns prior to cutting. No bleed, stain or wrinkle.	1½"	1 hr./3 hrs.	15/65	5	120°F (49°C)	100*
76 High Tack Adhesive	Multi-purpose with high temperature resistance and strong one-surface bonds.	1"-3" variable	10 min./1 hr.	25/100	25	160°F (71°C)	100
Super 77 Spray Adhesive	Fast, aggressive tack for bonding many lightweight materials. Choice of round or fan pattern nozzle.	1"-3"	15 min./30 min.	25/160	15	110°F (43°C)	220
80 Neoprene Contact Adhesive	Neoprene-based contact adhesive with plasticizer resistance. Can bond supported vinyl, leather, most rubber. Adheres to most plastics, laminate and wood. Resists over 200°F (93°C).	1"-2" variable	N/R / 1 hr.	50/400	35	200°F (93°C)	75/30[4]
90 Hi-Strength Adhesive	High contact strength for bonding decorative laminate. Adheres polyethylene and polypropylene to wood, metal, and more. One minute dry time.	1"-3" variable	N/R / 15 min.	45/230	25	160°F (71°C)	100

N/R = Not recommended
N/A = Not applicable
(1) ITSD T.M. C-700: ⅛" birch veneer bonded to ⅛" birch veneer
(2) ITSD T.M. C-449
(3) ITSD T.M. C-483; 500 g load for 1 hr. at noted temp.
(4) Plastic laminate bonding @ 3-5 g/sq. ft. coverage
(5) Coverage based on container sizes 24 ounce or * 16 ounce size cans.

Shipping-Mate Packaging Aerosols

Containment, communication and protection are a package's full job. And with these aerosols you can put packages to work more conveniently.

Product	Features	Spray Width	Bonding Range Surfaces One/Both	Relative Adhesion Shear[1] Initial/ Ultimate	Relative Adhesion Peel Strength[2]	Relative Adhesion Temp. Resist.[3]	Coverage Sq. Ft./ Cont.[4]
Case Sealing Adhesive	Ten-second holding strength with carton-tearing strength in 5 minutes. Convenient for shipping room carton closure and warehouse reclosure after inspection.	3"	N/R/15 min.	40 PSI/ 160 PSI	N/A	160°F (71°C)	100
Labeling Adhesive	Clear, fast-tacking. Holds labels to many corrugated cartons and problem surfaces such as glass, plastic and more. Moisture-resistant bond.	2½"	10 min. / N/R	15/120	N/A	130°F (54°C)	90
Palletizing Adhesive	Nearly immediate tack permits bags to be stacked on pallets without slipping. Easy separation after shipment. Clear color.	1½"	10 min. / N/R	10/10	N/A	120°F (49°C)	300
Box Re-Nu Coating	Covers most printing and labels with permanent tan color for reuse of corrugated cartons.	3"	N/A / N/A	N/A / N/A	N/A	250°F (121°C)	25

N/R = Not recommended
N/A = Not applicable
(1) ITSD T.M. C-700: ⅛" birch veneer bonded to ⅛" birch veneer
(2) ITSD T.M. C-449
(3) ITSD T.M. C-483; 500 g load for 1 hr. at noted temp.
(4) All container sizes 24-fl. oz. except Box Re-Nu Coating.

Note: This technical information and data should be considered representative or typical only, and should not be used for specification purposes.

Aerosol Chemicals

For maintenance and production, these aerosol chemicals are performance proven daily in thousands of applications. Lubricating, cleaning, inhibiting rust and other tough jobs become finger-touch easy.

Product	Features	Temperature Resistance*
Silicone Lubricant	Lubricates cutting tools and tables. Helps prevent build-up of glues, wax, inks, paints. Won't stain or become gummy. FDA listed ingredients.**	350°F (177°C)
5-Way Penetrant	Penetrates, lubricates, demoisturizes, cleans and helps prevent rust. Frees rusted, frozen nuts. "Dries out" electrical apparatus. Inhibits corrosion and pitting of molding dies and extension screws.	N/A*
Citrus Base Cleaner	Multi-purpose, citrus-scented cleaner removes grease, dirt, oil and adhesive overspray from equipment. Softens liquid adhesive and tape residue.	N/A*

*N/A = Not applicable

Spray Pump Chemicals

These spray pump maintenance chemicals deliver ingredients in a convenient palm-sized applicator, without the use of aerosol propellants.

Product	Features	Temperature Resistance*
Silicone Lubricant	Lubricates cutting tools and tables. Helps prevent build-up of glues, wax, inks, paints. Won't stain or become gummy. FDA listed ingredients.**	350°F (177°C)
5-Way Penetrant	Penetrates, lubricates, demoisturizes, cleans and helps prevent rust. Frees rusted, frozen nuts. Inhibits corrosion and pitting of molding dies and extension screws.	N/A*
Citrus Base Cleaner	Multi-purpose, citrus-scented cleaner removes grease, dirt, oil and adhesive overspray from equipment. Softens liquid adhesive and tape residue. FDA listed ingredients.***	N/A*

40

5-Way Penetrant

41

Citrus Base Cleaner

** The ingredients of the product when dried after application are listed as indirect food additives under FDA regulations 21 CFR § 178.3570, § 178.3910, and § 181.28.

*** The ingredients of the product when dried after application are listed as GRAS under FDA regulations 21 CFR § 184.1, et seq. or as indirect food additives under FDA regulations 21 CFR § 178.3400, § 178.3910, and § 181.30.

Note: This technical information and data should be considered representative or typical only, and should not be used for specification purposes.

Water-Based Aerosol Adhesive

New technology has produced this water-based, low VOC spray adhesive with bonding strength and heat resistance comparable to many solvent-based aerosol products.

Product	Features	Spray Width	Bonding Range Surfaces One/Both	Relative Adhesion Shear(1) Initial/ Ultimate	Relative Adhesion Peel Strength(2)	Temp. Resist.(3)	Coverage Sq. Ft./ Cont.
General Purpose Spray Adhesive 201	Water-based, non-flammable. Bonds many lightweight substrates from paper and fabrics to plastics, wood, aluminum and more.	2"-3"	30 min. / 60 min.	20/275 PSI	23 PIW	160°F (71°C)	>100 (16 oz. can)

(1) ITSD T.M. C-700: 1/8" birch veneer bonded to 1/8" birch veneer
(2) ITSD T.M. C-449
(3) ITSD T.M. C-483; 500 g load for 1 hr. at noted temp.

Systems approach to improving productivity and lowering costs.

Hot melt bonding systems are becoming more important to manufacturers as pressures increase to improve productivity, lower costs, and conserve energy. Hot Melt Bonding Systems from 3M provide effective support in all of these areas.

Jet-melt™ Adhesives are 100% solid, solvent-free thermoplastic resins that become fluid when heated. In the molten state, they quickly wet out the surface and upon cooling harden to form a strong bond to many surfaces. Most of the bond strength is usually achieved in seconds often eliminating the need for clamps or fixturing.

Assemblies can be moved immediately to keep production flowing. No space or energy is consumed for drying.

Each adhesive is engineered for use in one of the portable, lightweight Polygun™ Applicators—easy-to-use equipment that has established 3M as the leader and innovator in melt-on-demand technology.

For packaging, special adhesives and applicator accessories provide speed, convenience and economy for a variety of manual carton sealing operations.

Jet-melt Adhesives bond wood, plastic, foam, fabric, rubber, cardboard and many other surfaces.

Polygun II LT – a portable, self-contained, pneumatic applicator for "low-melt" adhesives applied at just 265°F (129°C). Delivery rate of up to 6.0 pounds of 3M adhesive per hour.

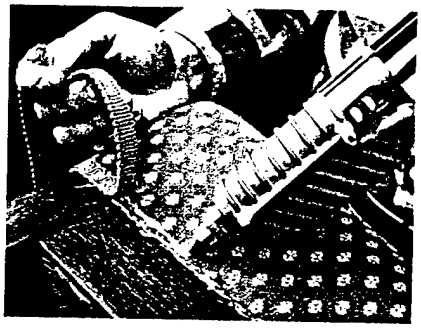
Polygun II Applicator—a portable, self-contained, pneumatic applicator with an adhesive delivery rate of up to 7.5 pounds of 3M adhesive per hour. Preferred for higher volume bonding needs.

Polygun TC Applicator—rugged and reliable, this compact, all-electric handgun weighs just 10 ounces. Delivers up to 3.5 pounds of 3M adhesive per hour. Widely used in the industrial market.

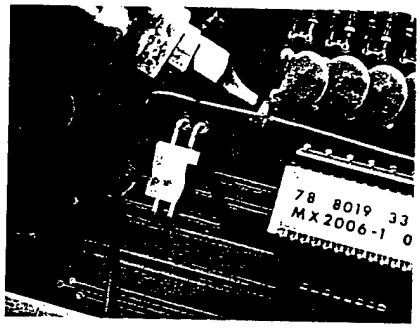
Polygun EC Applicator—high performance, electronic controlled applicator. Offers latest in hand-held applicator technology including exclusive solid-state temperature controller, many other unique features. Adhesive delivery rate is 2.5 to 5.5 pounds of 3M adhesive per hour.

Polygun LT Applicator (with Quadrack™ Converter)—operates at just 265°F (129°C). Designed to apply the new low melt versions of Jet-melt adhesives.

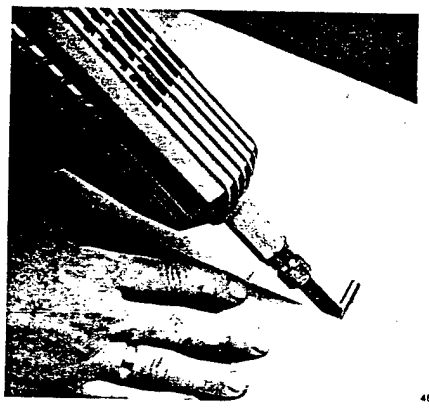
Effective answers to many of your product assembly and manual case sealing needs.



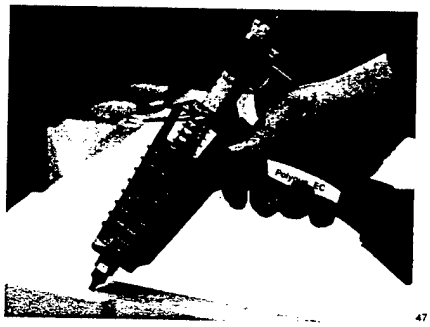
Polygun LT Applicator and Jet-melt Adhesives make an ideal system for welting and gimping, bonding fabric to wood.



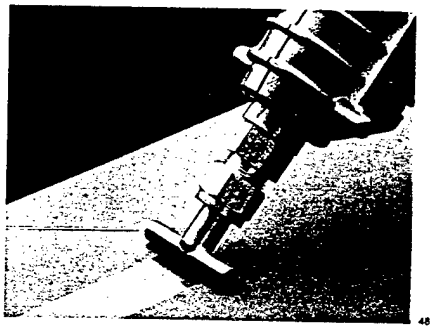
In electronic applications, Polygun TC Applicator delivers high performance and control for tacking, mounting, unitizing, potting, coil terminating and more.



With special T-tip, Polygun II Applicator seals regular slotted cartons in a fast, single motion.



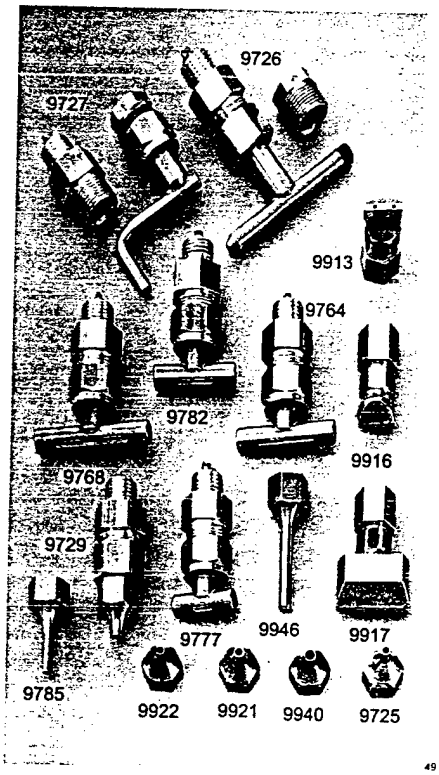
Polygun EC Applicator can be used with 3M low-melt adhesive to effectively bond heat-sensitive substrates such as styrene foam.



Jet-melt 3755-LM Adhesive, a low melt, "delayed-tack" adhesive, can be applied in a thin uniform ribbon—lets you take up to 45 seconds to make your bond.

Job-tailored applicator tips

Every Polygun Applicator comes with a standard tip engineered for optimum general-purpose use. To help maximize productivity on specific jobs, however, you can select from a variety of optional tips and spreaders.



Tip No.	Description	Stock No.
9913	2 Hole Spreader	62-9913-9930-4
9916	3 Hole Spreader	62-9916-9930-7
9917	3 Hole 1" Spreader	62-9917-9930-5
9921	.090" Fluted	62-9921-0066-9
9922	.063" Fluted	62-9922-0066-7
9940	.125" Fluted Tip	62-9940-6920-1
9946	.072" Brass Extension	62-9946-6980-2
9725	Mini Extension Tip .072" Opening	62-9725-9930-2
9726	"T" Tip (shown with valve and adaptor) for all Polygun Applicators	62-9726-9930-0
9727	"L" Tip (shown with adaptor and valve) for all Polygun Applicators	62-9727-9930-8
9729	High Viscosity Valve	62-9729-9930-4
9785	.070" Tapered Aluminum Extension	62-9785-9930-6
9777	¼" Slotted Spreader (3755 only)	62-9777-9930-3
9782	½" Slotted Spreader (3755 only)	62-9782-9930-3
9764	¾" Slotted Spreader (3755 only)	62-9764-9930-1
9768	1" Slotted Spreader (3755 only)	62-9768-9930-3

Product Number, Color	FDA Listed Ingredients(1)	UL 94 Listing	Features	Sizes	Temp. Control Setting	Flash Point (°F/°C)	Auto Ignition (°F/°C)
Low-Melt Technology: Applied at only 265°F (129°C), these Jet-melt "LM" adhesives bond heat-sensitive substrates s							
3755-LM Clear	Y	N/A	**"Delayed-tack"** applied in **thin-glue-line** ribbon for bonding paper, corrugated, chipboard, P.O.P. displays and exhibits.	⅝" x 2"	NA	509/265	565/296 @250°F
3762-LM Lt. Amber	Y	V 2	**Improved "hot tack"** when dispensed at low melt temperature. Can bond beadboard, corrugated, displays.	1" x 3" ⅝" x 2" ⅝" x 8"	1	509/265	545/285
3776-LM Tan	N/A	N/A	**General purpose** medium performance. Can bond lightweight materials (paper, fibrous glass, cloth) to painted/primed metal, including most light-gauged. Not for structural applications.	1" x 3" ⅝" x 8"	1	460/238	627/330
3778-LM Tan	N/A	N/A	**Good delivery** and **medium bonding range.** Can bond many wood and wood-like substrates. Excellent for woodworking and cabinet shops.	1" x 3" ⅝" x 8"	1	536/280	683/362
3792-LM Clear	Y	V 2	**Long bonding range** when dispensed at low melt temperature. Can bond woods, P.O.P. displays, corrugated and other lightweight materials.	1" x 3" ⅝" x 2" ⅝" x 8"	1	550/288	574/301
Hot-Melt Technology							
3738 Tan	Y	V 2	**High delivery** and **long bonding range.** General purpose for wood, plastics for exhibit-building, furniture.	1" x 3" ½" x 12" ⅝" x 2" ⅝" x 8"	4	550/288	803/428
3747 Tan	Y	N/A	**General purpose** including plastic, wood and light gauge metal. **Good heat resistance** and flexibility. Medium performance.	1" x 3" ½" x 12" ⅝" x 2" ⅝" x 8"	4	509/265	572/300
3748 Off-white	Y	V2	**Good thermal and electrical properties**. Non-corrosive to copper. Can bond **polyethylene** and **polypropylene**.	1" x 3" ⅝" x 2" ⅝" x 8"	4	536/280	626/330
3748 V-0 Light Yellow	N	VO	Self-extinguishing version of 3748 Adhesive meets **UL 94 V-0**, UL 1410 requirements.	1" x 3" ⅝" x 2" ⅝" x 8"	4	536/280	626/330
3762 Tan	Y	V 2	Excellent "hot tack" fast-setting for corrugated packaging, recouperage, repacking area, warehouse. **Low cost, general purpose.**	1" x 3" ½" x 12" ⅝" x 2" ⅝" x 8"	3	500/260	775/413
3764 Clear	Y	V 2	**Can bond many plastics, polyolefins.** Good impact resistance at low temperature.	1" x 3" ½" x 12" ⅝" x 2" ⅝" x 8"	4	514/267	807/431
3779 Amber	Y	VO	**Good electrical properties** with high heat resistance for potting, wire staking. **UL 94 V-0.**	1" x 3" ⅝" x 2" ⅝" x 8"	NA	550/288	895/479
3783 Brown	Y	N/A	Multi-purpose with good heat and impact resistance. **Can bond many plastics and light gauge metals.**	1" x 3" ⅝" x 2"	NA	480/249	827/442
3789 Brown	Y	V2	**High performance for plastic.** Impact resistant. Also can bond wood and vinyl.	1" x 3" ⅝" x 8"	5	635/335	702/372
3792 Clear	Y	V2	**Clear multi-purpose product** for wood, corrugated, light-weight substrates. Furniture, upholstery, novelties.	1" x 3" ½" x 12" ⅝" x 2" ⅝" x 8"	4	450/232	800/427
3796 Lt. Tan	N	N/A	Multi-purpose with heat resistance. **High performance for many plastics and light gauge metals.**	1" x 3" ⅝" x 2"	NA	480/249	662/350
3797 Lt. Grey	Y	V2	**Good electrical properties**, good flow and heat resistance for potting.	1" x 3" ⅝" x 2"	NA	570/299	700/371

(1) The ingredients of the product when dried after application are listed as indirect food additives under FDA regulation 21 CFR § 175.105.

(2) ASTM E-28-6-7

(3) Brookfield Thermosel Viscometer in Centipoise

(4) On canvas

Viscosity CPS [3] (375°F)	Delivery Rate (sec.) for 1" x 3" Cartridge	Ball & Ring Soft Point [2] (°F/°C)	Heat Resistance (°F/°C)	Impact Resistance (In.-Lbs.) 0°F (-18°C)	72°F (22°C)	Peel Strength PIW [4] 72°(22°C)	Shear Strength PSI [5] 72°(22°C)	Tensile Strength PSI 72°(22°C)	Elongation %	Bonding Range 1/8" Bead (Sec.) [6]
yrene foam.										
13000	NA	157/70	120/49	10	14	13	500	380	400	120
4000 @250°F	45	205/96	130/54	10	13	6	480	600	300	25
8250	47	184/84	140/60	9	13	9	600	270	600	40
7000	46	186/85	140/60	10	14	8	435	300	130	40
10500 @250°F	57	178/81	140/60	11	62	13	350	547	125	40
2875	35	186/86	130/54	13	36	13	375	360	1000	50
4100	45	220/104	145/63	11	25	20	430	750	1300	45
5000	65	292/144	175/79	11	24	18	250	375	1100	45
5500	65	305/152	175/79	10	50	15	275	200	1850	30
1870	30	201/94	130/54	11	20	7	545	450	400	35
6000	55	190/88	140/60	14	58	14	390	650	625	40
7000	75	325/163	300/149	11	22	18	700	2100	300	25
10000	60	190/88	145/63	12	38	22	500	900	500	45
5200	70	270/132	220/104	14	40	16	570	520	600	50
5000	45	179/81	140/60	13	42	13	250	400	750	50
7500	120	240/116	200/93	13	29	29	550	363	930	40
2650	55	304/151	170/77	9	19	10	350	283	98	30

(5) On Douglas Fir
(6) 1/8" semicircular bead, Douglas Fir to Douglas Fir

Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

Using this Guide

This guide can be used to assist in choosing a product or products to evaluate for a given application. The substrates that may be involved are listed in the first column. The 3M products that you may want to evaluate are grouped by type in the next six columns. For example, you want to bond rubber to ceramic and have structural strength. First, select the substrate heading "Rubber", move down three lines to "Glass and Ceramics" and look under "Structurals". There are several candidate products in this example, available in the Scotch-Weld and Jet-Weld Adhesive product lines.

	Structurals			Non-Structurals		
Wood and Hardboard to:	**Scotch-Weld Adhesives**	**Pronto Instant Adhesives**	**Jet-Weld Adhesives**	**Scotch-Grip and Fastbond Adhesives**	**Aerosols**	**Jet-melt Adhesives**
Wood and Hardboard	2-Part Epoxies and Urethanes	CA-50, CA-100	TE-100, TE-030, TE-031, TS-115, TS-230	F/B 30-NF, 959, 1357 (All), 4323, 5200, F/B 2000-NF	80, 90	3738, 3747, 3778-LM, 3789
Metal	Flexible 2-Part Epoxies, 2-Part Urethanes	CA-50, CA-100	TS-115, TS-230	1357 (All), F/B 5, F/B 10, F/B 2000-NF	80, 90	3747, 3776-LM, 3796
Rubber (except EPDM)	Flexible 2-Part Epoxies, 2-Part Urethanes	CA-50, CA-100	TS-115, TS-230	1357 (All), 1300 (All), 2141, F/B 2000-NF	80, 90*	3747, 3796
EPDM Rubber	–	CA-40[3]	–			–
Glass and Ceramics	Flexible 2-Part Epoxies	CA-50, CA-100	TS-115, TS-230	1357 (All), 1300 (All), 2141	80, 90*	3747, 3796, 3764
Leather	Flexible 2-Part Epoxies	CA-50, CA-100	TE-100, TE-030, TE-031, TS-115, TS-230	847 (All), F/B 30-NF, F/B 2000-NF	80, 90	–
Plastics (Polyolefins)	–	–	–	4693, F/B 2000-NF	72, 76, 90	3748, 3764, 3796, 3792-LM
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies	–	TE-031, TS-230, TS-115	4693, 1099 (All), F/B 2000-NF	72, 77, 80, 90	3748, 3764, 3796, 3792-LM
Plastics (High-Performance Nylon)	Flexible 2-Part Epoxies	CA-50, CA-100	–	1099 (All), 4693	77, 80, 90	3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-50, CA-100	TE-100, TE-030, TE-031, TS-115, TS-230	1099 (All), 2262, 4475, F/B 2000-NF	80	3789, 3796
Paper & Cardboard	2-Part Epoxies and Urethanes	–	All Products	F/B 30-NF, 4550, 4268-NF, F/B 2000-NF	72, 75*, 76, 77, 80, 90	3762-LM, 3762, 3792-LM, 3755-LM
Fabric, Felt, Cork & Fiberous Glass	–	–	All Products	4550, 4268-NF, F/B 2000-NF	72, 74, 75*, 76, 77, 80, 90	3738, 3747, 3778-LM, 3792-LM
Flexible Foam (Latex, Urethane)	–	–	All Products	F/B 45-NF, F/B 47-NF, F/B 2000-NF	74	3738, 3747, 3764, 3792
Rigid Foam (Beadboard, Styrofoam)	2-Part Urethanes, Flexible 2-Part Epoxies	–	All Products	F/B 30-NF, 4289-NF, F/B 2000-NF	77	3762-LM, 3792-LM, 3776-LM, 3778-LM, 3755-LM
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	F/B 30-NF, 1357(All), F/B 5, F/B 2000-NF	74, 80	3747, 3764, 3792, 3776-LM

Note: The technical information and data on these pages should be considered representative or typical only, and should not be used for specification purposes.

	Structurals			Non-Structurals		
Metal to:	**Scotch-Weld Adhesives**	**Pronto Instant Adhesives**	**Jet-Weld Adhesives**	**Scotch-Grip and Fastbond Adhesives**	**Aerosols**	**Jet-melt Adhesives**
Metal	Acrylics Epoxies	CA's	–	1357 (All), 1099 (All), 1300 (All)	80, 90	3747[2], 3796, 3776-LM[2]
EPDM Rubber	–	CA-40, CA-40H	–	4799	–	–
Rubber (except EPDM)	Flexible 2-Part Epoxies	CA's	TS-115, TS-230	2141, 1300 (All), 847 (All), F/B 2000-NF[1]	80, 90*	3747, 3796
Glass and Ceramics	Flexible 2-Part Epoxies	–	–	959, 1357 (All)	80, 90	3747, 3764, 3796
Leather	Flexible 2-Part Epoxies	CA-50, CA-100	TS-115, TS-230	847 (All), F/B 2000-NF	80	3789, 3796
Plastics (Polyolefins)	–	–	–	4693, F/B 2000-NF[1]	72, 76, 90	3796,
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies Acrylics	CA's	TS-115, TS-230	4693, 4475, 1357 (All), F/B 2000-NF[1]	72, 77, 80, 90	3747, 3776-LM, 3796
Plastics (High Performance-Nylon)	Flexible 2-Part Epoxies, DP-420, DP-460, Acrylics	CA's	–	1099 (All), 4693	77, 80, 90	3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-40, CA-40H, CA-50, CA-100	TS-115, TS-230	1099 (All), 2262, 4475	80	3789, 3796
Paper & Cardboard	Epoxies	–	TS-115, TS-230	F/B 10, F/B 42-NF (All), 4550, F/B 2000-NF	72, 75*, 76, 77, 80, 90	3747, 3776-LM, 3796
Fabric, Felt, Cork & Fiberous Glass	–	–	TS-115, TS-230	F/B 42-NF (All), 4550, F/B 2000-NF	72, 74, 75*, 76, 77, 80, 90	3747, 3776-LM
Flexible Foam (Latex, Urethane)	–	–	TS-115, TS-230	F/B 2000-NF	74	3747, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies	–	TS-115, TS-230	F/B 30-NF, 4289-NF, F/B 2000-NF[1]	77	3776-LM
Rigid Foam (Urethane)	–	CA's	TS-115, TS-230	1357(All), F/B 5, F/B 10, F/B 2000-NF[1]	74, 80	3747, 3796, 3776-LM
Rubber (except EPDM) to:						
Rubber (except EPDM)	Flexible 2-Part Epoxies, 2-Part Urethanes	CA's	TS-115, TS-230	2141, 1300 (All), 847 (All)	80, 90*	3747, 3796
EPDM Rubber	–	CA-40, CA-40H	–	4799	–	–
Glass and Ceramics	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TS-115, TS-230	1300 (All), 2141	80, 90	3747, 3796
Leather	Flexible 2-Part Epoxies	CA-50, CA-100	All Products	847 (All), 2141, 1300, F/B 2000-NF	80	3796
Plastics (Polyolefins)	–	–	–	4693	90	3796
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies, 2-Part Urethanes	CA's	TE-031, TS-230, TS-115	1099 (All), 847 (All), 1300 (All), 959	80, 90	3747, 3796
Plastics (High Performance-Nylon)	Flexible 2-Part Epoxies, 2-Part Urethanes	CA's	–	1099 (All)	80, 90	3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-40, CA-40H, CA-50, CA-100	All Products	1099 (All)	80	3796
Paper & Cardboard	Flexible 2-Part Epoxies, 2-Part Urethanes	–	All Products	1300 (All), 2141, F/B 2000-NF	80, 90	3747, 3796

• Produces a temporary bond on these materials

(1) Adhesives *must* be forced dried and bonded while warm.

(2) For best results, preheat the substrate to a minimum of 120°F (49°C).

(3) Evaluate using surface activator

Rubber (except EPDM): Continued	Structurals			Non-Structurals		
	Scotch-Weld Adhesives	Pronto Instant Adhesives	Jet-Weld Adhesives	Scotch-Grip and Fastbond Adhesives	Aerosols	Jet-melt Adhesives
Fabric, Felt, Cork & Fiberous Glass	–	–	All Products	847, 1300 (All), 2141, F/B 2000-NF	80, 90	3747, 3796
Flexible Foam (Latex, Urethane)	–	–	All Products	F/B 2000-NF	74, 80	3747, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	All Products	F/B 2000-NF	–	–
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	1300 (All), 1357(All), 2141	74, 80	3747, 3796
EPDM Rubber to:						
EPDM Rubber	–	CA-40, CA-40H	–	4799	–	–
Glass & Ceramics	–	–	–	4799	–	–
Leather	–	–	–	–	–	–
Plastics (Polyolefins)	–	–	–	–	–	–
Plastics (ABS, PVC, Acrylic, etc)	–	CA-40, CA-40H	–	4799	–	–
Plastics (High Performance - Nylon)	–	CA-40, CA-40H	–	4799	–	–
Plastics (Flexible Vinyl)	–	CA-40, CA-40H	–	–	–	–
Rubber (except EPDM)	–	–	–	4799	–	–
Fabric, Felt, Cork & Fiberous Glass	–	–	–	4799	–	–
Flexible Foam (Latex, Urethane)	–	–	–	–	–	–
Rigid Foam (Beadboard, Styrene)	–	–	–	–	–	–
Rigid Foam (Urethane)	–	–	–	4799	–	–
Glass & Ceramics to:						
Glass & Ceramics	Flexible 2-Part Epoxies, 2-Part Urethanes	–	–	959, 4475	80, 90	–
Leather	Flexible 2-Part Epoxies	–	TS-115, TS-230	847 (All), 1099 (All), F/B 2000-NF	80, 90	3796
Plastics (Polyolefins)	–	–	–	4693	72, 76, 90	3764, 3796, 3792-LM
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TS-115, TS-230	959, 4475	72, 77, 80, 90	3764, 3796
Plastics (High Performance - Nylon)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	–	1099 (All), 4693	72, 77, 80, 90	3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	–	TS-115, TS-230	2262, 4475	80	3796
Rubber (except EPDM)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TS-115, TS-230	4268-NF, 4550, F/B 42-NF PLUS, F/B 2000-NF	72, 75*, 76, 77, 90	3764, 3796, 3792-LM

Note: The technical information and data on these pages should be considered representative or typical only, and should not be used for specification purposes.

Glass and Ceramics to: Continued	Structurals			Non-Structurals		
	Scotch-Weld Adhesives	Pronto Instant Adhesives	Jet-Weld Adhesives	Scotch-Grip and Fastbond Adhesives	Aerosols	Jet-melt Adhesives
Fabric, Felt, Cork & Fiberous Glass	–	–	TS-115, TS-230	4268-NF, 4550, F/B 42-NF (All), F/B 2000-NF	72, 74, 75*, 77, 90	3764, 3796
Flexible Foam (Latex, Urethane)	–	–	TS-115, TS-230	F/B 2000-NF	74	3764, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TS-115, TS-230	F/B 30-NF, 4213-NF	76, 77	–
Rigid Foam (Urethane)	–	–	TS-115, TS-230	1357 (All), F/B 10, F/B 30-NF	74, 80	3764, 3796
Leather to:						
Leather	Flexible 2-Part Epoxies, 2-Part Urethanes	CA-50	All Products	847, F/B 30-NF, F/B 2000-NF	80, 90	3789, 3796
Plastic (Polyolefins)	–	–	–	F/B 2000-NF	76, 90	3796
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies, 2-Part Urethanes	CA-100	TE-031, TS-230	847 (All), 1099 (All), F/B 2000-NF	80, 90	3789, 3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-50, CA-100	All Products	4475, 1099 (All), F/B 2000-NF	80	3789, 3796
Paper & Cardboard	Flexible 2-Part Epoxies, 2-Part Urethanes	–	All Products	4213-NF, F/B30-NF, F/B 2000-NF	80, 90	3789, 3796
Fabric, Felt, Cork & Fiberous Glass	–	–	All Products	4213-NF, F/B 30-NF, F/B 2000-NF	90	3789, 3796
Flexible Foam (Latex, Urethane)	–	–	All Products	F/B 2000-NF	80	3789, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	All Products	4213-NF, F/B 30-NF, F/B 2000-NF	–	–
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	F/B 30-NF, F/B 2000-NF	80	3789, 3796
Plastics (Polyolefins) to:						
Plastics (Polyolefins)	–	–	–	4693, F/B 2000-NF(1)	72, 76, 90	3748, 3764, 3792-LM, 3796
Plastics (ABS, PVC, Acrylic, etc.)	–	–	–	4693, F/B 2000-NF(1)	72, 90	3748, 3764, 3792-LM, 3796
Plastics (High Performance Nylon)	–	–	–	4693	90	3796
Plastics (Flexible Vinyl)	–	–	–	–	–	3796
Paper & Cardboard	–	–	–	4693, F/B 2000-NF	72, 75*, 76, 90	3748, 3764
Fabric, Felt, Cork, Fiberous Glass	–	–	–	4693, F/B 2000-NF	72, 76, 90	3748, 3764, 3792-LM, 3796
Flexible Foam (Latex, Urethane)	–	–	–	F/B 2000-NF	–	3748, 3764, 3796
Rigid Foam (Beadboard, Styrene)	–	–	–	F/B 2000-NF(1)	–	3792-LM
Rigid Foam (Urethane)	–	–	–	4693, F/B 2000-NF(1)	74	3748, 3764, 3792-LM, 3794

(1) Adhesive *must* be force dried and bonded while warm.

* Produces a temporary bond on these materials.

	Structurals			Non-Structurals		
Plastics (ABS, PVC, Acrylic) to:	**Scotch-Weld Adhesives**	**Pronto Instant Adhesives**	**Jet-Weld Adhesives**	**Scotch-Grip and Fastbond Adhesives**	**Aerosols**	**Jet-melt Adhesives**
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies, 2-Part Urethanes, Acrylics	CA's	TE-031,TS-115 , TS-230	1099 (All), 4475, 4475, F/B 2000-NF[1]	72, 77, 90	3747, 3764, 3796, 3776-LM, 3792-LM
Plastics (High Performance-Nylon)	Flexible 2-Part Epoxies, 2-Part Urethanes, Acrylics	CA's	–	1099, 4693	72, 77, 90	3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-40, CA-50, CA-100	TE-031,TS-115, TS-230	1099 (All), 2262, 4475	80*	3789, 3796
Paper & Cardboard	Flexible 2-Part Epoxies, 2-Part Urethanes	CA-40H[3]	TE-031,TS-115, TS-230	4550, F/B 2000-NF, F/B 42-NF (All)	72, 77	3764, 3792, 3792-LM, 3776-LM
Fabric, Felt, Cork & Fiberous Glass	–	–	TE-031,TS-115, TS-230	4550, F/B 2000-NF, F/B 42-NF (All)	72, 76, 77, 90	3747, 3764, 3792, 3792-LM, 3776-LM
Flexible Foam (Latex, Urethane)	–	–	TE-031,TS-115, TS-230	F/B 2000-NF	–	3747, 3764, 3792, 3792-LM, 3776-LM
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TE-031,TS-115, TS-230	F/B 2000-NF[1]	77	3792-LM, 3776-LM
Rigid Foam (Urethane)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TE-031,TS-115, TS-230	1099, 4693, 4475, F/B 2000-NF[1]	–	3747, 3764, 3792, 3792-LM, 3776-LM
Plastics (High Performance) Nylon to:						
Plastics (High Performance-Nylon)	Flexible 2-Part Epoxies, 2-Part Urethanes, DP-420, DP-460, Acrylics	CA's	–	1099 (All), 4693	72, 77, 80, 90	3764, 3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-40, CA-50, CA-100	–	1099 (All)	80	3789, 3796
Paper & Cardboard	Flexible 2-Part Epoxies, 2-Part Urethanes	–	–	4550, F/B 42-NF (PLUS)	72, 77, 90	3747, 3764, 3796
Fabric, Felt, Cork & Fiberous Glass	–	–	–	4550,4693	72, 77, 80, 90	3747, 3764, 3796
Flexible Foam (Latex, Urethane)	–	–	–	F/B 2000-NF	80, 90	3747, 3764, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	–	F/B 2000-NF	77	–
Rigid Foam (Urethane)	2-Part Urethanes	–	–	1099 (All), 4693	80	3747, 3764, 3796
Plastic (Flexible Vinyl) to:						
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-40, CA-50, CA-100	All Products	1099 (All), 2262, 4475	80	3789, 3796
Paper & Cardboard	Flexible 2-Part Epoxies	–	All Products	1099 (All), 2262, 4475, F/B 2000-NF	80	3789, 3796
Fabric, Felt, Cork, & Fiberous Glass	–	–	All Products	1099 (All), 2262, 4475, F/B 2000-NF	80	3789, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	All Products	–	–	–
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	1099 (All), 2262, 4475	80	3789, 3796

Note: The technical information and data on these pages should be considered representative or typical only, and should not be used for specification purposes.

Paper and Cardboard to:	Structurals			Non-Structurals		
	Scotch-Weld Adhesives	Pronto Instant Adhesives	Jet-Weld Adhesives	Scotch-Grip and Fastbond Adhesives	Aerosols	Jet-melt Adhesives
Paper & Cardboard	2-Part Epoxies and Urethanes	–	All Products	4550, 4213-NF, F/B 30-NF, F/B 2000-NF	72, 75*, 76, 77	3762, 3762-LM, 3792-LM, 3778-LM
Fabric, Felt, Cork & Fiberous Glass	–	–	All Products	4550, 4213-NF, F/B 42-NF PLUS, F/B 2000-NF	72, 75*, 76, 77	3762, 3762-LM, 3792-LM, 3778-LM
Flexible Foam (Latex, Urethane)	–	–	All Products	F/B 2000-NF	80, 90	3762, 3762-LM, 3792-LM, 3778-LM
Rigid Foam (Beadboard, Styrene)	2-Part Epoxies and Urethanes	–	All Products	F/B 30-NF, 4213-NF, F/B 2000-NF	77	3755-LM, 3762-LM, 3792-LM, 3778-LM
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	4550, F/B 42-NF PLUS, F/B 2000-NF	80	3762, 3762-LM, 3792-LM, 3776-LM
Fabric, Felt, Cork & Fiberous Glass to:						
Fabric, Felt, Cork & Fiberous Glass	–	–	All Products	4550, F/B 42-NF PLUS, F/B 2000-NF	72, 74, 75*, 76, 77, 90	3755-LM, 3762-LM, 3792-LM, 3776-LM
Flexible Foam (Latex Urethane)	–	–	All Products	F/B 2000-NF	74	3755-LM, 3762-LM, 3792-LM, 3776-LM
Rigid Foam (Beadboard, Styrene)	–	–	All Products	F/B 30-NF, F/B 42-NF PLUS, F/B 2000-NF	77	3755-LM, 3762-LM, 3792-LM, 3778-LM
Rigid Foam (Urethane)	–	–	All Products	F/B 30-NF, F/B 42-NF PLUS, F/B 2000-NF	80	3755-LM, 3762-LM, 3792-LM, 3776-LM, 3778-LM
Flexible Foam (Latex Urethane) to:						
Flexible Foam (Latex Urethane)	–	–	All Products	F/B 2000-NF	74, 80	3747, 3792, 3792-LM, 3776-LM
Rigid Foam (Beadboard, Styrene)	–	–	All Products	F/B 2000-NF	–	3762-LM, 3792-LM, 3778-LM
Rigid Foam (Urethane)	–	–	All Products	F/B 2000-NF	74, 80	3792, 3792-LM, 3776-LM
Rigid Foam (Beadboard, Styrene) to:						
Rigid Foam (Beadboard, Styrene)	2-Part Epoxies and Urethanes	–	All Products	F/B 30-NF, 4289-NF, F/B 42-NF PLUS, F/B 2000-NF	76, 77	3762-LM, 3792-LM, 3778-LM, 3778-LM
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	F/B 30-NF, 4289-NF, F/B 42-NF PLUS, F/B 2000-NF	–	3762-LM, 3792-LM, 3776-LM, 3778-LM
Rigid Foam (Urethane) to:						
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	1357 (All), F/B 30-NF, 4289-NF, F/B 2000-NF(1)	80	3747, 3792, 3792LM

(1) Adhesive *must* be force dried and bonded while warm.

• Produces a temporary bond on these materials.

Note: This chart is intended only to indicate possible product candidates for your particular application requirements. Final product selection should be made only after consideration of a variety of factors and evaluation of sample bonds.

Copy and Fax this page to 3M Industrial Tape and Specialties Division

Explain your final assembled product.

_____

_____

Specify what you are bonding.

_____ to _____

Is your application:

☐ In Design Stage ☐ In Production

☐ Structural ☐ Non-structural

Name: _____

Company: _____ Title: _____

Address: _____

City/State/Zip: _____

Phone: _____

Fax: _____

☐ Have a 3M Representative contact me.

☐ I would like to receive samples for evaluation.

☐ Product interest _____

Fax to 612/736-4776.

For details contact your nearest 3M branch office or authorized 3M ITSD adhesives distributor.

Alaska
11151 Calaska Circle
Anchorage, AK 99515
Phone: 907/522-5200
Fax: 907/522-1645

Atlanta
2860 Bankers Industrial Dr.
Atlanta, GA 30360-2764
Phone: 800/241-6932
404/447-7000
Fax: 800/699-7839
404/242-2432

Chicago
6850 South Harlem Ave.
Bedford Park, IL
60501-1956
Phone: 800/972-0723
708/496-6500
Fax: 800/421-2482
708/496-6511

Dallas
2121 Santa Anna Ave
Dallas, TX 75228-1698
Mail: PO Box 28158
Dallas, TX
75228-0158
Phone: 800/241-2976
214/324-8100
Fax: 800/562-9037
214/324-8225

Detroit
22100 Telegraph Road
Southfield, MI 48034
Mail: PO Box 358
Southfield, MI
48037-0358
Phone: 800/241-0184
810/827-2450
Fax: 800/544-3091
810/827-6936

Hawaii
4443 Malaai Street
Honolulu, HI 96820
Mail: PO Box 30048
Honolulu, HI 96820
Phone: 808/422-2721
Fax: 808/422-9557

Los Angeles
6023 South Garfield Ave.
Los Angeles, CA 90040
Mail: PO Box 54019
Los Angeles, CA
90054
Phone: 800/241-4819
213/726-6300
Fax: 800/648-0865
213/726-6462

New York
15 Henderson Drive
West Caldwell, NJ
07007-6689
Mail: PO Box 2076
West Caldwell, NJ
07007-2076
Phone: 800/524-0399
201/575-2000
Fax: 800/447-2053
201/575-2172

Minneapolis/St. Paul
3130 Lexington Ave. South
Eagan, MN 55121
Mail: PO Box 33211
St. Paul, MN 55133
Phone: 800/241-4820
612/733-3300
Fax: 800/241-9553
612/737-9420

Northern Mexico
10830 Pellicano Drive
El Paso, TX 79935
Phone: 915/599-4696
Fax: 915/599-4688

Canada
P.O. Box 5757 Terminal A
1840 Oxford St. East
London, Ontario, Canada
N6A 4T1
Phone: 519/451-2500
Fax: 519/452-6262

Mexico
Phone: 52-5-626-0400
Fax: 52-5-728-2299

Puerto Rico
Puerto Rico Industrial Park
P.O. Box 100
Carolina, PR 00986-0100
Phone: 809/750-3000
Fax: 809/757-1955

IMPORTANT NOTICE: As to Jet-Weld and Polygun Adhesive Applicators, spare parts, and accessories, 3M may provide a warranty as described in the materials which accompany the products. 3M OTHERWISE MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of application. Please remember that many factors can affect the use and performance of a 3M ITSD product in a particular application. The materials to be bonded with the product, the surface preparation of those materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a 3M ITSD product. Given the variety of factors that can affect the use and performance of a 3M ITSD product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M ITSD product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

LIMITATION OF REMEDIES AND LIABILITY: If the 3M product is proved to be defective, THE EXCLUSIVE REMEDY, AT 3M'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE 3M PRODUCT. 3M shall not otherwise be liable for any loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including negligence, warranty, or strict liability.

3M

Industrial Adhesives and Aerospace Department
Industrial Tape and Specialties Division

3M Center Bldg. 220-7E-01
St. Paul, MN 55144-1000

DIN: 14-2-5/#03
31 December 1996

Recycled paper
40% pre-consumer
10% post-consumer

Printed in U.S.A.

© 3M 1995 78-6900-2848-1

QUOTATION

JOHN G. SHELLEY CO., INC.

16 MICA LANE • P.O. BOX 81250 • WELLESLEY HILLS, MASSACHUSETTS 02181-0411 • (617) 237-0900

MANUFACTURER OF GASKETS, CUSTOM MOLDED SILICONES AND SPECIAL ELASTOMERS
DISTRIBUTOR OF ADHESIVES, TAPES AND STATIC CONTROL MATERIALS

DATE 12/10/96

1-800-525-0202

FAX 617-237-8978

TO:
A.F. MEYER AND ASSOCIATES
1364 BEVERLY RD. SUIT 201
MC LEAN, VA. 22101
Attn: Christine Palese

YOUR INQUIRY NO./DATED	
Job I.D. 2447	
PROPOSED SHIPPING DATE	VIA
Stock-3 weeks	Wellesley Hills
TERMS	F.O.B.
1% 10 N/30 *	Wellesley Hills
SALESMAN	

WE ARE PLEASED TO SUBMIT THE FOLLOWING QUOTATION:

QTY.	U/M	DESCRIPTION	PRICE	AMOUNT
12		3M Adhesive Spray #90 23.25 fl.oz. aerosol	$ 12.70/ea.	
12		3M Adhesive Spray #80 23.25 fl.oz. aerosol	$ 12.93/ea.	
4		3M Adhesive 2141, gallon	$ 48.97/ea.	
4		3M Adhesive 1300, gallon	$ 57.06/ea.	
4		3M Citrus Cleaner, gallon	$ 52.71/ea.	
		3M Jet-Weld TS-230 - No Quote		
		3M Jet-Weld 115 HGS - No Quote		
		Paint Stripper - No Quote		
		* Pending Credit Approval		

CONDITIONS: The prices and terms on this quotation are not subject to verbal changes or other agreements unless approved in writing by the Home Office of the Seller. All quotations and agreements are contingent upon strikes, accidents, fires, availability of materials and all other causes beyond our control. Prices are based on costs and conditions existing on date of quotation and are subject to change by the Seller before final acceptance.

Typographical and stenographic errors subject to correction. Purchaser agrees to accept either average or shortage not in excess of ten percent to be charged for pro-rata. Purchaser assumes liability for patent and copyright infringement when goods are made to Purchaser's specifications. When quotation specifies material to be furnished by the purchaser ample allowance must be made for reasonable spoilage and material must be of suitable quality to facilitate efficient production.

Conditions not specifically stated herein shall be governed by established trade customs. Terms inconsistent with those stated herein which may appear on Purchaser's formal order will not be binding on the Seller.

Prices charged for molds or dies represent a partial tooling charge. These charges apply on the first order only and are made with the understanding that all molds dies remain our property, we assume full responsibility for all necessary repairs, replacements, and insurance coverage.

Frank McPhillips

Above prices based on immediate acceptance unless otherwise stated

By: Frank McPhillips

DIN: 14-2-5/#03
31 December 1996

STATUS QUO MATERIAL:	Neolube No. 1 Graphite, Colloidal
Manufacturer:	Huron Industries Inc.
Building:	240
PROPOSED MATERIAL:	Lock-Ease
Manufacturer:	AGS Company

MSDS

Lock-Ease	Page H2-1

Product Information

Lock-Ease	Not Available

Cost Data

Lock-Ease	Page H2-4

Printed For: CHRISTINE PALESE
MCCLEAN

MATERIAL SAFETY DATA SHEET

********** Section I - Identification **********

Manufacturer AGS Company
2651 Hoyt St.
Muskegon Hts., MI 49444

Phone: 800-253-0403
616-733-2101
FAX: 616-733-1784
Transportation Emergency - CHEM-TEL: 800-255-3924

Trade Name LOCK-EASE Cat. No. LE-18
Common Name LOCK-EASE Container/Size One gallon

NFPA - Health 0 Flammability 2 Reactivity 0 Specific Hazard
HMIS - Health 0 Flammability 2 Reactivity 0 Protective Equipment A

********** Section II - Hazardous Ingredients **********

	Hazardous Ingredient	CAS No.	Wgt. %	TLV
1.	Aliphatic Petroleum Naphtha	8052-41-3	60-85%	100 ppm (500 ppm PEL)
2.	Petroleum Oil*	Not Assigned	5-15%	5 cu. m. (mist)
3.	Colloidal Graphite			
4.	Dispersion	Not Assigned	1-5%	5 cu. m. (oil mist)
5.	Aluminum Stearate Benzoate			
6.	Complex	Not Assigned	1-5%	Not Assigned
7.				
8.				
9.				
10.				

NOTE *Petroleum oil is severely hydrotreated or solvent refined. It does not require labeling as a carcinogen.

********** Section III - Physical Data **********

pH - Supplied Not Determined
pH - Diluted Not Applicable
Water Solubility Nil
Specific Gravity (Water=1) 0.81
Melting Point Not Applicable

Boiling Point Not Determined
% Volatiles 85% (by weight)
Vapor Pressure Not Determined
Vapor Density (Air=1) > 1
Evaporation Rate Not Determined

Appearance Black liquid with petroleum odor.

Original Issue Date 11/12/85
Revision No.4 Date 04/22/96

********** Section IV - Fire & Explosion Data **********

Flash Pt. > 100°F. Method T.C.C. Auto Ignition Temp. Not Determined

Flammable Limits In Air - LEL Not Determined UEL Not Determined

Extinguishing Media Carbon dioxide, dry chemical, foam and/or water fog.

Special Procedures Wear self-contained breathing apparatus. Water fog may be used to reduce vapor concentration.

Unusual Hazards Vapors are heavier than air and accumulate in low areas.

********** Section V - Reactivity Data **********

Unstable and/or Auto Reactive Stable

Incompatible Materials Strong oxidizers.

Hazardous Decomposition Products Oxides of carbon and aluminum.

********** Section VI - Emergency First Aid **********

Eyes Flush with water for at least 15 minutes. Consult a physician.

Skin Wash with soap and water. Remove contaminated clothing. If adverse effects occur, consult a physician.

Ingestion Do not induce vomiting, get immediate medical attention.

Inhalation Remove to fresh air. Administer oxygen or artificial respiration as required. Consult a physician.

********** Section VII - Health Effects **********

Eyes May cause irritation.

Skin May cause irritation, defatting, dermatitis. Contaminated clothing may cause severe irritation.

Ingestion May cause G.I. irritation, nausea and vomiting.

Inhalation May cause irritation to respiratory tract and CNS depression.

Other Effects Aspiration into lungs may cause chemical pneumonitis.

Product - LE-18 Printed 11/26/96
Printed For: CHRISTINE PALESE

********* Section VIII - Ventilation and Protective Measures *********

Ventilation Requirement Suitable to maintain concentration below TLV's.

Eyes Yes Gloves Yes Clothing No Respiratory Yes

Other Eye bath in work area.

********** Section IX - Storage and Handling Procedures **********

Conditions to Avoid Excessive heat.

********** Section X - Spill Procedures and Waste Disposal **********

Spill Procedure Absorb with an inert material.

Disposal Method Removal by an approved, licensed waste hauler.

EPA Waste I.D. NO. D001

Approved By Tommy Jones
Manager, Technical Resources

Original Issue Date 11/12/85
Revision No.4 Date 04/22/96

The Information Herein Is Given In Good Faith,
No Warranty, Expressed Or Implied, Is Made.

AGS COMPANY

November 26, 1996

Ms. Christine Palese
1364 Beverly Road, Suite 3201
McClean, VA 22101

Dear Ms. Palese:

AGS is pleased to quote the you the following prices for our LOCK-EASE Graphited Lock Fluid.

		Each	*Case*
LE-18	LOCK-EASE Lock Fluid, 1 gallon	$24.90	$99.60/4

Minimum Order - $100
Freight prepaid on shipments over $300

This product can also be purchased from McMaster-Carr Supply Company, their part number 13725K16.

Under separate cover, we are sending you a sample of the product along with the MSDS. If you have any questions or need additional information, please let us know.

Sincerely,

Jeanette Heger

Jeanette Heger
Manager - Customer Service

JH/cs

DIN: 14-2-5/#03
31 December 1996

H2-4

AGS Company
American Grease Stick Co.
P.O. Box 729, Muskegon, MI 49443, U.S.A.
Toll Free 800-253-0403 • Toll Free in Michigan & Canada 800-735-0403
Local Calls (616) 733-2101 • FAX (616) 733-1784

STATUS QUO MATERIAL:	IB No. 2652 Acrylic Lacquer Aerosol
Manufacturer:	Ill. Bronze Powder & Paint
Building:	60
PROPOSED MATERIAL:	DR038 Concentrate Aerosol Lacquer
Manufacturer:	Devoe & Raynolds Co., Inc.

MSDS

DR038 Concentrate Aerosol Lacquer	Page H3-1

Product Information

DR038 Concentrate Aerosol Lacquer	Page 982 - GSA Spring 1996 Supply Catalog

Cost Data

DR038 Concentrate Aerosol Lacquer	Page 982 - GSA Spring 1996 Supply Catalog

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF April 1996

Proprietary Version - For U.S. Government Use Only

FSC: 8010
NIIN: 002906984
Manufacturer's CAGE: 70506
Part No. Indicator: A
Part Number/Trade Name: DR038-CONCENTRATE

Nuclear Water Data

This is not a Nuclear Water Chemical NIIN.

Standard PMS Identification Number Data

SPIN FSC: 8010
SPIN NIIN: 002906984
SPIN: J236

General Information

Item Name: AEROSOL LACQUER
Company's Name: DEVOE & RAYNOLDS CO., INC.
Company's Street:
Company's P. O. Box:
Company's City:
Company's State:
Company's Country:
Company's Zip Code:
Company's Emerg Ph #: 714-686-6930
Company's Info Ph #:
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:

Safety Focal Point: G
Record No. For Safety Entry: 011
Tot Safety Entries This Stk#: 013
Status:
Date MSDS Prepared: 01JAN85
Safety Data Review Date: 31JAN80
Supply Item Manager: GSA
MSDS Preparer's Name:
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
□
Report for NIIN: 002906984

Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number: PBDVHW
Specification Number: TT-L-50
Spec Type, Grade, Class:
Hazard Characteristic Code: F1
Unit Of Issue: CN
Unit Of Issue Container Qty: PT
Type Of Container: AEROSOL
Net Unit Weight:
NRC/State License Number:
Net Explosive Weight:
Net Propellant Weight-Ammo:
Coast Guard Ammunition Code:
==========

Ingredients/Identity Information
==========

Proprietary: NO
Ingredient: TOLUENE (SARA III)
Ingredient Sequence Number: 01
Percent: 85.0
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: XS5250000
CAS Number: 108-88-3
OSHA PEL: 200 PPM/150 STEL
ACGIH TLV: 50 PPM; 9293
Other Recommended Limit:

Proprietary: NO
Ingredient: XYLENES (O-,M-,P- ISOMERS) (SARA III)
Ingredient Sequence Number: 02
Percent: 5.0
Ingredient Action Code:

Ingredient Focal Point: G
NIOSH (RTECS) Number: ZE2100000
CAS Number: 1330-20-7
OSHA PEL: 100 PPM/150 STEL
ACGIH TLV: 100 PPM/150STEL;9192
Other Recommended Limit:

Proprietary: NO
Ingredient: 2-BUTOXYETHANOL
Ingredient Sequence Number: 03
Percent: <5.0
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: KJ8575000
CAS Number: 111-76-2
OSHA PEL: S, 50 PPM
ACGIH TLV: S, 25 PPM; 9293
Other Recommended Limit:

□
Report for NIIN: 002906984

Proprietary: NO
Ingredient: METHYL ETHYL KETONE (2-BUTANONE) (MEK) (SARA III)
Ingredient Sequence Number: 04
Percent: <10
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: EL6475000
CAS Number: 78-93-3
OSHA PEL: 200 PPM/300 STEL
ACGIH TLV: 200 PPM/300STEL 9192
Other Recommended Limit:
==========

Physical/Chemical Characteristics

==========
Appearance And Odor: BLACK, MOBILE LIQUID CONTAINING VOLATILE SOLVENTS.
Boiling Point: 172-320F
Melting Point:
Vapor Pressure (MM Hg/70 F):
Vapor Density (Air=1): >1
Specific Gravity: 0.94
Decomposition Temperature:
Evaporation Rate And Ref: < ETHER
Solubility In Water: SLIGHT
Percent Volatiles By Volume: 79.3
Viscosity:
pH:
Radioactivity:

Form (Radioactive Matl):
Magnetism (Milligauss): N/P
Corrosion Rate (IPY):
Autoignition Temperature:

Fire and Explosion Hazard Data

Flash Point: 38 F;3.3 C PMCC
Flash Point Method: N/P
Lower Explosive Limit:
Upper Explosive Limit:
Extinguishing Media: CO*2, DRY CHEMICAL, FOAM.
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS.
Unusual Fire And Expl Hazrds: WATER SHOULD BE USED TO COOL CONTAINERS EXPOSED TO FIRE.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NA
Materials To Avoid: OXIDIZING MATERIALS; SOFTENS RUBBER
Hazardous Decomp Products: CO; CO*2.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NA
□
Report for NIIN: 002906984

Health Hazard Data

LD50-LC50 Mixture:
Route Of Entry - Inhalation: N/P
Route Of Entry - Skin: N/P
Route Of Entry - Ingestion: N/P
Health Haz Acute And Chronic:
Carcinogenicity - NTP: N/P
Carcinogenicity - IARC: N/P
Carcinogenicity - OSHA: N/P
Explanation Carcinogenicity:
Signs/Symptoms Of Overexp: INHALATION: HEADACHE, NAUSEA, DIZZINESS. SKIN
CONTACT: MAY CAUSE SKIN IRRITATION IF PROLONGED.
Med Cond Aggravated By Exp:
Emergency/First Aid Proc: INHALATION: MOVE TO FRESH AIR. SKIN: FLUSH WITH

LARGE AMOUNTS OF WATER. REMOVE CONTAMINATED CLOTHING. EYE CONTACT: FLUS
H
WITH CLEAN WATER FOR AT LEAST 15 MIN. CALL PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: AVOID BREATHING VAPORS; EXTINGUISH IGNITI
ON
SOURCES IN IMMEDIATE AREA. AVOID CONTACT WITH LIQUID.
Neutralizing Agent:
Waste Disposal Method: DISPOSE OF IN CLOSED CONTAINERS-AWAY FROM IGNITI
ON
SOURCES.
Precautions-Handling/Storing: DO NOT STORE AT ELEVATED TEMPERATURES.
Other Precautions: CLOSE CONTAINERS AFTER USE.

Control Measures

Respiratory Protection: U.S. BUR. MINES APPROVED RESPIRATOR IN CONFINED
AREAS
Ventilation: SUFFICIENT TO KEEP CONCENTRATION BELOW GIVEN TLV.
Protective Gloves: PROLONGED USE.
Eye Protection: SOLVENT RESISTANT
Other Protective Equipment: NORMAL PROTECTIVE CLOTHING.
Work Hygienic Practices:
Suppl. Safety & Health Data: BOILING POINT: 78.0-160C

Transportation Data

Transportation Action Code:
Transportation Focal Point: G
Trans Data Review Date: 80031
DOT PSN Code: DTJ
DOT Symbol: D
DOT Proper Shipping Name: CONSUMER COMMODITY
DOT Class: ORM-D
DOT ID Number:
DOT Pack Group:
DOT Label: NONE
DOT/DoD Exemption Number:
□
Report for NIIN: 002906984

IMO PSN Code:
IMO Proper Shipping Name:

IMO Regulations Page Number:
IMO UN Number:
IMO UN Class:
IMO Subsidiary Risk Label:
IATA PSN Code:
IATA UN ID Number:
IATA Proper Shipping Name:
IATA UN Class:
IATA Subsidiary Risk Class:
IATA Label:
AFI PSN Code:
AFI Symbols:
AFI Prop. Shipping Name:
AFI Class:
AFI ID Number:
AFI Pack Group:
AFI Label:
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code:
N.O.S. Shipping Name:
Additional Trans Data:

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point: E
Disposal Data Review Date: 89334
Rec # For This Disp Entry: 04
Tot Disp Entries Per NSN: 005
Landfill Ban Item: YES
Disposal Supplemental Data: BOILING POINT: 78.0-160C IN CASE OF ACCIDENTAL
EXPOSURE OR DISCHARGE, CONSULT HEALTH AND SAFETY FILE FOR PRECAUTIONS.
1st EPA Haz Wst Code New: D001
1st EPA Haz Wst Name New: IGNITIBLE
1st EPA Haz Wst Char New: IGNITABILITY
1st EPA Acute Hazard New: NO
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

Label Data

==========
====
Label Required: YES
Technical Review Date:
Label Date:
□
Report for NIIN: 002906984

MFR Label Number:
Label Status: G
Common Name: DR038-CONCENTRATE
Chronic Hazard: N/P
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: INHALATION: HEADACHE, NAUSEA, DIZZINESS. SK
IN
CONTACT: MAY CAUSE SKIN IRRITATION IF PROLONGED.
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: DEVOE & RAYNOLDS CO., INC.
Label Street:
Label P.O. Box:
Label City:
Label State:
Label Zip Code:
Label Country:
Label Emergency Number: 714-686-6930
Year Procured:
□

STATUS QUO MATERIAL:	Neoprene N-11 Primer
Manufacturer:	Haartz-Mason Inc.
Building:	60
PROPOSED MATERIAL:	3M 90 High Strength Adhesive
Manufacturer:	3M

MSDS

3M 90 High Strength Adhesive	Page H4-1

Product Information

3M 90 High Strength Adhesive	Page H4-8

Cost Data

3M 90 High Strength Adhesive	Page H4-44

MATERIAL SAFETY DATA SHEET

3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

Copyright, 1996, Minnesota Mining and Manufacturing Company. All rights reserved. Copying and/or downloading of this information for the purpose of properly utilizing 3M products is allowed provided that:
1) the information is copied in full with no changes unless prior agreement is obtained from 3M, and
2) neither the copy nor the original is resold or otherwise distributed with the intention of earning a profit thereon.

DIVISION: INDUSTRIAL TAPE AND SPECIALTIES DIVISION
TRADE NAME:
3M 90 High Strength Adhesive
ID NUMBER/U.P.C.:
62-4441-4830-8 00-21200-85852-9 62-4441-4925-6 00-21200-82219-3
62-4441-4930-6 00-21200-82219-3 62-4441-4932-2 00-21200-89352-0
62-4441-4935-5 - - -
ISSUED: August 26, 1996
SUPERSEDES: July 18, 1996
DOCUMENT: 11-0881-0

1. INGREDIENT

INGREDIENT	C.A.S. NO.	PERCENT
DIMETHYL ETHER (PROPELLANT)	115-10-6	50.0 - 60.0
PENTANE	109-66-0	10.0 - 20.0
ACETONE	67-64-1	10.0 - 20.0
NON-VOLATILE COMPONENTS - NEW JERSEY TRADE SECRET (T.S.) REGISTRY NO. 04499600-5548P ++	TradeSecret	7.0 - 13.0
CYCLOHEXANE	110-82-7	3.0 - 7.0

++ synthetic elastomers, hydrocarbon resin, antioxidant, and u.v. absorber. Not hazardous according to Canadian WHMIS criteria. Non-WHMIS controlled.

This product contains the following toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR Part 372:
CYCLOHEXANE

2. PHYSICAL DATA

BOILING POINT:..... Compressed gas
VAPOR PRESSURE:..... Compressed gas
VAPOR DENSITY:..... N/D
EVAPORATION RATE:..... N/D
SOLUBILITY IN WATER:..... Nil
SPECIFIC GRAVITY:..... 0.70

Abbreviations: N/D - Not Determined N/A - Not Applicable

2. PHYSICAL DATA (continued)

PERCENT VOLATILE:..... ca. 89 % by wt
pH:..... N/A
VISCOSITY:..... N/A - aerosol
MELTING POINT:..... N/D

APPEARANCE AND ODOR:
Clear liquid in aerosol, solvent odor

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... <-40F (Closed Cup/Propellant)
FLAMMABLE LIMITS - LEL:..... N/A
FLAMMABLE LIMITS - UEL:..... Flammable Gas
AUTOIGNITION TEMPERATURE:..... N/D

EXTINGUISHING MEDIA:
Water spray, Carbon dioxide, Dry chemical, Foam

SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head. Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Closed containers exposed to heat from fire may build pressure and explode. Vapors may travel long distances along the ground or floor to an ignition source and flash back.

NFPA HAZARD CODES: HEALTH: 2 FIRE: 4 REACTIVITY: 1 AEROSOL STORAGE: 3
UNUSUAL REACTION HAZARD: none

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Heat.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

Abbreviations: N/D - Not Determined N/A - Not Applicable

---

4. REACTIVITY DATA (continued)

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon Monoxide and Carbon Dioxide, Aldehydes, Ketones, Hydrocarbons.

---

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Ventilate area. Extinguish all ignition sources. Cover with absorbent material. Collect using non-sparking tools. Place in a U.S. DOT-approved container.

RECOMMENDED DISPOSAL:
Incinerate in a permitted hazardous waste incinerator in the presence of a combustible material. Facility must be capable of handling aerosol cans. Dispose of empty cans in a sanitary landfill. Dispose of completely absorbed waste product in a facility permitted to accept chemical wastes.

RECYCLE EMPTY AEROSOL CONTAINERS WHERE AVAILABLE.

ENVIRONMENTAL DATA:
Not determined.

REGULATORY INFORMATION:
Volatile Organic Compounds: ca. 89 % (616 g/l), SCAQMD Rule 443.1, calculated.
VOC Less H2O & Exempt Solvents: ca. 89 % (616 g/l) SCAQMD Rule 443.1, calculated.

Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = D001 (Ignitable)

EPCRA HAZARD CLASS:
FIRE HAZARD: Yes PRESSURE: Yes REACTIVITY: No ACUTE: Yes CHRONIC: Yes

---

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

Abbreviations: N/D - Not Determined N/A - Not Applicable

---

6. SUGGESTED FIRST AID (continued)

SKIN CONTACT:
Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:
Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

---

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact with vapor, spray, or mist. Wear safety glasses with side shields.

SKIN PROTECTION:
Avoid prolonged or repeated skin contact.

RECOMMENDED VENTILATION:
Do not use in a confined area or areas with little or no air movement. If exhaust ventilation is not adequate, use appropriate respiratory protection. Provide ventilation adequate to control vapor concentrations below recommended exposure limits and/or control spray or mist.

RESPIRATORY PROTECTION:
Avoid breathing of vapors, mists or spray. Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: half-mask organic vapor respirator.

PREVENTION OF ACCIDENTAL INGESTION:
Do not ingest.

RECOMMENDED STORAGE:
Store at temperatures below 120 degrees F (49 degrees C). Store out of direct sunlight. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE:
Aerosol container contains flammable gas under pressure. Keep away from heat, sparks, open flame, and other sources of ignition. Extremely flammable liquid and vapor. Do not pierce or burn container, even after use. No smoking while handling this material. Avoid static discharge.

Abbreviations: N/D - Not Determined N/A - Not Applicable

7. PRECAUTIONARY INFORMATION (continued)

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
DIMETHYL ETHER (PROPELLANT).....	1000	PPM	TWA	CMRG	
DIMETHYL ETHER (PROPELLANT).....	500	PPM	TWA	AIHA	
DIMETHYL ETHER (PROPELLANT).....	942	MG/M3	TWA	AIHA	
PENTANE.....	600	PPM	TWA	ACGIH	
PENTANE.....	750	PPM	STEL	ACGIH	
PENTANE.....	600	PPM	TWA	OSHA	
PENTANE.....	750	PPM	STEL	OSHA	
ACETONE.....	750	PPM	TWA	ACGIH	
ACETONE.....	1000	PPM	STEL	ACGIH	
ACETONE.....	750	PPM	TWA	OSHA	
ACETONE.....	1000	PPM	STEL	OSHA	
NON-VOLATILE COMPONENTS - NEW JERSEY TRADE SECRET (T.S.) REGISTRY NO. 04499600-5548P ++.....	NONE	NONE	NONE	NONE	
CYCLOHEXANE.....	300	PPM	TWA	ACGIH	
CYCLOHEXANE.....	300	PPM	TWA	OSHA	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- ACGIH: American Conference of Governmental Industrial Hygienists
- OSHA: Occupational Safety and Health Administration
- CMRG: Chemical Manufacturer Recommended Exposure Guidelines
- NONE: None Established
- AIHA: American Industrial Hygiene Assoc. Workplace Environmental Exposure Level Guideline

8. HEALTH HAZARD DATA

EYE CONTACT:
Moderate Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

SKIN CONTACT:
Mild Skin Irritation (after prolonged or repeated contact): signs/symptoms can include redness, swelling, and itching.

Abbreviations: N/D - Not Determined N/A - Not Applicable

8. HEALTH HAZARD DATA (continued)

INHALATION:
Intentional concentration and inhalation may be harmful or fatal.

Kidney Effects: signs/symptoms can include reduced urine volume, blood in urine and back pain.

Liver Effects: signs/symptoms can include yellow skin(jaundice) and tenderness of upper abdomen.

Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

WHILE THE FOLLOWING EFFECTS ARE ASSOCIATED WITH ONE OR MORE OF THE INDIVIDUAL INGREDIENTS IN THIS PRODUCT AND ARE REQUIRED TO BE INCLUDED ON THE MSDS BY THE U.S. OSHA HAZARD COMMUNICATION STANDARD, THEY ARE NOT EXPECTED EFFECTS DURING FORESEEABLE USE OF THIS PRODUCT.

Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.

SECTION CHANGE DATES

HEADING	SECTION CHANGED SINCE July 18, 1996	ISSUE

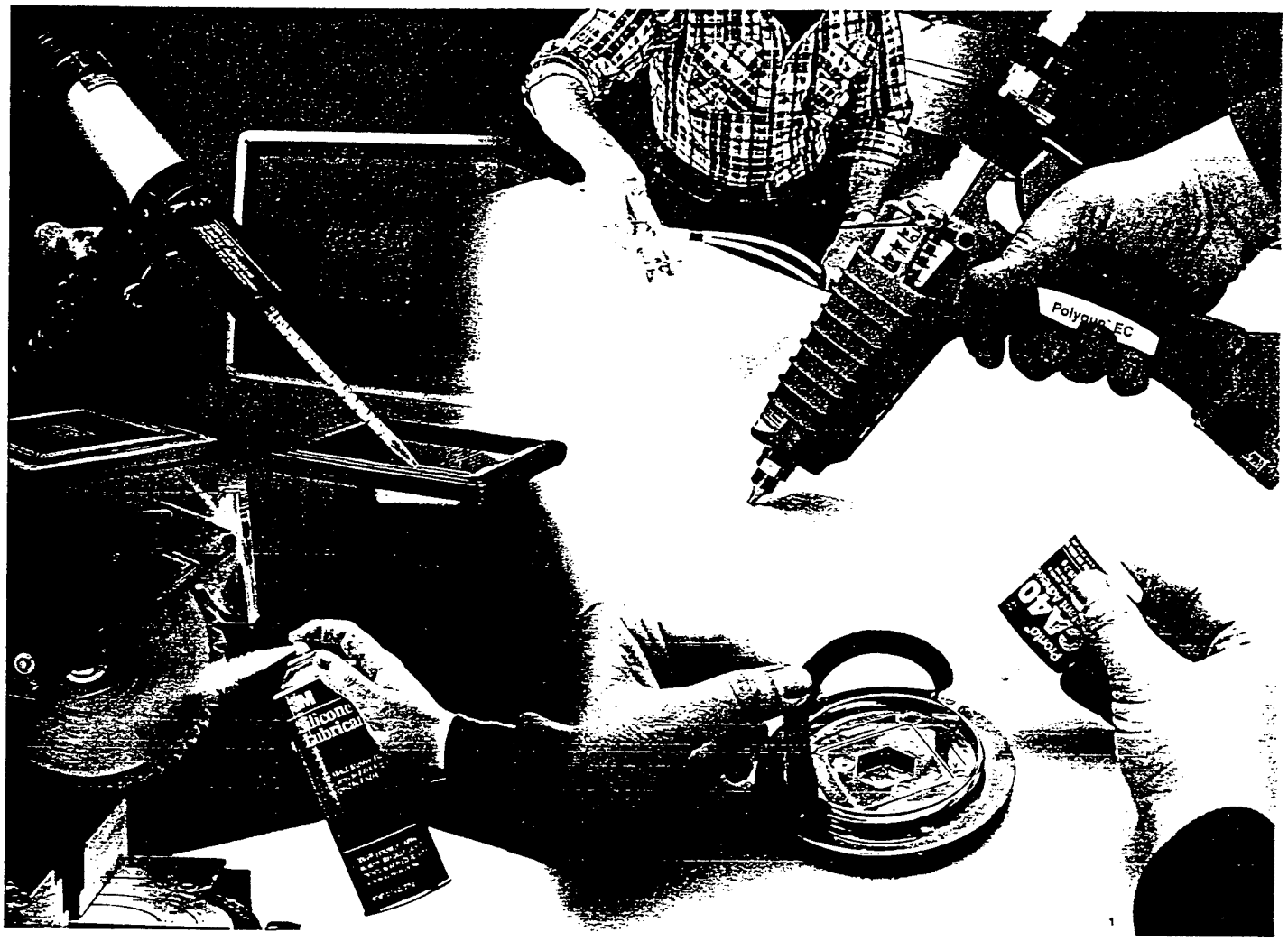
Abbreviations: N/D - Not Determined N/A - Not Applicable

The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3M provides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information, 3M makes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the MSDS available directly from 3M.

3M

Designer's Reference Guide To Adhesive Technology



Look to 3M to help make your products stronger, lighter, better looking, longer lasting, less costly and easier to manufacture.

Adhesives technology – helping people get more out of life.

Wherever you look, you'll likely find 3M adhesive technology helping people get more out of life at home, leisure and work. Chair cushions, kitchen counter tops, cars, computer components, aircraft, light fixtures, musical instruments, toys, washing machines, golf clubs, watchbands, cellular phones, vinyl luggage, speaker fabric, packaging, trains, athletic shoes, and air conditioners – there are 3M adhesives used in each of these applications, and adhesives for thousands more.

Today, product designers and manufacturing engineers are relying on adhesives more than ever for **greater design flexibility, more efficient production and improved end-use performance.**

And the demand for new and better adhesives is continually growing.

3M has long been recognized as a pioneer in industrial adhesives, but to meet the growing demand doesn't just mean providing the right chemical formula. Or even new innovative formulations such as Jet-Weld™ Thermoset Adhesives.

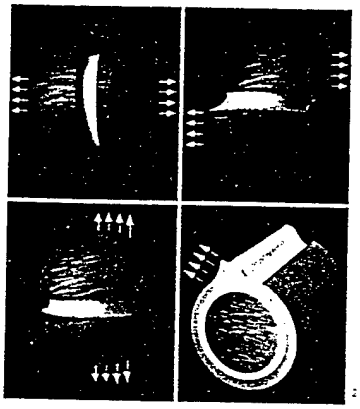
We also apply ourselves to the business end. Which is why we don't just develop adhesives, but whole application systems designed to facilitate production.

Our goal is to help make your product stronger, lighter, better looking, longer lasting...less costly and easier to manufacture.

You can continue to look to 3M for the advanced adhesive performance and quality that contribute to how you and your customers want to live.

Table of Contents

4 The Benefits of Adhesive Technology: To help you get full value and performance from adhesive technology.



5 3M Structural Adhesives

6 **Scotch-Weld™ Adhesives:** Structural adhesives and applicators with proven performance.

10 **Pronto™ Instant Adhesives:** Performance matched to production and end use requirements.

12 **Jet-Weld™ Thermoset Adhesives:** New line of one-part, moisture-curing urethane adhesives and dispensing equipment.

15 3M Non-Structural Adhesives

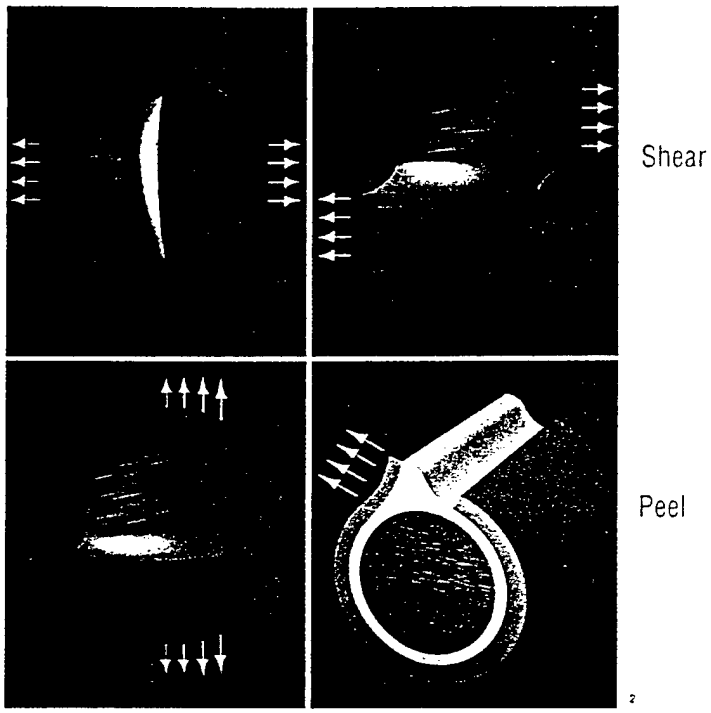
16 **Scotch-Grip™ and Fastbond™ Products:** Industrial-quality adhesives for reliable non-structural bonding.

22 **3M Aerosol Products:** Handy spray applicators for speed, convenience and economy.

26 **Hot Melt Systems:** Wide line of solvent-free adhesives and applicators for assembly and packaging.

30 **Adhesive Selection Guide:** To help you select the right joining system for the job.

Stress resistance, simplification, economy and more.



One of the primary benefits of adhesive is that it holds something together resisting the stress trying to pull it apart.

Tensile stress is exerted equally over the entire joint straight and away from the adhesive bond.

Shear stress is across the adhesive bond. The bonded materials are being forced to slide over each other.

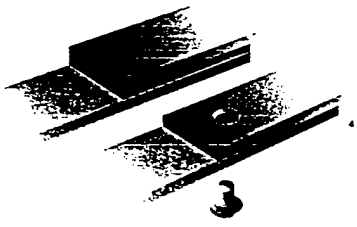
Cleavage stress is concentrated at one edge and exerts a prying force on the bond.

Peel stress is concentrated along a thin line at the bond's edge. One surface is flexible,

Most applications combine stresses.

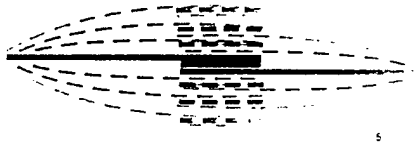
The following six points elaborate on the advantages of using adhesives for stress resistance and more.

1. Uniform distribution of stress over the entire bonded area can **eliminate stress concentration** caused by rivets, spot welds and similar mechanical fastening. Lighter, thinner materials can often be used without sacrificing strength.



2. Bonding laminates of **dissimilar materials** can produce combinations superior in strength and performance to either adherent alone. **Adhesive flexibility** compensates for differences in coefficients of expansion.

3. Elastomeric flexibility **improves resistance to vibration** fatigue.



4. Holes are eliminated to **maintain the integrity** of the bonded material. This can reduce finishing and increase design flexibility.

5. Continuous contact between mating surfaces can effectively **bond and seal** against many environmental conditions.

6. **Costs can be cut** by reducing material requirements and weight; eliminating drilling, welding, screwing, and similar operations.

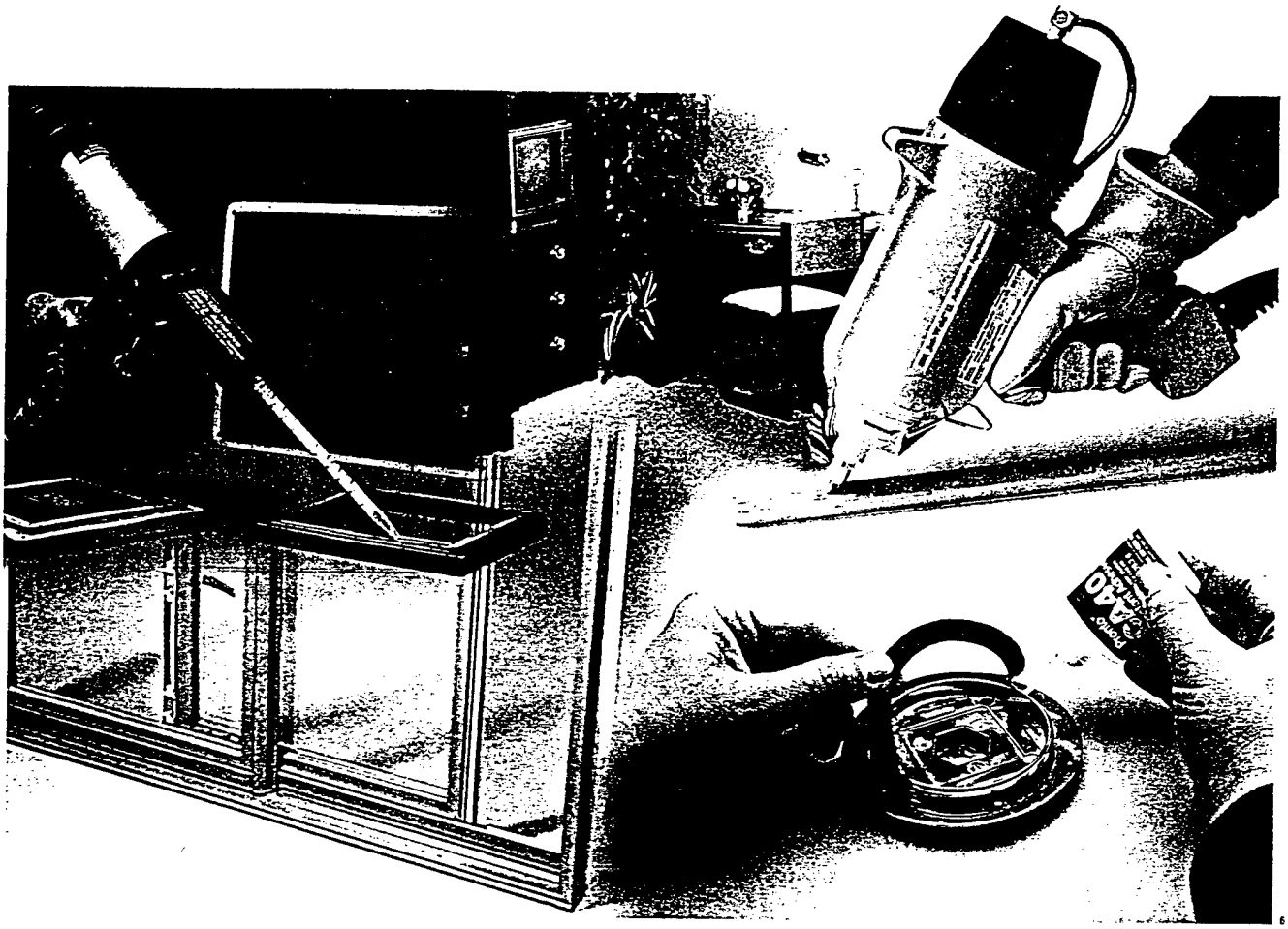
Choice of 3M structural or non-structural formulations.

To meet requirements for stress resistance, specific substrates, application efficiency and cost, 3M offers a wide range of easy-to-use adhesives in handy sizes with practical dispensing systems.

Structural adhesives (pages 5 to 14) bond the load-bearing parts of a product. Usually these are metal, but wood, glass and rigid plastics can also be structurally bonded.

Non-structural adhesives (pages 15 to 29) bond materials for insulation, cushioning and paneling; rubber, plastic, fabric, leather, wood, cardboard, and other substrates used in non load-bearing applications.

Structural Adhesives



3M high-strength structural adhesives are fundamentally load-bearing formulations. Bond strength is often as strong as, or stronger than the materials joined.

These adhesives are generally cross-linked or thermosetting, and include epoxies, phenolics, urethanes, acrylics and cyanoacrylates.

The aircraft industry is one of the pioneers in use of structural adhesives. And structural adhesives still play an integral role in the aerospace industry. But many other industries have also been taking advantage of 3M's advanced formulations and innovative dispensing.

For example: bushing assembly in appliances, headlight assembly in cars, fiberglass decks in boats, relays and controls in electronic equipment, lawn sprinklers, window frames, office partitions, pump casting components, golf clubs, home furniture, and surgical instruments.

The 3M structural adhesives product line includes the following:

- Scotch-Weld one and two-part epoxy adhesives, and two-part urethanes and acrylics.
- Scotch-Weld™ EPX™ Applicator System with Duo-Pak two-part adhesive cartridges.
- Pronto™ Instant Adhesives.
- Jet-Weld™ Thermoset Adhesive System

Load-bearing formulations for metals, rubber, glass and more.

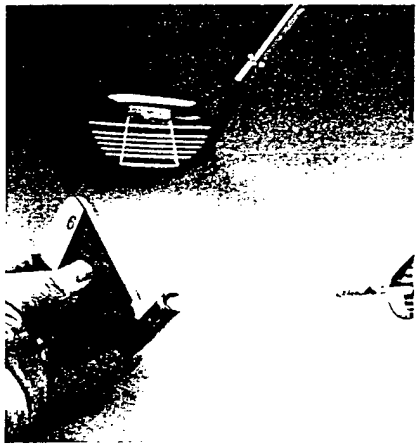
More and more manufacturers are using high strength, load-bearing adhesives in lieu of mechanical or fusion methods for structural joining and fastening. The reasons are many: greater design latitude, cleaner lines, material substitution, less machining, lighter weight, more durability and often less cost.

All of this adds up to potential increased profitability and contributes to the ongoing satisfaction of the end-use customers.

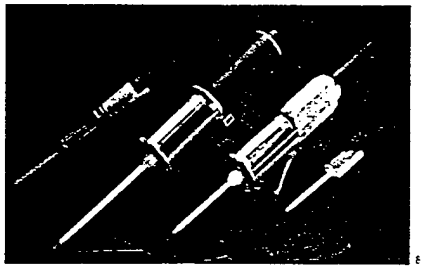
And with Scotch-Weld Structural Adhesives, you get a line backed by more than 50 years experience in adhesives engineering, and performance-proven by manufacturers worldwide.

To meet application and end-use requirements you can select from one-part heat-curing epoxies, and two-part room-temperature curing epoxies, acrylics and urethanes. There are formulations for bonding steel, aluminum, copper, engineering plastics, rubber, glass, wood, masonry and more.

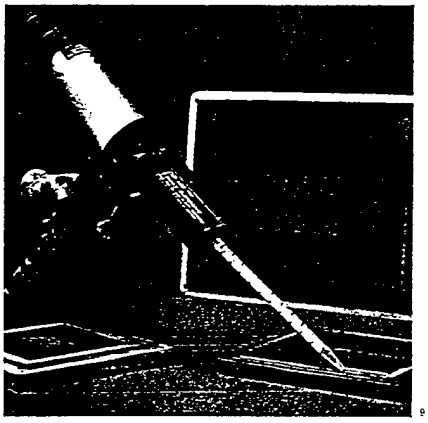
Whatever properties you need—durable adhesion, flexibility, creep resistance, heat and environmental resistance, void-filling—you'll likely find a Scotch-Weld product to meet your requirements and expectations.



Bonds made with Scotch-Weld adhesive are high strength with void-filling properties that secure loose-fitting parts and help seal against the environment.



The EPX line of reliable hand-held dispensers include (l to r) 50ml Pneumatic, 200ml Pneumatic, 200ml Manual, and improved 50ml Manual Dispensers. Not shown, 400ml Pneumatic Dispenser.



EPX Pneumatic Applicator System delivers consistent air pressure for easy uniform application of Scotch-Weld structural adhesives in Duo-Pak cartridges. Adjustable flow rate of 5 to 40 g/minute.

Product Information:
Scotch-Weld Two-Part Epoxy Adhesives

Two-part, room-temperature or heat curing epoxy adhesives provide high-strength bonds on a wide variety of substrates. Bond is often stronger than the parts being bonded.

Product (Color)[1]	Features	Mix Ratio (Volume) B:A	Approximate [2] Viscosity 75°F (24°C) (CPS)	Approximate[3] Worklife At 75°F (24°C)	Average[4] T-Peel At 75°F (24°C) PIW	Overlap Shear Strength[5] PSI -67°F (-55°C)	75°F (24°C)	180°F (82°C)	250°F (121°C)
1648 B/A Green	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • Higher performing product at elevated temperatures	6:5	275,000	60 Min.	4	2000	2500	700	400
1751 B/A Gray	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • Excellent void filler and machinable for many "Body Solder" applications	3:2	700,000	45 Min.	4	1400	2000	500	300
1838 B/A Green	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • Meets MIL-A-23941A • Excellent Environmental Resistance	4:5	400,000	60 Min.	4	1500	3000	500	300
1838 B/A Tan	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • Tan version of 1838 Green Adhesive	6:5	250,000	60 Min.	5	1500	3000	500	300
1838-L B/A Translucent	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • Translucent, low viscosity version of 1838 Green Adhesive	1:1	10,000	60 Min.	5	2000	3000	400	200
2158 B/A Gray	• Long worklife adhesive • Rigid epoxy • 8-12 hrs. handling strength • General purpose product	1:1	375,000	120 Min.	4	1700	2000	400	300
2216 B/A Gray	• Long worklife adhesive • Flexible epoxy • 8-12 hrs. handling strength • Can bond plastic, metal and other dissimilar materials	2:3	80,000	90 Min.	25	2000	2500	400	200
2216 B/A Tan Non-Sag	• Long worklife adhesive • Flexible epoxy • 8-12 hrs.. handling strength • Tan version of 2216 B/A Gray Adhesive	2:3	350,000	90 Min.	25	2000	2500	400	200
2216 B/A Translucent	• Long worklife adhesive • Flexible epoxy • 16-20 hrs. handling strength • Translucent version of 2216 B/A Gray Adhesive	1:1	10,000	120 Min.	25	3000	2000	200	100
3501 B/A Gray	• Fast cure adhesive • Rigid epoxy • 20-30 minutes handling strength • Rapid room temp. curing material that can bond metal, wood, most plastics and masonry products	1:1	500,000	7 Min.	5	1500	2400	300	200

Scotch-Weld Two-Part Urethane Adhesives

Two-part urethane adhesives cure at room-temperature or with heat to provide tough, impact resistant bonds with high peel strength.

3532 B/A Brown	• Fast cure adhesive • 20-30 min. handling strength • Semi-rigid urethane • Rapid cure, for flexible bonds of many plastics, wood and rubber	1:1	30,000	7 Min.	25	2500	2000	300	150
3535 B/A Off-white	• Very fast cure adhesive • 15-20 min. handling strength • Semi-rigid urethane • Faster setting version of 3532 B/A Adhesive	1:1	30,000	3 Min.	25	2500	2000	300	150
3549 B/A Brown	• Long worklife adhesive • 2-4 hrs. handling strength • Semi-rigid urethane • Longer worklife version of 3532 B/A Adhesive	1:1	30,000	60 Min.	25	2500	2000	300	150

Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

(1) Color is mixed if two-part product.
(2) Brookfield viscometer viscosity values are typical values for the mixed product.
(3) The time during which an adhesive will adequately wet-out on a substrate.
(4) 180° peel tested on .030" aluminum per ASTM D 1876-61T.
(5) Tested per ASTM D 1002-64.

Product Information:
Scotch-Weld One-Part Epoxy Adhesives

One-part epoxy adhesives are structural-strength products that eliminate the mixing and weighing of two-part systems. These products must be heat cured.

Product (Color)	Features	Viscosity	Optimum Cure			Average (1) T-Peel At 75°F (24°C)	Overlap Shear Strength(2) PSI				
			Time (Min.)	Temp (°F/°C)	Pressure (PSI)		-67°F (-55°C)	75°F (24°C)	180°F (82°C)	250°F (121°C)	350°F (177°C)
1386 Cream	A 350°F (177°C) curing epoxy for metal to metal bonding provides exceptionally high strength, impact resistant bonds. Meets requirements of MMM-A-134 Type III	150,000 cps	60	350/177	10	10 (Alum.)	3000	5500	4500	2500	400
1469 Cream	A 350°F (177°C) curing epoxy with excellent performance at elevated temperatures.Meets requirements of MMM-A-132 Type II, Class 3, Group 4	60,000 cps	120	350/177	10	2 (Alum.)	3150	3700	3700	3600	1000
2086 Gray	A 350°F (177°C) curing epoxy similar to 1386 Adhesive but filled to provide excellent flow control.	Paste	60	350/177	10	5 (Alum.)	3000	5000	5000	2200	500
2214 Regular Gray	Aluminum filled heat curing (250°F, 121°C) structural adhesive of paste consistency. Can bond metals, glass and many plastics.	Paste	60	250/121	10	5 (Alum.) 50 (Steel)	3000	4500	4500	1500	400
2214 Hi-Dense Gray	Similar to 2214 regular adhesive but deaerated and formulated to provide dense, void-free bond lines.	Paste	60	250/121	10	5 (Alum.) 50 (Steel)	3000	4500	4500	1700	400
2214 Hi-Temp Gray	Formulated to provide outstanding performance at elevated temperatures and excellent sag control.	Paste	60	250/121	10	2 (Alum.) 5 (Steel)	2000	2000	3000	2500	900
2214 Hi-Temp New Formula Gray	A version of 2214 Hi-Temp Adhesive with exceptional performance at elevated temperatures and excellent performance under high temperature, high humidity conditions. Resists attack by hot ethylene glycol.	Paste	60	250/121	10 5	5 (Alum.) (Steel)	2800	2800	2500	2000	1200
2214 Hi-Flex Gray	Similar to 2214 Regular Adhesive but deaerated and formulated to provide bonds featuring outstanding shock resistance.	Paste	60	250/121	10	10 (Alum.) 65 (Steel)	2500	4000	2000	450	250
2214 Non-metallic filled Cream	A cream colored non-metallic version of 2214 Regular Adhesive suggested for electrical applications where insulating qualities are desired.	Paste	60	250/121	10	7 (Alum.) 12 (Steel)	3000	4000	4500	1500	400
2290 Amber	A 21% solids liquid epoxy. B-stageable. Can be used in laminating steel cores for motor stators and rotors. Excellent for many thin metal stack laminations such as those used in magnetic tape heads.	60 cps	30	350/177	50	10 (Alum.)	5000	5000	3500	1200	200

Note: The technical information and data on these pages should be considered representative or typical only and should not be used for specification purposes.

(1) Tested per ASTM D 1876-61T.
(2) Tested per ASTM D 1002-64.

Scotch-Weld Metal Primers

One and two-part metal primers that can be used to help improve adhesion and provide better environmental resistance when used with Scotch-Weld Adhesives.

Product Color	Features	Viscosity	Comments
3901 Red	• Adhesion promoter • Organo-silane base • Brush or spray application	5 cps	A primer for film and liquid adhesives in those applications where it is desired to obtain improved metal and glass adhesion or improved resistance to environmental exposure with epoxy and urethane adhesives. It can help simplify production scheduling by protecting the cleaned surfaces until the bonding operations can be completed and imparts improved corrosion protection to metal.
1945 B/A Green	• 1:1 mix ratio two-part epoxy primer • 8 hour potlife • Brush, spray or dip application	500 cps	It is a two-part chemically curing, corrosion resistant primer to improve adhesion of urethanes and epoxies to many metals as well as offering increased corrosion protection. It cures at room temperature and has excellent adhesion to many metals.

Scotch-Weld Adhesives in Duo-Pak cartridges.

Two-part, room-temperature curing epoxy, urethane and acrylic adhesives especially formulated and packaged for use in the EPX Applicator.

Product (Color) [1]	Features	Mix Ratio (Volume) B:A	Approximate [2] Viscosity 75°F (24°C) (CPS)	Approximate [3] Worklife At 75°F (24°C)	Average [4] T-Peel At 75°F (24°C) PIW	Overlap Shear Strength [5][2] PSI			
						-67°F (-55°C)	75°F (24°C)	180°F (82°C)	250°F (121°C)
DP-100 Clear	• Fast cure adhesive • Rigid epoxy • 15-20 min. handling strength • Machinable product	1:1	13,000	4 Min.	2	900	1500	300	200
DP-100Plus Clear	• Water clear • Fast cure • Good peel and shear strength	1:1	8,500	4 Min.	13	3000	3500	200	150
DP-100NS Translucent	• Fast cure adhesive • Rigid epoxy • 25-30 min. handling strength • Translucent low flow version of DP-100 Adhesive	1:1	95,000	6 Min.	2	900	1500	300	200
DP-100 FR White	• Fast cure adhesive • Rigid epoxy • 25-30 min. handling strength • Meets UL94V-0 rating • Self-extinguishing version of DP-100 Adhesive	1:1	50,000	6 Min.	2	800	1400	400	200
DP-105 Clear	• Water clear • Fast cure • Very flexible • Excellent peel strength	1:1	6,500	5 Min.	35	3500	2000	150	100
DP-105 Gray	• Gray • Fast cure • Very flexible • Excellent peel strength	1:1	50,000	5 Min.	45	3000	2500	300	200
DP-110 Gray	• Fast cure adhesive • Flexible epoxy • 30 min. handling strength	1:1	55,000	9 Min.	15	2000	2500	200	150
DP-110 Translucent	• Fast cure adhesive • Flexible epoxy • 30 min. handling strength • Translucent version of DP-110 Gray Adhesive	1:1	50,000	9 Min.	10	2000	2500	200	150
DP-125 Gray	• Medium worklife • Good peel strength	1:1	52,500	25 Min.	35	3400	4300	400	200
DP-125 Translucent	• Medium worklife • Good peel strength	1:1	15,000	25 Min.	35	4000	2500	150	100
DP-190 Gray	• Long worklife adhesive • Flexible epoxy • 8-12 hrs. handling strength • Can bond metals, plastics and many other dissimilar materials	1:1	80,000	90 Min.	20	1500	2500	400	300
DP-190 Translucent	• Long worklife • Good peel strength	1:1	10,000	90 Min.	30	3500	1700	160	100
DP-270 Black	• Long worklife potting compound • 8-12 hrs. handling strength • Rigid epoxy	1:1	19,000	70 Min.	2	1200	2500	300	200
DP-270 Clear	• Long worklife potting compound • 8-12 hrs. handling strength • Rigid epoxy • Clear product for many electronic applications • Black version of DP-270 Clear Adhesive	1:1	19,000	70 Min.	2	1200	2500	300	200
DP-420 Off-White	• Medium worklife adhesive • Toughened epoxy • 1-2 hrs. handling strength • High performance product	2:1	45,000	20 Min.	50	4500	4500	450	200
DP-460 Off-White	• Long worklife adhesive • Toughened epoxy • 2-4 hrs. handling strength • Meets MIL-A-23941A • Longer worklife DP-420 Adhesive type product • High-performance product	2:1	45,000	60 Min.	60	4500	4500	700	200
DP-605NS Off-White	• Fast cure adhesive • Semi-rigid urethane • 15-20 min. handling strength • Excellent gap filler and non sag product for wood and plastic	1:1	150,000	4 Min.	15	1000	1250	325	100
DP-805 Lt. Yellow	• High peel and shear strength • Can bond slightly oily material • Good elevated temperature performance • Excellent plastic adhesion	1:1	110,000	4 Min.	35	2500	3500	2200	200

Note: The technical information and data on these pages should be considered representative or typical only, and should not be used for specification purposes.

(1) Color is mixed if two-part product.
(2) Brookfield viscometer viscosity values are typical values for the mixed product.
(3) The time during which an adhesive will adequately wet-out on a substrate.
(4) 180° peel tested on .030" aluminum per ASTM D 1876-61T.
(5) Tested per ASTM D 1002-64.

Fast bonding with the right combination of strength, cure time and viscosity.

For speed and performance, you'll likely find a product in this line with precisely the right combination of bond strength, cure time and viscosity.

These one-part cyanoacrylate adhesives rapidly reach handling strength at room temperature without a catalyst. Bonds achieve 80% of full strength in an hour. A single drop per square inch can bond many plastics, rubber, metal and more with tensile strength up to 5,000 PSI.

Depending on the specific formulation, you have the following features: resistance to fuels, lubricating oils and other chemicals from -40°F to 200°F (-40F to 93°C); gap filling; extended cure rates for repositionability; high peel and impact strength; conformance to MIL-Spec A-46050C.

Application is easy from their own containers or through intermediate manual dispensers or automated systems. Curing requires no expensive equipment or fixturing.

Product Information:
Pronto™ Instant Adhesives

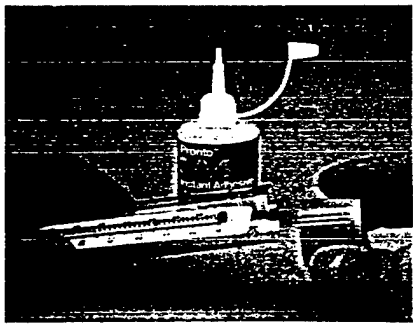
One-part, room-temperature curing adhesives that are ready-to-use without metering or mixing. Bonded parts reach handling strength in 5-10 seconds on many applications.

Product	Features	Base	Time[1] To Handling Strength (Sec.)	Viscosity (CPS)	Average[2] T-Peel At 75°F (24°C)	Overlap Shear Strength[3] @ 75° (24°C) (PSI) Steel	Alumi-num	Nitrile Rubber	Neoprene Rubber	ABS	Rigid PVC
CA-4	Fast setting multi-purpose cyanoacrylate adhesive for bonding a variety of plastics and rubbers. Meets MIL-A-46050C Type II, Class 2.	ethyl	5-40	60-120	1-2	1500	1500	35*	55*	900*	1000*
CA-5	A higher viscosity, slower setting version of CA-4 Adhesive.Better adapted for filling gaps and uneven surfaces. Meets MIL-A-46050C Type II, Class 3.	ethyl	20-70	2000-3000	1-2	2000	1100	35*	55*	900*	1000*
CA-7	Very fast setting product with excellent adhesion to a variety of metals, plastics and rubbers. Meets MIL-A-46050C Type I, Class 1.	methyl	1-30	15-40	2-4	2500	2400	35*	55*	900*	1000*
CA-8	Fast setting adhesive with excellent adhesion to many metals, plastics and rubbers. Slower setting than CA-7 Adhesive. Meets MIL-A-46050C Type II, Class 2.	ethyl	5-40	70-120	2-4	2000	2100	35*	55*	900*	1000*
CA-9	A slower setting version of CA-8 Adhesive ideal for wire tacking and coil terminating in conjunction with surface activator. Meets MIL-A-46050C Type II, Class 3.	ethyl	20-70	1000-1700	2-4	2000	2440	35*	55*	900*	1000*
CA-40	Very fast setting adhesive with excellent adhesion to many substrates including flexible vinyl and EPDM rubber. Meets MIL-A-46050C Type II, Class 1.	ethyl	1-30	2-10	1-2	1400	1400	35*	55*	900*	1000*
CA-40H	A higher viscosity, slower setting version of CA-40 Adhesive, with better void filling capabilities. Meets MIL-A-46050C Type II, Class 3.	ethyl	5-40	400-600	1-2	1500	1500	35*	55*	900*	1000*
CA-50 Gel	A high-viscosity gel consistency CA for many applications needing non-sag properties. Less sensitive to acidic surfaces.	ethyl	60-120	45,000-85,000	1-2	2000	900	105*	130*	850*	690*
CA-100	Toughened material that provides high peel and impact strength, thermal shock resistance and improved heat resistance. Meets MIL-A-46050C Type II, Class 3.	ethyl	20-70	2500-4500	15	2000	2900	95*	120*	600*	710*
SURFACE ACTIVATOR	A clear, colorless organic-based liquid, which can be applied by brush or spray.	This product helps speed curing and primes surfaces when cyanoacrylate adhesives are unable to cure properly due to surface activity. Also can be used for wire tacking and coil terminating in combination with CA-5, CA-9, CA-50, or CA-100 Adhesives. Bottle container comes with brush in lid and spray pump.									

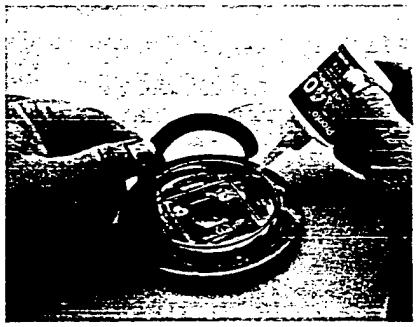
Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

(1) The time it takes assembled parts to reach a strength where further handling and processing can take place. Times will depend on surface to be bonded, temperature and humidity.

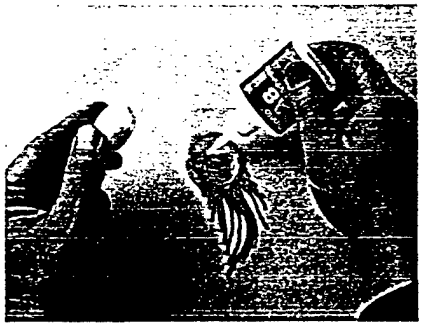
(2) Tested per ASTM D 1876-61T.
(3) Tested per ASTM D 1002-64.
* Substrate failure.



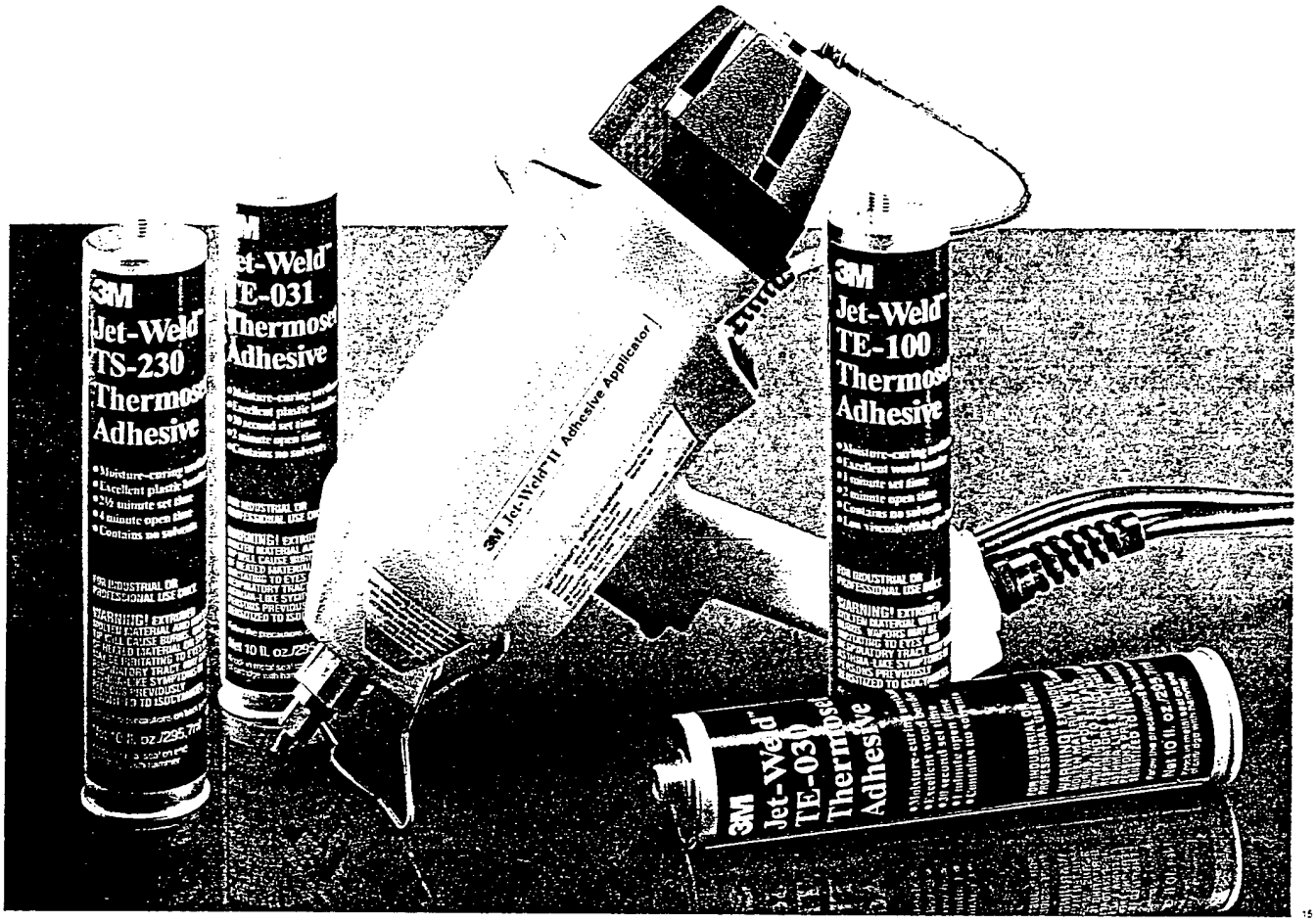
A single drop of Pronto Instant Adhesive per square inch quickly bonds many plastics, rubber, metal and more.



Pronto CA-40 Instant Adhesive works on many problem surfaces where other adhesives may fail, such as bonding EPDM rubber.



Pronto CA-8 Instant Adhesive is an excellent multi-purpose product for use in a variety of assembly applications.



Hot melt speed and structural strength performance in the palm of your hand.

The Jet-Weld II Applicator and moisture-curing urethane adhesives put a powerful production capability in your assembly operation. This single system combines many production benefits typical of hot melt adhesives and bond performance usually associated with two-part structural adhesives.

Speed and 100% solids

Fast initial set of Jet-Weld adhesives can help you reduce costs. **Fast handling strength** helps eliminate or minimize fixturing and speed assembly.

With a **one-component**, moisture-curing formulation, you also eliminate metering, mixing and curing equipment. That can help simplify production as well as save energy.

100% solids give you a low-VOC adhesive system with no drying equipment and no attack on plastics.

Unique high strength and application versatility

Jet-Weld adhesives approach the high strength end of the performance range, exceeding many conventional hot melt and PVA (polyvinyl acetate) adhesives.

Based on proprietary 3M urethane technology, Jet-Weld adhesives can bond a wide **variety of substrates**, including wood, plastics, rubber, dissimilar materials, and plasticized vinyls.

With the **long bonding range** and initial repositionability of Jet-Weld adhesives, assembly of complex parts is easier. **Bond lines are thin, flexible and tough** for improved part fit, appearance and rugged performance.

Combine this versatility with the applicator's portability and you have a system that can adapt readily to many of your production requirements.

Jet-Weld Adhesive Selection Guide

Substrate	Adhesive TE-030	Adhesive TE-031	Adhesive TE-100	Adhesive TS-230	Adhesive TS-115HGS
ABS	Good	Excellent	Good	Excellent	Excellent
Aluminum (1) (2)	Poor	Fair	Poor	Excellent	Excellent
EPDM rubber	Poor	Poor	Poor	Poor	Poor
Fabric/felt/cork	Excellent	Excellent	Excellent	Excellent	Excellent
FRP – epoxy based	Good	Excellent	Good	Excellent	Excellent
FRP – polyester based	Good	Excellent	Good	Excellent	Excellent
Glass/ceramic	Poor	Fair	Poor	Excellent	Excellent
Leather	Excellent	Excellent	Excellent	Excellent	Excellent
Neoprene rubber (3)	Poor	Fair/poor	Poor	Good/fair	Good/fair
Nitrile rubber (3)	Good	Excellent	Good	Excellent	Excellent
Nylon	Poor	Fair/poor	Poor	Fair/poor	Fair/poor
Painted metal (1)	Poor	Good/fair	Poor	Excellent	Excellent
Polyacrylic	Fair	Excellent	Fair	Excellent	Excellent
Polycarbonate (4)	Good	Excellent	Good	Excellent	Excellent
Polyolefins (5)	Poor	Poor	Poor	Poor	Poor
Polystyrene	Poor	Excellent	Poor	Excellent	Poor
Polystyrene (beadboard)	Excellent	Excellent	Excellent	Excellent	Excellent
PVC (rigid or flexible)	Good	Excellent	Good	Excellent	Excellent
Steel (1) (2)	Poor	Fair	Poor	Good	Good
Styrene Butadiene Rubber	Good	Excellent	Good	Excellent	Excellent
Wood/hardboard	Excellent	Good	Excellent	Good	Good

(1) Not recommended for bonding metal, glass and ceramic to itself or each other due to low moisture transmission of substrates.

(2) Abrade uncoated aluminum. Not for use on uncoated aluminum subjected to hot/humid conditions.

(3) Rubbers vary in composition. Adhesion to specific rubber must be evaluated by user.

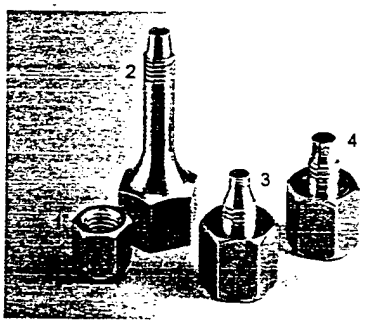
(4) Adhesive may partially delaminate from polycarbonate at elevated temperatures.

(5) Polypropylene, polyethylene. Corona or plasma treatment may improve adhesion.

Photo courtesy of The Rose Hill Co., Inc.

16

Decorator tables – Jet-Weld adhesive performs multiple tasks including V-groove bonding at the table joints, and laminating tops.

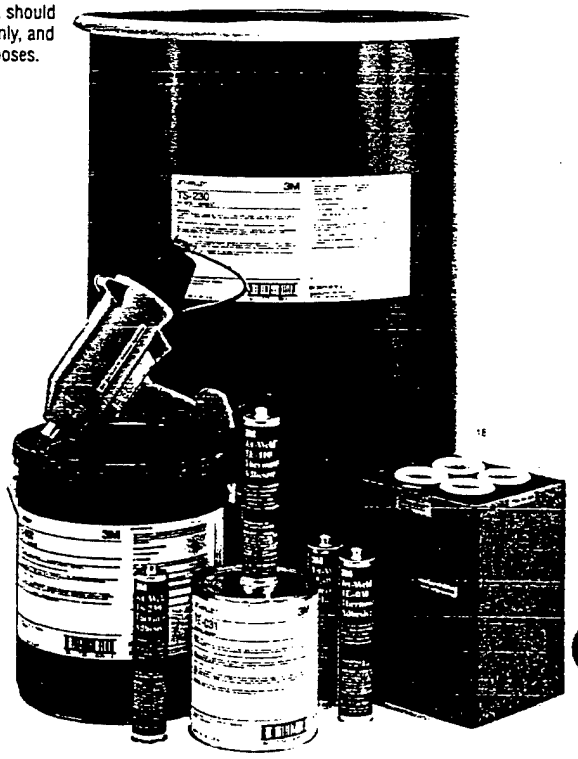


17

Job-matched tips –

1) Threaded cap for sealing tip after use.
2) Extension tip for improved sight line in hard-to-reach areas.
3) .062" tip for low flow applications.
4) .125" tip for high flow applications.

Note: This technical information and data should be considered representative or typical only, and should not be used for specification purposes.



18

Container sizes to meet your production volume –

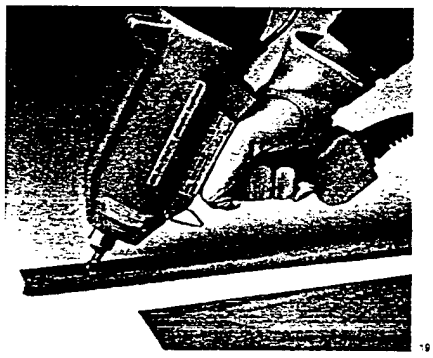
- 10 fl.oz. cartridges
- Gallon pail
- 5 gallon pail
- 55 gallon drum

Product Information:
Jet-Weld Adhesives

A complete line of warm applied, moisture-curing polyurethane adhesives for the woodworking, laminating and plastic component assembly markets.

Product	Description	Application temperature	Viscosity	Color	Open time	Set time	Shore D	Tensile strength	Elongation %	Modulus
TE-030	Extrudable grade with fast set time ideal for bonding **wood.** Can bond selected plastics.	250°F (121°C)	16,000 cps	White Off White	1 min.	30 sec	50	3600 psi	725%	11,200 psi
TE-031	Extrudable grade with fast set time ideal for bonding a wide variety of **plastics**, including polystyrene and polyacrylic.	250°F (121°C)	13,000 cps	White/ Off White	2 min.	30 sec	50	3900 psi	725%	5600 psi
TE-100	Extrudable grade with medium set time and low viscosity ideal for bonding **wood.** Can bond selected plastics. Yields thin glue lines.	250°F (121°C)	7,000 cps	White/ Off White	2 min.	1 min.	51	4200 psi	675%	12,200 psi
TS-230	Sprayable/extrudable grade with long set time ideal for bonding a wide variety of **plastics**, including polystyrene and polyacrylic. Can bond **aluminum** and **glass** to plastic and wood.	250°F (121°C)	9,000 cps	White/ Off White	4 min.	2.5 min.	45	3300 psi	700%	5400 psi
TS-115 HGS	Sprayable/extrudable/roll coatable grade with fast set time, ideal for bonding a variety of substrates including wood, fiber, reinforced plastic and other **plastics** to themselves, **metal** and **glass.**	250°F (121°C)	16,000 cps	White/ Off White	10 min.	1 min.	47	3200 psi	600%	3300 psi

Note: This technical information and data should be considered representative or typical only and should not be used for specification purposes.



Easily applied bead of 100% solids Jet-Weld adhesive is applied molten at only 250°F (121°C).

Photo courtesy of Othmar Klem Furniture Co

Wood furniture – Jet-Weld adhesive reliably bonds a wide variety of wood components in furniture ranging from headboards to desks and TV cabinets.

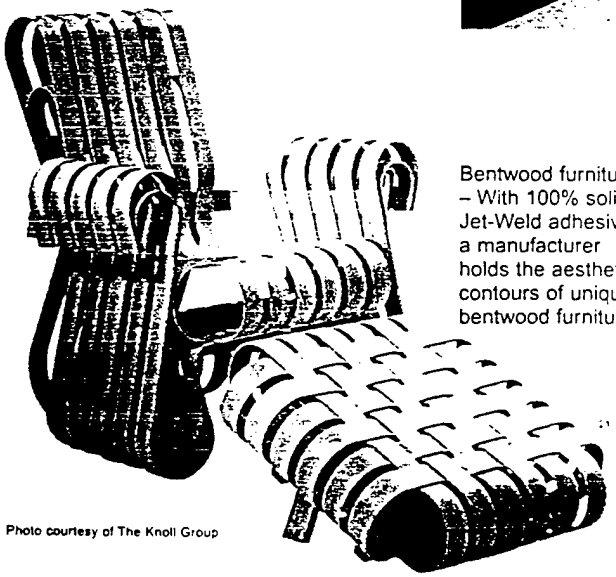
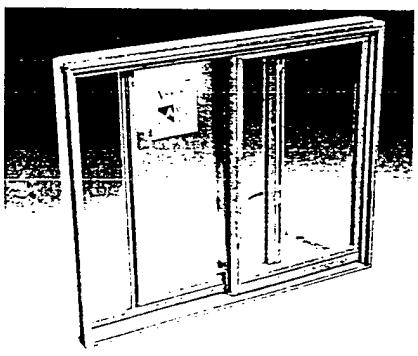


Photo courtesy of The Knoll Group

Bentwood furniture – With 100% solids Jet-Weld adhesives, a manufacturer holds the aesthetic contours of unique bentwood furniture.

Photo courtesy of Andersen Windows Inc



High performance gliding windows – With fast handling strength, Jet-Weld adhesive helps speed the bonding of interior wood trim to the vinyl sash.

Non-Structural Adhesives

3M non-structural strength adhesives bond substrates used in insulation applications, cushioning, decorative trim, packaging, paneling, sealing, gasketing, countertops, furniture, woodworking and general assembly. Materials include rubber, plastics, fabric, leather, wood, metal, and glass. A range of bond strength is available to help meet specific requirements wherever structural strength is not required.

Each substrate has an individual bonding "profile" determined by the degree of porosity, absorbency, surface texture, strength, solvent sensitivity, and reaction to environmental conditions such as humidity. And with 3M adhesives, you have a wide selection to help find the best balance of end-use performance, application ease and cost effectiveness.

Non-structural adhesives are generally rubber or resin-based thermoplastic formulations. Forms can be liquid with different viscosities, solid hot melts, or supplied in a convenient aerosol.

The 3M non-structural adhesives product line includes the following:

- 3M Scotch-Grip™ and Fastbond™ liquid adhesives including many advanced water-based formulations.
- 3M Aerosol Adhesives and chemicals for industrial and packaging applications.
- Jet-melt™ Adhesives with Polygun™ Hot Melt Applicators.

Innovative answers to a wide variety of non-structural bonding problems.

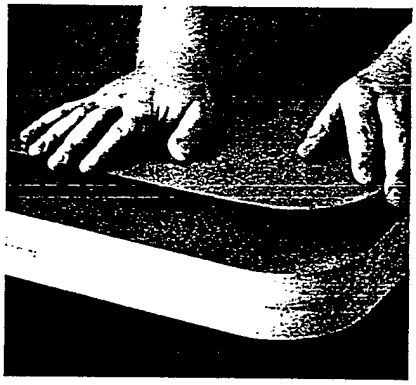
Scotch-Grip and Fastbond brand Adhesives are industrial-quality products designed to provide innovative answers to a wide variety of non-structural bonding problems. Some formulations are tailored to specific types of applications. Others are multi-purpose and used worldwide in hundreds of different product assembly operations.

In general assembly, these products are used to bond rubber, gasketing materials, insulation, decorative trim and many other non-load-bearing materials to themselves and metal, wood, plastics and more.

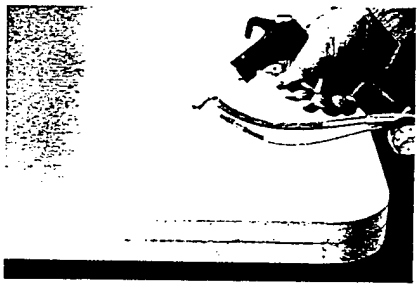
In lamination, they can bond plastic sheets and films to numerous substrates. And in panel assembly, they can bond such "skins" as steel, aluminum and high pressure laminate to a wide variety of materials.

Many of these adhesive products are now available in water dispersed formulations, which can be extremely important in today's highly-regulated production environment.

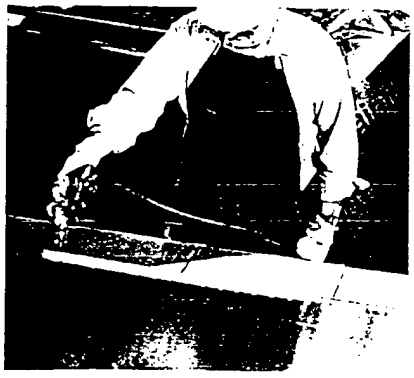
If you're looking for a reliable non-structural adhesive, you're likely to find just what you need in the Scotch-Grip and Fastbond lines backed with more than 50 years of 3M adhesives engineering.



Fastbond 2000-NF Contact Adhesives cover more area than the same amount of typical solvent-based contact adhesives.



This low-cost, hand-held applicator offers significant savings over many typical application systems currently available, making it ideal for small shops or off-line applications.



For bonding insulation, water-based Fastbond 42-NF Plus Adhesive provides a low VOC content and resists elevated temperatures and humidity.

Product Information:
Scotch-Grip™ and Fastbond™ Water-Based Adhesives

A versatile selection of water-dispersed adhesives that offer low or no VOCs (Volatile Organic Compounds) and nonflammability (in the wet state) to bond a wide variety of substrates.

Product	Features	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Consistency	Color (Dry Film)	Application Method	Bonding Range	Peel Strength (PIW) 75°F (24°C)
30-NF Green Contact Adhesive	Long bonding range with high immediate bond strength. Economical high coverage. Low VOC content. Meets MIL-A-24179A, Type I.	50%	None	Thin liquid	Green	Spray, roller, brush	Up to 4 hours	5.9(1)
30-NF Neutral Contact Adhesive	Neutral colored version of 30-NF Adhesive. Low VOC content. Meets MIL-A-24179A, Type I.	50%	None	Thin liquid	Clear	Spray, roller, brush	Up to 4 hours	5.9(1)
42-NF Plus NV Insulation Adhesive	Fast tacking with resistance to elevated temperature and humidity. No VOC content. Covered by Underwriter's Laboratories Inc. component recognition program guide MAGW2, file MH 6288(N) component-adhesive (miscellaneous) to secure insulating materials to sheet metals.	63%	None	Thixotropic liquid	Black	Spray	Up to 15 minutes	19.9(1)
2000-NF Blue Adhesive (with spray Activator #1)	Water-dispersed, activated adhesive which provides immediate bonding and handling strength without forced drying.	49%	None	Thin liquid	Blue	Co-Spray	Up to 2 hours	4.1(1)
2000-NF Light Orange	Light orange version of 2000-NF Adhesive.	49%	None	Thin liquid	Light Orange	Co-Spray	Up to 2 hours	4.1(1)
2000-NF Neutral	Neutral colored version of 2000-NF Adhesive.	49%	None	Thin liquid	Clear	Co-Spray	Up to 2 hours	4.1(1)
4213-NF Industrial Adhesive	Resists staining and discoloration. Dries clear. No VOC content. Not recommended for exterior applications.	54%	None	Medium liquid	Clear	Brush, roller, trowel	5 minutes	12.0(2)
4224-NF Industrial Adhesive	Permanently pressure sensitive with aggressive tack. Plasticizer resistant. Low VOC content.	40%	None	Thick liquid	Blue	Spray, brush, roller trowel, roll coat, knife coat	30 days plus	4.4(3)
4224-NF Clear Industrial Adhesive	Neutral colored version of 4224-NF Adhesive.	40%	None	Thick liquid	Clear	Spray, brush, roller trowel, roll coat, knife coat	30 days plus	4.4(3)
4268-NF Industrial Adhesive	High-coverage pressure-sensitive adhesive with repositionability. Low VOC content and low odor.	48%	None	Medium liquid	Clear	Spray, brush, roller trowel, roll coat, knife coat	30 days plus	6.3(3)
4289-NF Industrial Mastic Adhesive	High strength bonds for styrene and beadboard without cavitation. Non-sag on vertical surfaces. Freeze-thaw stable. Low VOC content.	69%	None	Mastic	Black	Caulk, flow, trowel	30 minutes	N/A

(1) Canvas to cold rolled steel @ 2.0 inches/minute separation rate.

(2) Supported vinyl to wood @ 2.0 inches/minute separation rate.

(3) Primed polyester to steel @ 2.0 inches/min. separation rate.

Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

Product Information:
Scotch-Grip™ and Fastbond™ High Performance Contact Adhesives

A complete line of high strength "contact" type adhesives with years of successful history in a wide range of industrial product assembly applications.

Product	Features	Solids Wt. (Approx.)	Flash Point	Consis-tency	Color (Dry Film)	Applica-tion Method	Bonding Range	Overlap Shear Strength (PSI) 75°F (24°C)	Overlap Shear Strength (PSI) 180°F (82°C)	Peel Strength (PIW) 75°F (24°C)
5 Green	Rapid strength build-up. Heat and creep resistant bond. Meets mil spec MMM-A-121.	19%	-14°F (-26°C)	Thin liquid	Green	Spray	30 min. minimum	482(1)	65(1)	19 (2)
5 Neutral	Neutral colored version of Fastbond 5 Adhesive.	19%	-14°F (-26°C)	Thin liquid	Light yellow	Spray	30 min. minimum	482(1)	65(1)	19 (2)
10 Neutral	Similar performance to 5 Neutral Adhesive. Brushable with higher coverage. Meets mil spec MMM-A-121.	22%	-14°F (-26°C)	Thin liquid	Light yellow	Brush roller	30 min. minimum	482(1)	65(1)	19 (2)
1357	Rapid strength build-up to a very high strength bond for metal. Resists heat and continuous load stress. Meets MIL-A-21366A, MMM-A-121.	25%	-14°F (-26°C)	Thin liquid	Gray-green	Brush, spray	30 min. minimum	536(1)	199(1)	42 (2)
1357 Neutral	Neutral colored version of 1357 Adhesive.	25%	-14°F (-26°C)	Thin liquid	Light yellow	Brush, spray	30 min. minimum	536(1)	199(1)	42 (2)
1357-L	Lower solids, lower viscosity version of 1357 Adhesive for automatic spray applications.	18%	-14°F (-26°C)	Thin liquid	Gray-green	Spray	30 min. minimum	536(1)	199(1)	42 (2)

Scotch-Grip™ Rubber and Gasket Adhesives

A versatile line of high strength adhesives that are used throughout industry to bond many rubber and gasket materials to themselves and to other substrates.

Product	Features	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Consis-tency	Color (Dry Film)	Applica-tion Method	Bonding Range	Overlap Shear Strength (PSI) 75°F (24°C)	Overlap Shear Strength (PSI) 180°F (82°C)	Peel Strength (PIW) 75°F (24°C)
847	Quick drying and flexible with fuel and oil resistance. Heat and solvent reactivatable. Curable with heat.	36%	0°F (-18°C)	Medium liquid	Brown	Brush, flow	Up to 15 minutes	200(1)	9(1)	40(2)
847-L	Lower viscosity version of 847 Adhesive for spray application.	24%	0°F (-18°C)	Thin syrup	Brown	Spray, brush	Up to 20 minutes	200(1)	9(1)	40(2)
847-H	Higher viscosity version of 847 Adhesive.	50%	0°F (-18°C)	Thick syrup	Brown	Brush, flow	Up to 10 minutes	200(1)	9(1)	40(2)
1300	High immediate strength, fast-drying, and heat resistant for rubber and metal.	37%	-14°F (-26°C)	Medium liquid	Yellow	Brush, flow	Up to 12 minutes	549(1)	136(1)	52 (2)
1300-L	Lower viscosity version of 1300 Adhesive. Sprayable. Meets Mil Spec MMM-A-121.	29%	-14°F (-26°C)	Thin liquid	Yellow	Spray, brush	Up to 8 minutes	549(1)	136(1)	52 (2)
1300 Roll Coatable	Slower drying, roll coatable version of 1300 Adhesive.	32%	-40°F (4°C)	Thin liquid	Yellow	Spray, brush, flow, roll coat	Up to 15 minutes	549(1)	136(1)	52 (2)
2141	Easy-brushing general purpose rubber adhesive with excellent water resistance.	30%	-14°F (-26°C)	Medium liquid	Light yellow	Brush, flow	Up to 15 minutes	–	–	32 (2)

(1) Birch plywood to birch plywood @ 0.1 inches/ minute separation rate

(2) Canvas to cold rolled steel @ 2.0 inches/minute separation rate

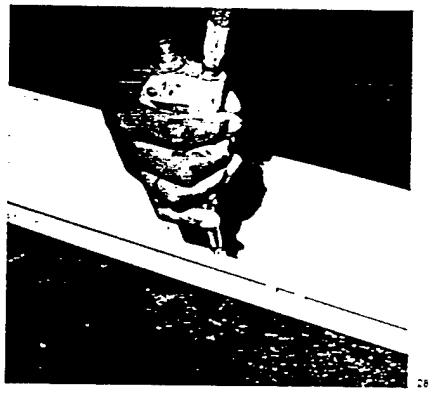
Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

Scotch-Grip™ and Fastbond™ Industrial Adhesives

A full line of adhesives with versatile substrate and application capabilities for a wide range of industrial product assembly applications.

Product	Features	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Consistency	Color (Dry Film)	Application Method	Bonding Range	Overlap Shear Strength (PSI) 75°F (24°C)	Peel Strength (PIW) 75°F (24°C)
959 Mastic	Dries to a tough, permanently flexible film that can bond mirrors (test for backing compatibility). Water resistant.	62%	-14°F (-26°C)	Thick paste	Cream	Caulk flow	Up to 20 minutes	–	N/A
1870 Industrial Adhesive	Single surface application with very long tack range. Resists bleed through. Flexible bond.	26%	-7°F (-22°C)	Thin liquid	Tan	Spray, brush	Up to 40 minutes	N/A	7[3]
4323 Construction Mastic	Resistant to wear, heat and dead load creep.	66%	1°F (-17°C)	Mastic	Gray	Caulk, flow, trowel	Up to 20 minutes	290+[1]	N/A
4550 Industrial Adhesive	Fast tacking, low pressure sprayable adhesive with long bonding range. Listed under UL INC.® Component Recognition Category MAGW2 (Adhesives, Insulation). File Number MH6288(N).	35%	Less than -20°F (-29°C)	Medium liquid	Clear/ trans-lucent	Spray	Up to 60 minutes	N/A	23[2]
4799 Industrial Adhesive	Brushable paste consistency with low soak-in on porous surfaces. Can bond EPDM rubber.	36%	-14°F (-26°C)	Thin paste	Black	Brush trowel	Up to 15 minutes	N/A	28[2]
5298 Industrial Adhesive	One part, 100% solids moisture curing liquid urethane adhesive which can bond wood, metal and many plastics without primers. Sets to handling strength in 4 to 6 hours or less.	100%	>395°F (>-203°C)	Thick liquid	Clear	Flow or trowel	Up to 15 minutes	400[3]	N/A
5497 Industrial Adhesive	One part, 100% solids moisture curing liquid urethane adhesive which can bond wood, metal and many plastics without primers. Sets to handling strength in 30 to 60 minutes.	100%	>300°F (>-149°C)	Thick liquid	Clear	Flow or trowel	5 minutes	30[3]	N/A

(1) Fir plywood to itself @ 2.0 inches/min. separation rate. Wood failure.
(2) Canvas to cold rolled steel @ 2.0 inches/min. separation rate.
(3) Maple to itself @ 50% R.H. Test at 0.1 inches/min. separation rate.



To prevent moisture penetration, a pressure flow gun applies Scotch-Grip Rubber and Gasket Adhesive to bond a rubber gasket in the cover of a commercial light fixture.

Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

Product Information:
Scotch-Grip™ Plastic Adhesives

A complete line of high-strength, fast-drying adhesives with unique plastic bonding capabilities for a wide variety of industries.

Product	Features	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Consis-tency	Color (Dry Film)	Applica-tion Method	Bonding Range	Overlap Shear Strength (PSI) 75°F (24°C)	Overlap Shear Strength (PSI) 180°F (82°C)	Peel Strength (PIW) 75°F (24°C)
826	Fast drying adhesive for many plastic films. Resists aromatic and aliphatic fuels, water, oil.	24%	35°F (3°C)	Thin liquid	Amber	Spray, brush	Up to 45 minutes	198(1)	59(1)	27(3)
1099	Fast drying and heat curable. Resists weathering, water, oil, plasticizer migration, aliphatic fuels. Meets MIL-A-13883B, Type I and MMM-A-189C, Class 2.	32%	0°F (-18°C)	Medium liquid	Light Tan	Brush, flow	Up to 40 minutes	1306(1)(2)	643(1)(2)	31(3)
1099-L	A sprayable version of 1099 Adhesive.	24%	0°F (-18°C)	Thin liquid	Tan	Spray, brush	Up to 20 minutes	1306(1)(2)	643(1)(2)	31(3)
2262	Quick tack, clear and non-staining. Resists plasticizer migration for bonding many flexible vinyls.	25%	-0°F (-18°C)	Thin liquid	Clear	Brush, flow	Up to 20 minutes	N/A	N/A	17(4)
4475	Clear, fast tacking and dries quickly to a firm bond. Resists water, plasticizer migration, detergent, oils and grease.	42%	20°F (-7°C)	Medium liquid	Clear	Flow	Up to 10 minutes	N/A	N/A	44(3)
4693	Long tack range. Water and heat resistant bond for many plastics including polyethylene and polypropylene.	24%	-0°F (-18°C)	Thin liquid	Clear	Spray, brush	Up to 60 minutes	N/A	N/A	22(3)

(1) Aluminum to aluminum @ 0.1 inches/minute separation rate

(2) Bonds heat cured for 15 minutes @ 325°F, 150 PSI

(3) Canvas to cold rolled steel @ 2.0 inches/minute separation rate

(4) Unsupported vinyl to steel @ 2.0 inches/minute separation rate

Scotch-Grip™ Solvents

A line of solvents for clean-up, surface preparation, and solvent reactivation of many adhesives, coatings and sealers.

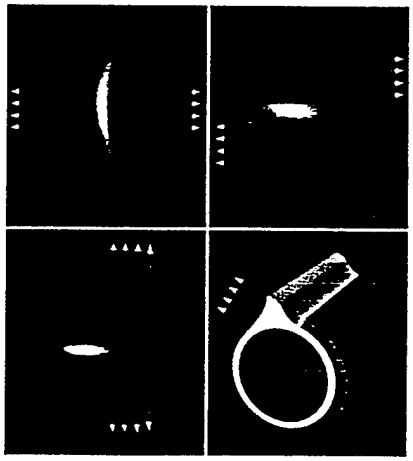
Product	Features	Base	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Con-sistency	Color	Appli-cation Method
No. 2	Contains petroleum distillate and toluene for removing many oil-soluble adhesives, coatings and sealers. Not recommended for surface preparation.	Toluene Aliphatic Blend	0%	-14°F (-26°C)	Very thin liquid	Clear	Brush, dip spray
No. 3	Contains methyl ethyl ketone for removing many oil-resistant adhesives, coatings and sealers and solvent reactivation of pre-applied adhesives. Cleans surfaces prior to bonding.	Methyl Ethyl Ketone	0%	-20°F (-7°C)	Very thin liquid	Clear	Brush, dip spray

Scotch-Seal™ and Weatherban™ Sealants

A versatile line of products for a wide variety of sealant applications.

Product	Features	Solids Wt. (Approx.)	Flash Point (Closed Cup)	Consis-tency	Color (Dry)	Application Method	Cure or Dry Time	Service Temp. Range
606-NF Sealant	Smooth handling, weather resistant sealant for metal, wood, painted or primed surfaces and certain abraded plastics. Skins over in 20-40 minutes with low shrinkage. Permits weld-through and painting.	78%	None	Pumpable paste	White	Hand or pressure caulk	7 days (¼" dia. bead)	-20° to 180°F (-29° to 82°C)
800 Sealant	Air dries to a flexible, rubbery seal for aluminum, cold rolled steel, galvanized steel, glass, many plastics and other surfaces. Resists weather, water, oils, fuel, detergent and soap solutions.	51.5%	20°F (-7°C)	Heavy liquid	Reddish brown	Brush or flow	1-3 days	-65° to 200°F (-54° to 93°C)
900 Sealant	Firm, rubbery seal with gap filling properties for aluminum, galvanized steel, cold rolled steel and more. Economically seals medium and high pressure heating and air conditioning ducts.	66%	1°F (-17°C)	Mastic	Gray	Hand or pressure caulk	1-2 days	0° to 180°F (-18° to 82°C)
1103 Sealant	Weather resistant seal for glass, aluminum, cold rolled steel, galvanized steel, rubber and wood.	45%	40°F (4°C)	Medium liquid	Clear	Brush or flow	1-2 days (⅛" dia. bead)	-20° to 160°F (-29° to 71°C)
1252 Tamper proof Sealant	Fire retardant seal for aluminum, glass, galvanized steel, cold rolled steel and most plastics. Resists oil, gasoline, water, jet fuel and fungus. Will not corrode metal. Tack free in 20 seconds.	70%	20°F (-7°C)	Thin paste	White	Pressure flow gun	24 hours (⅛" dia. bead)	-20° to 250°F (-29° to 121°C)
2084 Sealant	Adheres to metal, wood and glass. Seals metal to glass in windows and doors. Resists weather, water, oil and gasoline.	46%	0°F (-18°C)	Heavy liquid	Aluminum	Brush or flow	24 hours (⅛" dia. bead)	-30° to 250°F (-34° to 121°C)
5200 Sealant	Rubbery, extremely strong sealant/adhesive for mahogany, teak, cedar, fir, plywood and fiberglass. Nonshrinking, one-part moisture cure. Resists weather, fresh and salt water.	Greater than 99%	Greater than 150°F (66°C)	Thixo-tropic paste	White, mahogany or tan	Hand or pressure caulk	7 days (¼" dia. bead)	-30° to 200°F (-1° to 93°C)
5354 Sealant Tape	High tack, adheres aggressively to porous and non-porous surfaces. Easy to compress and resists cold flow.	100%	None	Solid sealant tape	Black	Apply by hand	Non-drying or curing	-65° to 190°F (-54° to 88°C)
PF-5422 Sealant Tape	Thread reinforced for dimensional stability and die-cutting. Repositionable with virtually no cleanup. Weather resistant adhesion to glass, metal and many other non-porous surfaces.	100%	None	Solid sealant tape	Black	Apply by hand	Non-drying or curing	-40° to 200°F (-40° to 93°C)
PF-5423 Sealant Tape	Nonreinforced thinner product similar to PF 5422 Sealant Tape.	100%	None	Solid sealant tape	Black	Apply by hand	Non-drying or curing	-40° to 200°F (-40° to 93°C)

Note: The technical information and data on these pages should be considered representative or typical only, and should not be used for specification purposes.



Convenience, speed and a fistful of real work power.

3M aerosol products go to the job and are always ready when needed. Only a touch of the finger bonds, cleans, lubricates or handles a variety of other jobs. Most of our aerosol adhesives have a controlled spray pattern which helps minimize overspray and clean-up.

That's convenience and speed... and you get both without sacrificing performance. With job-matched formulations, you have a fistful of technology that gets jobs done reliably and cost effectively.

3M introduced the first industrial-grade aerosol adhesive over 30 years ago and continues to lead the way with lace spray technology and other product advancements.

User-friendly economics. As handy self-contained applicators, 3M aerosols often save the expense of complex application systems. The compact container size combined with storage stability can help to reduce your storage costs. And with clean, targeted application, you get more usable product for your money.

Convenience, speed, performance and cost effectiveness—that's real work power. And 3M combined it all in a full line of aerosol "power tools" that are proven "user-friendly" worldwide.

The line includes:

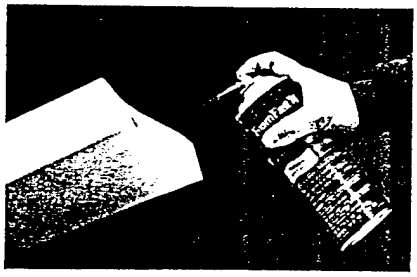
- Industrial-quality Aerosol Adhesives
- Aerosol Chemicals for Maintenance and Production (also available in spray pump)
- Shipping-Mate™ Aerosols for Packaging
- New, water-based General Purpose Spray Adhesive

These products contain no methylene chloride, chlorofluorocarbons (CFCs), or 1,1,1-trichloroethane (methyl chloroform).

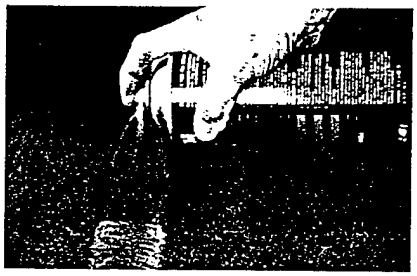
A variety of ways to help speed assembly jobs, reduce costs.

With fast tack, long bonding range and little or no soak-in, Super 77 Spray Adhesive is a versatile tool for bonding many lightweight materials.

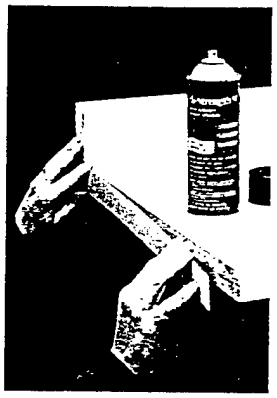
Aerosol Adhesives



Super 74 FoamFast Adhesive quickly bonds flexible urethane or latex foams to themselves and many other lightweight materials.

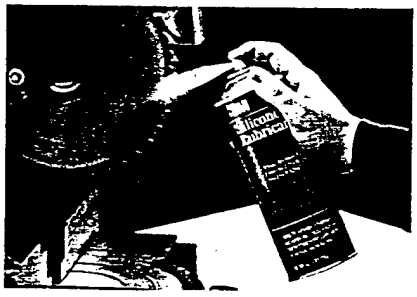


Low-misting lace spray pattern of 72, 74, 76, 80 and 90 Adhesives target adhesive where you want it for clean, precise application.

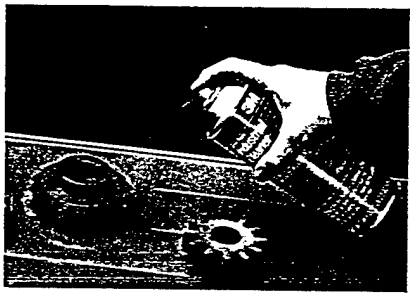


In edge banding, 90 Hi-Strength Adhesive typically bonds in 60 seconds compared to 15-20 minutes for many typical bulk contact adhesives.

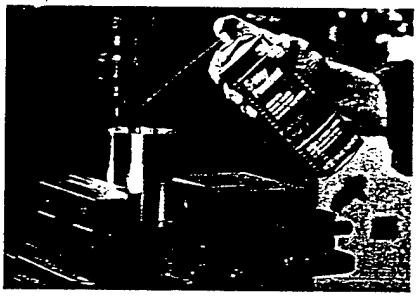
Chemicals for maintenance and production



Silicone Lubricant lubricates cutting tools and tables. Helps prevent build-up of glues, wax, inks, paints. Won't stain or become gummy. Available in aerosol or spray pump.



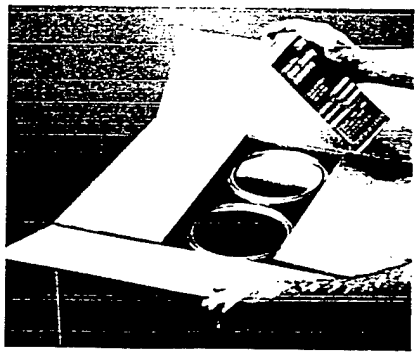
Citrus Base Cleaner is a heavy-duty degreaser/cleaner for grease, oils, grime, inks, tape residue and most non-curing adhesives. Non-corrosive, it has a fresh citrus scent. Available in aerosol or spray pump.



5-Way Penetrant helps free rusted bolts, lubricates and cleans, drives out moisture. Also excellent as a tapping liquid for stainless steel, aluminum. Available in aerosol or spray pump (as 5-Way Plus Penetrant).

Shipping-Mate Aerosols for packaging

Box Re-Nu Coating covers most printing and labels with permanent tan color for reuse of corrugated cartons.



Case Sealing Adhesive can help save you time and money if you have cartons that come unglued...fill cartons by hand...open cartons for inspection...or fill miscellaneous orders.

Clear Labeling Adhesive sticks to many problem surfaces such as glass, rubber or metal where many other adhesives or gummed labels may fail.

Based on 3M pioneering technology, these aerosol adhesives are precisely formulated for industrial performance requirements.

Product	Features	Spray Width	Bonding Range Surfaces One/Both	Shear[1] Initial/ Ultimate	Relative Adhesion Peel Strength (PIW)[2]	Relative Adhesion Temp. Resist.[3]	Coverage Sq. Ft./ Cont.[5] (typical)
72 Pressure Sensitive Adhesive	Repositionable with aggressive tack for bonding polyethylene film and foam; also carpet bonding. Blue color.	1"-3" variable	8 hr./7 days	20 PSI/ 85 PSI	8	120°F (49°C)	100
Super 74 FoamFast Adhesive	Fast tack with foam-tearing strength and soft, non-dimpling glue line. General upholstery foam bonding. Plus knife edge bonding, boxing, edge turning.	1"-3" variable	N/R / 15 min.	40/205	20	120°F (49°C)	260
75 Repositionable Adhesive	Clear "tape-like" adhesive holds badges during stitching and patterns prior to cutting. No bleed, stain or wrinkle.	1½"	1 hr./3 hrs.	15/65	5	120°F (49°C)	100*
76 High Tack Adhesive	Multi-purpose with high temperature resistance and strong one-surface bonds.	1"-3" variable	10 min./1 hr.	25/100	25	160°F (71°C)	100
Super 77 Spray Adhesive	Fast, aggressive tack for bonding many lightweight materials. Choice of round or fan pattern nozzle.	1"-3"	15 min./30 min.	25/160	15	110°F (43°C)	220
80 Neoprene Contact Adhesive	Neoprene-based contact adhesive with plasticizer resistance. Can bond supported vinyl, leather, most rubber. Adheres to most plastics, laminate and wood. Resists over 200°F (93°C).	1"-2" variable	N/R / 1 hr.	50/400	35	200°F (93°C)	75/30[4]
90 Hi-Strength Adhesive	High contact strength for bonding decorative laminate. Adheres polyethylene and polypropylene to wood, metal, and more. One minute dry time.	1"-3" variable	N/R / 15 min.	45/230	25	160°F (71°C)	100

N/R = Not recommended
N/A = Not applicable
(1) ITSD T.M. C-700: ⅛" birch veneer bonded to ⅛" birch veneer
(2) ITSD T.M. C-449
(3) ITSD T.M. C-483; 500 g load for 1 hr. at noted temp.
(4) Plastic laminate bonding @ 3-5 g/sq. ft. coverage
(5) Coverage based on container sizes 24 ounce or * 16 ounce size cans.

Shipping-Mate Packaging Aerosols

Containment, communication and protection are a package's full job. And with these aerosols you can put packages to work more conveniently.

Product	Features	Spray Width	Bonding Range Surfaces One/Both	Relative Adhesion Shear[1] Initial/ Ultimate	Relative Adhesion Peel Strength[2]	Temp. Resist.[3]	Coverage Sq. Ft./ Cont.[4]
Case Sealing Adhesive	Ten-second holding strength with carton-tearing strength in 5 minutes. Convenient for shipping room carton closure and warehouse reclosure after inspection.	3"	N/R/15 min.	40 PSI/ 160 PSI	N/A	160°F (71°C)	100
Labeling Adhesive	Clear, fast-tacking. Holds labels to many corrugated cartons and problem surfaces such as glass, plastic and more. Moisture-resistant bond.	2½"	10 min. / N/R	15/120	N/A	130°F (54°C)	90
Palletizing Adhesive	Nearly immediate tack permits bags to be stacked on pallets without slipping. Easy separation after shipment. Clear color.	1½"	10 min. / N/R	10/10	N/A	120°F (49°C)	300
Box Re-Nu Coating	Covers most printing and labels with permanent tan color for reuse of corrugated cartons.	3"	N/A / N/A	N/A / N/A	N/A	250°F (121°C)	25

N/R = Not recommended
N/A = Not applicable
(1) ITSD T.M. C-700: ⅛" birch veneer bonded to ⅛" birch veneer
(2) ITSD T.M. C-449
(3) ITSD T.M. C-483; 500 g load for 1 hr. at noted temp.
(4) All container sizes 24-fl. oz. except Box Re-Nu Coating.

Note: This technical information and data should be considered representative or typical only, and should not be used for specification purposes.

Aerosol Chemicals

For maintenance and production, these aerosol chemicals are performance proven daily in thousands of applications. Lubricating, cleaning, inhibiting rust and other tough jobs become finger-touch easy.

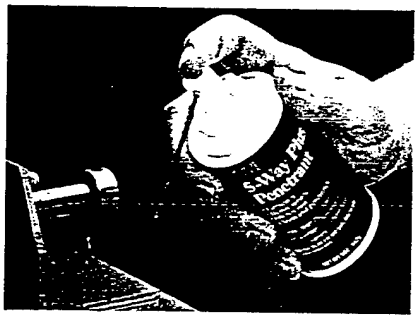
Product	Features	Temperature Resistance*
Silicone Lubricant	Lubricates cutting tools and tables. Helps prevent build-up of glues, wax, inks, paints. Won't stain or become gummy. FDA listed ingredients.**	350°F (177°C)
5-Way Penetrant	Penetrates, lubricates, demoisturizes, cleans and helps prevent rust. Frees rusted, frozen nuts. "Dries out" electrical apparatus. Inhibits corrosion and pitting of molding dies and extension screws.	N/A*
Citrus Base Cleaner	Multi-purpose, citrus-scented cleaner removes grease, dirt, oil and adhesive overspray from equipment. Softens liquid adhesive and tape residue.	N/A*

*N/A = Not applicable

Spray Pump Chemicals

These spray pump maintenance chemicals deliver ingredients in a convenient palm-sized applicator, without the use of aerosol propellants.

Product	Features	Temperature Resistance*
Silicone Lubricant	Lubricates cutting tools and tables. Helps prevent build-up of glues, wax, inks, paints. Won't stain or become gummy. FDA listed ingredients.**	350°F (177°C)
5-Way Penetrant	Penetrates, lubricates, demoisturizes, cleans and helps prevent rust. Frees rusted, frozen nuts. Inhibits corrosion and pitting of molding dies and extension screws.	N/A*
Citrus Base Cleaner	Multi-purpose, citrus-scented cleaner removes grease, dirt, oil and adhesive overspray from equipment. Softens liquid adhesive and tape residue. FDA listed ingredients.***	N/A*



5-Way Penetrant

Citrus Base Cleaner

** The ingredients of the product when dried after application are listed as indirect food additives under FDA regulations 21 CFR § 178.3570, § 178.3910, and § 181.28.

*** The ingredients of the product when dried after application are listed as GRAS under FDA regulations 21 CFR § 184.1, et seq. or as indirect food additives under FDA regulations 21 CFR § 178.3400, § 178.3910, and § 181.30.

Note: This technical information and data should be considered representative or typical only, and should not be used for specification purposes.

Water-Based Aerosol Adhesive

New technology has produced this water-based, low VOC spray adhesive with bonding strength and heat resistance comparable to many solvent-based aerosol products.

Product	Features	Spray Width	Bonding Range Surfaces One/Both	Relative Adhesion Shear(1) Initial/ Ultimate	Relative Adhesion Peel Strength(2)	Temp. Resist.(3)	Coverage Sq. Ft./ Cont.
General Purpose Spray Adhesive 201	Water-based, non-flammable. Bonds many lightweight substrates from paper and fabrics to plastics, wood, aluminum and more.	2"-3"	30 min. / 60 min.	20/275 PSI	23 PIW	160°F (71°C)	>100 (16 oz. can)

(1) ITSD T.M. C-700: ¼" birch veneer bonded to ¼" birch veneer
(2) ITSD T.M. C-449
(3) ITSD T.M. C-483, 500 g load for 1 hr. at noted temp.

Systems approach to improving productivity and lowering costs.

Hot melt bonding systems are becoming more important to manufacturers as pressures increase to improve productivity, lower costs, and conserve energy. Hot Melt Bonding Systems from 3M provide effective support in all of these areas.

Jet-melt™ Adhesives are 100% solid, solvent-free thermoplastic resins that become fluid when heated. In the molten state, they quickly wet out the surface and upon cooling harden to form a strong bond to many surfaces. Most of the bond strength is usually achieved in seconds often eliminating the need for clamps or fixturing.

Assemblies can be moved immediately to keep production flowing. No space or energy is consumed for drying.

Each adhesive is engineered for use in one of the portable, lightweight Polygun™ Applicators—easy-to-use equipment that has established 3M as the leader and innovator in melt-on-demand technology.

For packaging, special adhesives and applicator accessories provide speed, convenience and economy for a variety of manual carton sealing operations.

Jet-melt Adhesives bond wood, plastic, foam, fabric, rubber, cardboard and many other surfaces.

Polygun II LT – a portable, self-contained, pneumatic applicator for "low-melt" adhesives applied at just 265°F (129°C). Delivery rate of up to 6.0 pounds of 3M adhesive per hour.

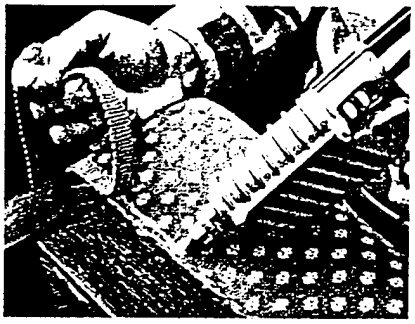
Polygun II Applicator—a portable, self-contained, pneumatic applicator with an adhesive delivery rate of up to 7.5 pounds of 3M adhesive per hour. Preferred for higher volume bonding needs.

Polygun TC Applicator—rugged and reliable, this compact, all-electric handgun weighs just 10 ounces. Delivers up to 3.5 pounds of 3M adhesive per hour. Widely used in the industrial market.

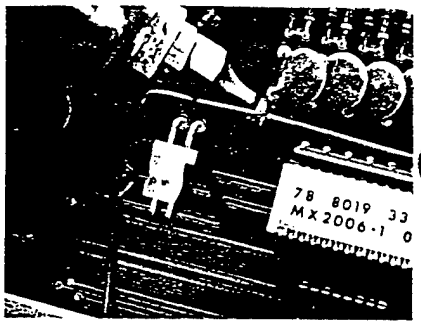
Polygun EC Applicator—high performance, electronic controlled applicator. Offers latest in hand-held applicator technology including exclusive solid-state temperature controller, many other unique features. Adhesive delivery rate is 2.5 to 5.5 pounds of 3M adhesive per hour.

Polygun LT Applicator (with Quadrack™ Conveyor)—operates at just 265°F (129°C). Designed to apply the new low melt versions of Jet-melt adhesives.

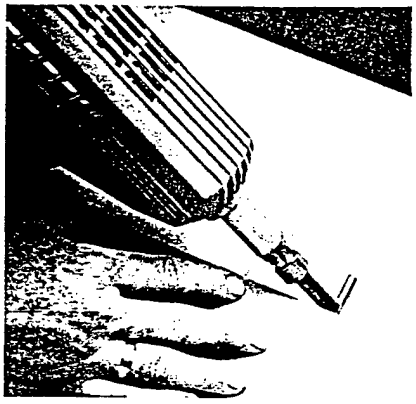
Effective answers to many of your product assembly and manual case sealing needs.



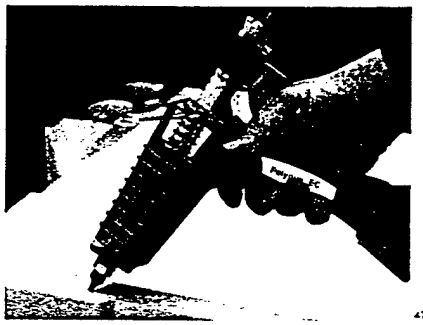
Polygun LT Applicator and Jet-melt Adhesives make an ideal system for welting and gimping, bonding fabric to wood.



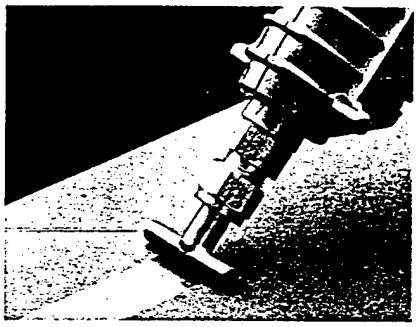
In electronic applications, Polygun TC Applicator delivers high performance and control for tacking, mounting, unitizing, potting, coil terminating and more.



With special T-tip, Polygun II Applicator seals regular slotted cartons in a fast, single motion.



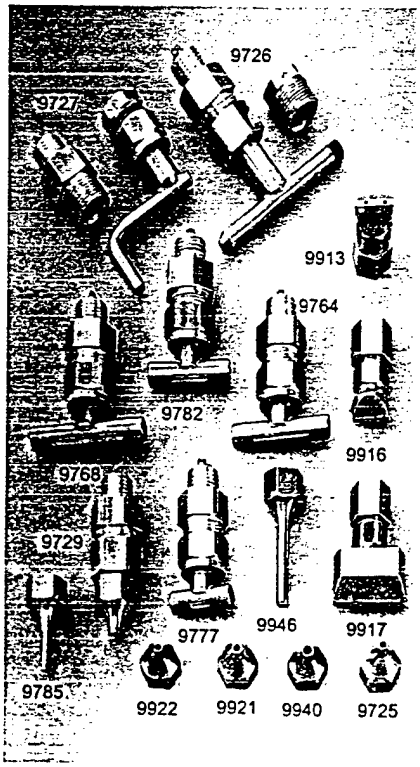
Polygun EC Applicator can be used with 3M low-melt adhesive to effectively bond heat-sensitive substrates such as styrene foam.



Jet-melt 3755-LM Adhesive, a low melt, "delayed-tack" adhesive, can be applied in a thin uniform ribbon—lets you take up to 45 seconds to make your bond.

Job-tailored applicator tips

Every Polygun Applicator comes with a standard tip engineered for optimum general-purpose use. To help maximize productivity on specific jobs, however, you can select from a variety of optional tips and spreaders.



Tip No.	Description	Stock No.
9913	2 Hole Spreader	62-9913-9930-4
9916	3 Hole Spreader	62-9916-9930-7
9917	3 Hole 1" Spreader	62-9917-9930-5
9921	.090" Fluted	62-9921-0066-9
9922	.063" Fluted	62-9922-0066-7
9940	.125" Fluted Tip	62-9940-6920-1
9946	.072" Brass Extension	62-9946-6980-2
9725	Mini Extension Tip .072" Opening	62-9725-9930-2
9726	"T" Tip (shown with valve and adaptor) for all Polygun Applicators	62-9726-9930-0
9727	"L" Tip (shown with adaptor and valve) for all Polygun Applicators	62-9727-9930-8
9729	High Viscosity Valve	62-9729-9930-4
9785	.070" Tapered Aluminum Extension	62-9785-9930-6
9777	¼" Slotted Spreader (3755 only)	62-9777-9930-3
9782	½" Slotted Spreader (3755 only)	62-9782-9930-3
9764	¾" Slotted Spreader (3755 only)	62-9764-9930-1
9768	1" Slotted Spreader (3755 only)	62-9768-9930-3

Product Number, Color	FDA Listed Ingredients(1)	UL 94 Listing	Features	Sizes	Temp. Control Setting	Flash Point (°F/°C)	Auto Ignition (°F/°C)
Low-Melt Technology: Applied at only 265°F (129°C), these Jet-melt "LM" adhesives bond heat-sensitive substrates.							
3755-LM Clear	Y	N/A	**"Delayed-tack"** applied in **thin-glue-line** ribbon for bonding paper, corrugated, chipboard, P.O.P. displays and exhibits.	⅜" x 2"	NA	509/265	565/296 @250°F
3762-LM Lt. Amber	Y	V 2	**Improved "hot tack"** when dispensed at low melt temperature. Can bond beadboard, corrugated, displays.	1" x 3" ⅜" x 2" ⅜" x 8"	1	509/265	545/285
3776-LM Tan	N/A	N/A	**General purpose** medium performance. Can bond lightweight materials (paper, fibrous glass, cloth) to painted/primed metal, including most light-gauged. Not for structural applications.	1" x 3" ⅜" x 8"	1	460/238	627/330
3778-LM Tan	N/A	N/A	**Good delivery** and **medium bonding range.** Can bond many wood and wood-like substrates. Excellent for woodworking and cabinet shops.	1" x 3" ⅜" x 8"	1	536/280	683/362
3792-LM Clear	Y	V 2	**Long bonding range** when dispensed at low melt temperature. Can bond woods, P.O.P. displays, corrugated and other lightweight materials.	1" x 3" ⅜" x 2" ⅜" x 8"	1	550/288	574/301
Hot-Melt Technology							
3738 Tan	Y	V 2	**High delivery** and **long bonding range.** General purpose for wood, plastics for exhibit-building, furniture.	1" x 3" ½" x 12" ⅜" x 2" ⅜" x 8"	4	550/288	803/428
3747 Tan	Y	N/A	**General purpose** including plastic, wood and light gauge metal. **Good heat resistance** and flexibility. Medium performance.	1" x 3" ½" x 12" ⅜" x 2" ⅜" x 8"	4	509/265	572/ 300
3748 Off-white	Y	V2	**Good thermal and electrical properties.** Non-corrosive to copper. Can bond **polyethylene** and **polypropylene.**	1" x 3" ⅜" x 2" ⅜" x 8"	4	536/280	626/330
3748 V-0 Light Yellow	N	V0	Self-extinguishing version of 3748 Adhesive meets **UL 94 V-0**, UL 1410 requirements.	1" x 3" ⅜" x 2" ⅜" x 8"	4	536/280	626/330
3762 Tan	Y	V 2	Excellent "hot tack" fast-setting for corrugated packaging, recouperage, repacking area, warehouse. **Low cost, general purpose.**	1" x 3" ½" x 12" ⅜" x 2" ⅜" x 8"	3	500/260	775/413
3764 Clear	Y	V 2	**Can bond many plastics, polyolefins.** Good impact resistance at low temperature.	1" x 3" ½" x 12" ⅜" x 2" ⅜" x 8"	4	514/267	807/431
3779 Amber	Y	V0	**Good electrical properties** with high heat resistance for potting, wire staking. **UL 94 V-0.**	1" x 3" ⅜" x 2" ⅜" x 8"	NA	550/288	895/479
3783 Brown	Y	N/A	Multi-purpose with good heat and impact resistance. **Can bond many plastics and light gauge metals.**	1" x 3" ⅜" x 2"	NA	480/249	827/442
3789 Brown	Y	V2	**High performance for plastic.** Impact resistant. Also can bond wood and vinyl.	1" x 3" ⅜" x 8"	5	635/335	702/372
3792 Clear	Y	V2	**Clear multi-purpose product** for wood, corrugated, light-weight substrates. Furniture, upholstery, novelties.	1" x 3" ½" x 12" ⅜" x 2" ⅜" x 8"	4	450/232	800/427
3796 Lt. Tan	N	N/A	Multi-purpose with heat resistance. **High performance for many plastics and light gauge metals.**	1" x 3" ⅜" x 2"	NA	480/249	662/ 350
3797 Lt. Grey	Y	V2	**Good electrical properties**, good flow and heat resistance for potting.	1" x 3" ⅜" x 2"	NA	570/299	700/371

(1) The ingredients of the product when dried after application are listed as indirect food additives under FDA regulation 21 CFR § 175.105.

(2) ASTM E-28-6-7

(3) Brookfield Thermosel Viscometer in Centipoise

(4) On canvas

Viscosity CPS [3] (375°F)	Delivery Rate (sec.) for 1" x 3" Cartridge	Ball & Ring Soft Point [2] (°F/°C)	Heat Resistance (°F/°C)	Impact Resistance (In.-Lbs.) 0°F (-18°C)	Impact Resistance (In.-Lbs.) 72°F (22°C)	Peel Strength PIW [4] 72°(22°C)	Shear Strength PSI [5] 72°(22°C)	Tensile Strength PSI 72°(22°C)	Elongation %	Bonding Range 1/8" Bead (Sec.) [6]
yrene foam.										
13000	NA	157/70	120/49	10	14	13	500	380	400	120
4000 @250°F	45	205/96	130/54	10	13	6	480	600	300	25
8250	47	184/84	140/60	9	13	9	600	270	600	40
7000	46	186/85	140/60	10	14	8	435	300	130	40
10500 @250°F	57	178/81	140/60	11	62	13	350	547	125	40
2875	35	186/86	130/54	13	36	13	375	360	1000	50
4100	45	220/104	145/63	11	25	20	430	750	1300	45
5000	65	292/144	175/79	11	24	18	250	375	1100	45
5500	65	305/152	175/79	10	50	15	275	200	1850	30
1870	30	201/94	130/54	11	20	7	545	450	400	35
6000	55	190/88	140/60	14	58	14	390	650	625	40
7000	75	325/163	300/149	11	22	18	700	2100	300	25
10000	60	190/88	145/63	12	38	22	500	900	500	45
5200	70	270/132	220/104	14	40	16	570	520	600	50
5000	45	179/81	140/60	13	42	13	250	400	750	50
7500	120	240/116	200/93	13	29	29	550	363	930	40
2650	55	304/151	170/77	9	19	10	350	283	98	30

(5) On Douglas Fir
(6) 1/4" semicircular bead, Douglas Fir to Douglas Fir

Note: The technical information and data above should be considered representative or typical only, and should not be used for specification purposes.

Using this Guide

This guide can be used to assist in choosing a product or products to evaluate for a given application. The substrates that may be involved are listed in the first column. The 3M products that you may want to evaluate are grouped by type in the next six columns. For example, you want to bond rubber to ceramic and have structural strength. First, select the substrate heading "Rubber", move down three lines to "Glass and Ceramics" and look under "Structurals". There are several candidate products in this example, available in the Scotch-Weld and Jet-Weld Adhesive product lines.

	Structurals			Non-Structurals		
Wood and Hardboard to:	**Scotch-Weld Adhesives**	**Pronto Instant Adhesives**	**Jet-Weld Adhesives**	**Scotch-Grip and Fastbond Adhesives**	**Aerosols**	**Jet-melt Adhesives**
Wood and Hardboard	2-Part Epoxies and Urethanes	CA-50, CA-100	TE-100, TE-030, TE-031, TS-115, TS-230	F/B 30-NF, 959, 1357 (All), 4323, 5200, F/B 2000-NF	80, 90	3738, 3747, 3778-LM, 3789
Metal	Flexible 2-Part Epoxies, 2-Part Urethanes	CA-50, CA-100	TS-115, TS-230	1357 (All), F/B 5, F/B 10, F/B 2000-NF	80, 90	3747, 3776-LM, 3796
Rubber (except EPDM)	Flexible 2-Part Epoxies, 2-Part Urethanes	CA-50, CA-100	TS-115, TS-230	1357 (All), 1300 (All), 2141, F/B 2000-NF	80, 90*	3747, 3796
EPDM Rubber	–	CA-40[3]	–			–
Glass and Ceramics	Flexible 2-Part Epoxies	CA-50, CA-100	TS-115, TS-230	1357 (All), 1300 (All), 2141	80, 90*	3747, 3796, 3764
Leather	Flexible 2-Part Epoxies	CA-50, CA-100	TE-100, TE-030, TE-031, TS-115, TS-230	847 (All), F/B 30-NF, F/B 2000-NF	80, 90	–
Plastics (Polyolefins)	–	–	–	4693, F/B 2000-NF	72, 76, 90	3748, 3764, 3796, 3792-LM
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies	–	TE-031, TS-230, TS-115	4693, 1099 (All), F/B 2000-NF	72, 77, 80, 90	3748, 3764, 3796, 3792-LM
Plastics (High Performance Nylon)	Flexible 2-Part Epoxies	CA-50, CA-100	–	1099 (All), 4693	77, 80, 90	3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-50, CA-100	TE-100, TE-030, TE-031, TS-115, TS-230	1099 (All), 2262, 4475, F/B 2000-NF	80	3789, 3796
Paper & Cardboard	2-Part Epoxies and Urethanes	–	All Products	F/B 30-NF, 4550, 4268-NF, F/B 2000-NF	72, 75*, 76, 77, 80, 90	3762-LM, 3762, 3792-LM, 3755-LM
Fabric, Felt, Cork & Fiberous Glass	–	–	All Products	4550, 4268-NF, F/B 2000-NF	72, 74, 75*, 76, 77, 80, 90	3738, 3747, 3778-LM, 3792-LM
Flexible Foam (Latex, Urethane)	–	–	All Products	F/B 45-NF, F/B 47-NF, F/B 2000-NF	74	3738, 3747, 3764, 3792
Rigid Foam (Polyboard, Styrofoam)	2-Part Urethanes, Flexible 2-Part Epoxies	–	All Products	F/B 30-NF, 4289-NF, F/B 2000-NF	77	3762-LM, 3792-LM, 3776-LM, 3778-LM, 3755-LM
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	F/B 30-NF, 1357(All), F/B 5, F/B 2000-NF	74, 80	3747, 3764, 3792, 3776-LM

Note: The technical information and data on these pages should be considered representative or typical only, and should not be used for specification purposes.

Metal to:	Structurals: Scotch-Weld Adhesives	Structurals: Pronto Instant Adhesives	Structurals: Jet-Weld Adhesives	Non-Structurals: Scotch-Grip and Fastbond Adhesives	Non-Structurals: Aerosols	Non-Structurals: Jet-melt Adhesives
Metal	Acrylics Epoxies	CA's	–	1357 (All), 1099 (All), 1300 (All)	80, 90	3747[2], 3796, 3776-LM[2]
EPDM Rubber	–	CA-40, CA-40H	–	4799	–	–
Rubber (except EPDM)	Flexible 2-Part Epoxies	CA's	TS-115, TS-230	2141, 1300 (All), 847 (All), F/B 2000-NF[1]	80, 90*	3747, 3796
Glass and Ceramics	Flexible 2-Part Epoxies	–	–	959, 1357 (All)	80, 90	3747, 3764, 3796
Leather	Flexible 2-Part Epoxies	CA-50, CA-100	TS-115, TS-230	847 (All), F/B 2000-NF	80	3789, 3796
Plastics (Polyolefins)	–	–	–	4693, F/B 2000-NF[1]	72, 76, 90	3796,
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies Acrylics	CA's	TS-115, TS-230	4693, 4475, 1357 (All), F/B 2000-NF[1]	72, 77, 80, 90	3747, 3776-LM, 3796
Plastics (High Performance-Nylon)	Flexible 2-Part Epoxies, DP-420, DP-460, Acrylics	CA's	–	1099 (All), 4693	77, 80, 90	3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-40, CA-40H, CA-50, CA-100	TS-115, TS-230	1099 (All), 2262, 4475	80	3789, 3796
Paper & Cardboard	Epoxies	–	TS-115, TS-230	F/B 10, F/B 42-NF (All), 4550, F/B 2000-NF	72, 75*, 76, 77, 80, 90	3747, 3776-LM, 3796
Fabric, Felt, Cork & Fiberous Glass	–	–	TS-115, TS-230	F/B 42-NF (All), 4550, F/B 2000-NF	72, 74, 75*, 76, 77, 80, 90	3747, 3776-LM
Flexible Foam (Latex Urethane)	–	–	TS-115, TS-230	F/B 2000-NF	74	3747, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies	–	TS-115, TS-230	F/B 30-NF, 4289-NF, F/B 2000-NF[1]	77	3776-LM
Rigid Foam (Urethane)	–	CA's	TS-115, TS-230	1357(All), F/B 5, F/B 10, F/B 2000-NF[1]	74, 80	3747, 3796, 3776-LM
Rubber (except EPDM) to:						
Rubber (except EPDM)	Flexible 2-Part Epoxies, 2-Part Urethanes	CA's	TS-115, TS-230	2141, 1300 (All), 847 (All)	80, 90*	3747, 3796
EPDM Rubber	–	CA-40, CA-40H	–	4799	–	–
Glass and Ceramics	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TS-115, TS-230	1300 (All), 2141	80, 90	3747, 3796
Leather	Flexible 2-Part Epoxies	CA-50, CA-100	All Products	847 (All), 2141, 1300, F/B 2000-NF	80	3796
Plastics (Polyolefins)	–	–	–	4693	90	3796
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies, 2-Part Urethanes	CA's	TE-031, TS-230, TS-115	1099 (All), 847 (All), 1300 (All), 959	80, 90	3747, 3796
Plastics (High Performance-Nylon)	Flexible 2-Part Epoxies, 2-Part Urethanes	CA's	–	1099 (All)	80, 90	3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-40, CA-40H, CA-50, CA-100	All Products	1099 (All)	80	3796
Paper & Cardboard	Flexible 2-Part Epoxies, 2-Part Urethanes	–	All Products	1300 (All), 2141, F/B 2000-NF	80, 90	3747, 3796

• Produces a temporary bond on these materials

(1) Adhesives *must* be forced dried and bonded while warm.

(2) For best results, preheat the substrate to a minimum of 120°F (49°C).

(3) Evaluate using surface activator

Rubber (except EPDM): Continued	Structurals			Non-Structurals		
	Scotch-Weld Adhesives	Pronto Instant Adhesives	Jet-Weld Adhesives	Scotch-Grip and Fastbond Adhesives	Aerosols	Jet-melt Adhesives
Fabric, Felt, Cork & Fiberous Glass	–	–	All Products	847, 1300 (All), 2141, F/B 2000-NF	80, 90	3747, 3796
Flexible Foam (Latex, Urethane)	–	–	All Products	F/B 2000-NF	74, 80	3747, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	All Products	F/B 2000-NF	–	–
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	1300 (All), 1357(All), 2141	74, 80	3747, 3796
EPDM Rubber to:						
EPDM Rubber	–	CA-40, CA-40H	–	4799	–	–
Glass & Ceramics	–	–	–	4799	–	–
Leather	–	–	–	–	–	–
Plastics (Polyolefins)	–	–	–	–	–	–
Plastics (ABS, PVC, Acrylic, etc.)	–	CA-40, CA-40H	–	4799	–	–
Plastics (High Performance Nylon)	–	CA-40, CA-40H	–	4799	–	–
Plastics (Flexible Vinyl)	–	CA-40, CA-40H	–	–	–	–
Rubber & Elastomers	–	–	–	4799	–	–
Fabric, Felt, Cork & Fiberous Glass	–	–	–	4799	–	–
Flexible Foam (Latex, Urethane)	–	–	–	–	–	–
Rigid Foam (Beadboard, Styrene)	–	–	–	–	–	–
Rigid Foam (Urethane)	–	–	–	4799	–	–
Glass & Ceramics to:						
Glass & Ceramics	Flexible 2-Part Epoxies, 2-Part Urethanes	–	–	959, 4475	80, 90	–
Leather	Flexible 2-Part Epoxies	–	TS-115, TS-230	847 (All), 1099 (All), F/B 2000-NF	80, 90	3796
Plastics (Polyolefins)	–	–	–	4693	72, 76, 90	3764, 3796, 3792-LM
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TS-115, TS-230	959, 4475	72, 77, 80, 90	3764, 3796
Plastics (High Performance Nylon)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	–	1099 (All), 4693	72, 77, 80, 90	3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	–	TS-115, TS-230	2262, 4475	80	3796
Rubber & Elastomers	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TS-115, TS-230	4268-NF, 4550, F/B 42-NF PLUS, F/B 2000-NF	72, 75*, 76, 77, 90	3764, 3796, 3792-LM

Note: The technical information and data on these pages should be considered representative or typical only and should not be used for specification purposes.

	Structurals			Non-Structurals		
Glass and Ceramics to: Continued	Scotch-Weld Adhesives	Pronto Instant Adhesives	Jet-Weld Adhesives	Scotch-Grip and Fastbond Adhesives	Aerosols	Jet-melt Adhesives
Fabric, Felt, Cork & Fiberous Glass	–	–	TS-115, TS-230	4268-NF, 4550, F/B 42-NF (All), F/B 2000-NF	72, 74, 75*, 77, 90	3764, 3796
Flexible Foam (Latex, Urethane)	–	–	TS-115, TS-230	F/B 2000-NF	74	3764, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TS-115, TS-230	F/B 30-NF, 4213-NF	76, 77	–
Rigid Foam (Urethane)	–	–	TS-115, TS-230	1357 (All), F/B 10, F/B 30-NF	74, 80	3764, 3796
Leather to:						
Leather	Flexible 2-Part Epoxies, 2-Part Urethanes	CA-50	All Products	847, F/B 30-NF, F/B 2000-NF	80, 90	3789, 3796
Plastic (Polyolefins)	–	–	–	F/B 2000-NF	76, 90	3796
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies, 2-Part Urethanes	CA-100	TE-031, TS-230	847 (All), 1099 (All), F/B 2000-NF	80, 90	3789, 3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-50, CA-100	All Products	4475, 1099 (All), F/B 2000-NF	80	3789, 3796
Paper & Cardboard	Flexible 2-Part Epoxies, 2-Part Urethanes	–	All Products	4213-NF, F/B30-NF, F/B 2000-NF	80, 90	3789, 3796
Fabric, Felt, Cork & Fiberous Glass	–	–	All Products	4213-NF, F/B 30-NF, F/B 2000-NF	90	3789, 3796
Flexible Foam (Latex, Urethane)	–	–	All Products	F/B 2000-NF	80	3789, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	All Products	4213-NF, F/B 30-NF, F/B 2000-NF	–	–
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	F/B 30-NF, F/B 2000-NF	80	3789, 3796
Plastics (Polyolefins) to:						
Plastics (Polyolefins)	–	–	–	4693, F/B 2000-NF(1)	72, 76, 90	3748, 3764, 3792-LM, 3796
Plastics (ABS, PVC, Acrylic, etc.)	–	–	–	4693, F/B 2000-NF(1)	72, 90	3748, 3764, 3792-LM, 3796
Plastics (High Performance Nylon)	–	–	–	4693	90	3796
Plastics (Flexible Vinyl)	–	–	–	–	–	3796
Paper & Cardboard	–	–	–	4693, F/B 2000-NF	72, 75*, 76, 90	3748, 3764
Fabric, Felt, Cork, Fiberous Glass	–	–	–	4693, F/B 2000-NF	72, 76, 90	3748, 3764, 3792-LM, 3796
Flexible Foam (Latex, Urethane)	–	–	–	F/B 2000-NF	–	3748, 3764, 3796
Rigid Foam (Beadboard, Styrene)	–	–	–	F/B 2000-NF(1)	–	3792-LM
Rigid Foam (Urethane)	–	–	–	4693, F/B 2000-NF(1)	74	3748, 3764, 3792-LM, 3794

(1) Adhesive *must* be force dried and bonded while warm.

* Produces a temporary bond on these materials.

	Structurals			Non-Structurals		
Plastics (ABS, PVC, Acrylic) to:	Scotch-Weld Adhesives	Pronto Instant Adhesives	Jet-Weld Adhesives	Scotch-Grip and Fastbond Adhesives	Aerosols	Jet-melt Adhesives
Plastics (ABS, PVC, Acrylic, etc.)	Flexible 2-Part Epoxies, 2-Part Urethanes, Acrylics	CA's	TE-031,TS-115 , TS-230	1099 (All), 4475, 4475, F/B 2000-NF[1]	72, 77, 90	3747, 3764, 3796, 3776-LM, 3792-LM
Plastics (High Performance-Nylon)	Flexible 2-Part Epoxies, 2-Part Urethanes, Acrylics	CA's	–	1099, 4693	72, 77, 90	3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-40, CA-50, CA-100	TE-031,TS-115, TS-230	1099 (All), 2262, 4475	80*	3789, 3796
Paper & Cardboard	Flexible 2-Part Epoxies, 2-Part Urethanes	CA-40H[3]	TE-031,TS-115, TS-230	4550, F/B 2000-NF, F/B 42-NF (All)	72, 77	3764, 3792, 3792-LM, 3776-LM
Fabric, Felt, Cork & Fiberous Glass	–	–	TE-031,TS-115, TS-230	4550, F/B 2000-NF, F/B 42-NF (All)	72, 76, 77, 90	3747, 3764, 3792, 3792-LM, 3776-LM
Flexible Foam (Latex,Urethane)	–	–	TE-031,TS-115, TS-230	F/B 2000-NF	–	3747, 3764, 3792, 3792-LM, 3776-LM
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TE-031,TS-115, TS-230	F/B 2000-NF[1]	77	3792-LM, 3776-LM
Rigid Foam (Urethane)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	TE-031,TS-115, TS-230	1099, 4693, 4475, F/B 2000-NF[1]	–	3747, 3764, 3792, 3792-LM, 3776-LM
Plastics (High Performance) Nylon to:						
Plastics (High Performance, Nylon)	Flexible 2-Part Epoxies, 2-Part Urethanes, DP-420, DP-460, Acrylics	CA's	–	1099 (All), 4693	72, 77, 80, 90	3764, 3796
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-40, CA-50, CA-100	–	1099 (All)	80	3789, 3796
Paper & Cardboard	Flexible 2-Part Epoxies, 2-Part Urethanes	–	–	4550, F/B 42-NF (PLUS)	72, 77, 90	3747, 3764, 3796
Fabric, Felt, Cork & Fiberous Glass	–	–	–	4550,4693	72, 77, 80, 90	3747, 3764, 3796
Flexible Foam (Latex,Urethane)	–	–	–	F/B 2000-NF	80, 90	3747, 3764, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	–	F/B 2000-NF	77	–
Rigid Foam (Urethane)	2-Part Urethanes	–	–	1099 (All), 4693	80	3747, 3764, 3796
Plastic (Flexible Vinyl) to:						
Plastics (Flexible Vinyl)	Flexible 2-Part Epoxies	CA-40, CA-50, CA-100	All Products	1099 (All), 2262, 4475	80	3789, 3796
Paper & Cardboard	Flexible 2-Part Epoxies	–	All Products	1099 (All), 2262, 4475, F/B 2000-NF	80	3789, 3796
Fabric, Felt, Cork, & Fiberous Glass	–	–	All Products	1099 (All), 2262, 4475, F/B 2000-NF	80	3789, 3796
Rigid Foam (Beadboard, Styrene)	Flexible 2-Part Epoxies, 2-Part Urethanes	–	All Products	–	–	–
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	1099 (All), 2262, 4475	80	3789, 3796

Note: The technical information and data on these pages should be considered representative or typical only and should not be used for specification purposes.

	Structurals			Non-Structurals		
Paper and Cardboard to:	**Scotch-Weld Adhesives**	**Pronto Instant Adhesives**	**Jet-Weld Adhesives**	**Scotch-Grip and Fastbond Adhesives**	**Aerosols**	**Jet-melt Adhesives**
Paper & Cardboard	2-Part Epoxies and Urethanes	–	All Products	4550, 4213-NF, F/B 30-NF, F/B 2000-NF	72, 75*, 76, 77	3762, 3762-LM, 3792-LM, 3778-LM
Fabric, Felt, Cork & Fiberous Glass	–	–	All Products	4550, 4213-NF, F/B 42-NF PLUS, F/B 2000-NF	72, 75*, 76, 77	3762, 3762-LM, 3792-LM, 3778-LM
Flexible Foam (Latex Urethane)	–	–	All Products	F/B 2000-NF	80, 90	3762, 3762-LM, 3792-LM, 3778-LM
Rigid Foam (Beadboard, Styrene)	2-Part Epoxies and Urethanes	–	All Products	F/B 30-NF, 4213-NF, F/B 2000-NF	77	3755-LM, 3762-LM, 3792-LM, 3778-LM
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	4550, F/B 42-NF PLUS, F/B 2000-NF	80	3762, 3762-LM, 3792-LM, 3776-LM
Fabric, Felt, Cork & Fiberous Glass to:						
Fabric, Felt, Cork & Fiberous Glass	–	–	All Products	4550, F/B 42-NF PLUS, F/B 2000-NF	72, 74, 75*, 76, 77, 90	3755-LM, 3762-LM, 3792-LM, 3776-LM
Flexible Foam (Latex Urethane)	–	–	All Products	F/B 2000-NF	74	3755-LM, 3762-LM, 3792-LM, 3776-LM
Rigid Foam (Beadboard, Styrene)	–	–	All Products	F/B 30-NF, F/B 42-NF PLUS, F/B 2000-NF	77	3755-LM, 3762-LM, 3792-LM, 3778-LM
Rigid Foam (Urethane)	–	–	All Products	F/B 30-NF, F/B 42-NF PLUS, F/B 2000-NF	80	3755-LM, 3762-LM, 3792-LM, 3776-LM, 3778-LM
Flexible Foam (Latex Urethane) to:						
Flexible Foam (Latex Urethane)	–	–	All Products	F/B 2000-NF	74, 80	3747, 3792, 3792-LM, 3776-LM
Rigid Foam (Beadboard, Styrene)	–	–	All Products	F/B 2000-NF	–	3762-LM, 3792-LM, 3778-LM
Rigid Foam (Urethane)	–	–	All Products	F/B 2000-NF	74, 80	3792, 3792-LM, 3776-LM
Rigid Foam (Beadboard, Styrene) to:						
Rigid Foam (Beadboard, Styrene)	2-Part Epoxies and Urethanes	–	All Products	F/B 30-NF, 4289-NF, F/B 42-NF PLUS, F/B 2000-NF	76, 77	3762-LM, 3792-LM, 3778-LM, 3778-LM
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	F/B 30-NF, 4289-NF, F/B 42-NF PLUS, F/B 2000-NF	–	3762-LM, 3792-LM, 3776-LM, 3778-LM
Rigid Foam (Urethane) to:						
Rigid Foam (Urethane)	2-Part Urethanes	–	All Products	1357 (All), F/B 30-NF, 4289-NF, F/B 2000-NF(1)	80	3747, 3792, 3792LM

(1) Adhesive *must* be force dried and bonded while warm.

• Produces a temporary bond on these materials.

Note: This chart is intended only to indicate possible product candidates for your particular application requirements. Final product selection should be made only after consideration of a variety of factors and evaluation of sample bonds.

Copy and Fax this page to 3M Industrial Tape and Specialties Division

Explain your final assembled product.

_____

_____

Specify what you are bonding.

_____ to _____

Is your application:

☐ In Design Stage ☐ In Production

☐ Structural ☐ Non-structural

Name: _____

Company: _____ Title: _____

Address: _____

City/State/Zip: _____

Phone: _____

Fax: _____

☐ Have a 3M Representative contact me.

☐ I would like to receive samples for evaluation.

☐ Product interest_____

Fax to 612/736-4776.

For details contact your nearest 3M branch office or authorized 3M ITSD adhesives distributor.

Alaska
11151 Calaska Circle
Anchorage, AK 99515
Phone: 907/522-5200
Fax: 907/522-1645

Atlanta
2860 Bankers Industrial Dr.
Atlanta, GA 30360-2764
Phone: 800/241-6932
404/447-7000
Fax: 800/699-7839
404/242-2432

Chicago
6850 South Harlem Ave.
Bedford Park, IL
60501-1956
Phone: 800/972-0723
708/496-6500
Fax: 800/421-2482
708/496-6511

Dallas
2121 Santa Anna Ave
Dallas, TX 75228-1698
Mail: PO Box 28158
Dallas, TX
75228-0158
Phone: 800/241-2976
214/324-8100
Fax: 800/562-9037
214/324-8225

Detroit
22100 Telegraph Road
Southfield, MI 48034
Mail: PO Box 358
Southfield, MI
48037-0358
Phone: 800/241-0184
810/827-2450
Fax: 800/544-3091
810/827-6936

Hawaii
4443 Malaai Street
Honolulu, HI 96820
Mail: PO Box 30048
Honolulu, HI 96820
Phone: 808/422-2721
Fax: 808/422-9557

Los Angeles
6023 South Garfield Ave.
Los Angeles, CA 90040
Mail: PO Box 54019
Los Angeles, CA
90054
Phone: 800/241-4819
213/726-6300
Fax: 800/648-0865
213/726-6462

New York
15 Henderson Drive
West Caldwell, NJ
07007-6689
Mail: PO Box 2076
West Caldwell, NJ
07007-2076
Phone: 800/524-0399
201/575-2000
Fax: 800/447-2053
201/575-2172

Minneapolis/St. Paul
3130 Lexington Ave. South
Eagan, MN 55121
Mail: PO Box 33211
St. Paul, MN 55133
Phone: 800/241-4820
612/733-3300
Fax: 800/241-9553
612/737-9420

Northern Mexico
10830 Pellicano Drive
El Paso, TX 79935
Phone: 915/599-4696
Fax: 915/599-4688

Canada
P.O. Box 5757 Terminal A
1840 Oxford St. East
London, Ontario, Canada
N6A 4T1
Phone: 519/451-2500
Fax: 519/452-6262

Mexico
Phone: 52-5-626-0400
Fax: 52-5-728-2299

Puerto Rico
Puerto Rico Industrial Park
P.O. Box 100
Carolina, PR 00986-0100
Phone: 809/750-3000
Fax: 809/757-1955

IMPORTANT NOTICE: As to Jet-Weld and Polygun Adhesive Applicators, spare parts, and accessories, 3M may provide a warranty as described in the materials which accompany the products. 3M OTHERWISE MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of application. Please remember that many factors can affect the use and performance of a 3M ITSD product in a particular application. The materials to be bonded with the product, the surface preparation of those materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a 3M ITSD product. Given the variety of factors that can affect the use and performance of a 3M ITSD product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M ITSD product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

LIMITATION OF REMEDIES AND LIABILITY: If the 3M product is proved to be defective, THE EXCLUSIVE REMEDY, AT 3M'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE 3M PRODUCT. 3M shall not otherwise be liable for any loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including negligence, warranty, or strict liability.

3M

Industrial Adhesives and Aerospace Department
Industrial Tape and Specialties Division

3M Center Bldg. 220-7E-01
St. Paul, MN 55144-1000

DIN: 14-2-5/#03
31 December 1996

Recycled paper
40% pre-consumer
10% post-consumer

Printed in U.S.A.

© 3M 1995 78-6900-2848-1

JOHN G. SHELLEY CO., INC.

16 MICA LANE • P.O. BOX 81250 • WELLESLEY HILLS, MASSACHUSETTS 02181-0411 • (617) 237-0900

MANUFACTURER OF GASKETS, CUSTOM MOLDED SILICONES AND SPECIAL ELASTOMERS
DISTRIBUTOR OF ADHESIVES, TAPES AND STATIC CONTROL MATERIALS

DATE 12/10/96

1-800-525-0202 FAX 617-237-8978

TO:
A.F. MEYER AND ASSOCIATES
1364 BEVERLY RD. SUIT 201
MC LEAN, VA. 22101
Attn: Christine Palese

YOUR INQUIRY NO./DATED	
Job I.D. 2447	
PROPOSED SHIPPING DATE	VIA
Stock-3 weeks	Wellesley Hills
TERMS	F.O.B.
1% 10 N/30 *	Wellesley Hills
SALESMAN	

WE ARE PLEASED TO SUBMIT THE FOLLOWING QUOTATION:

QTY.	U/M	DESCRIPTION	PRICE	AMOUNT
12		3M Adhesive Spray #90 23.25 fl.oz. aerosol	$ 12.70/ea.	
12		3M Adhesive Spray #80 23.25 fl.oz. aerosol	$ 12.93/ea.	
4		3M Adhesive 2141, gallon	$ 48.97/ea.	
4		3M Adhesive 1300, gallon	$ 57.06/ea.	
4		3M Citrus Cleaner, gallon	$ 52.71/ea.	
		3M Jet-Weld TS-230 - No Quote		
		3M Jet-Weld 115 HGS - No Quote		
		Paint Stripper - No Quote		
		* Pending Credit Approval		

CONDITIONS: The prices and terms on this quotation are not subject to verbal changes or other agreements unless approved in writing by the Home Office of the Seller. All quotations and agreements are contingent upon strikes, accidents, lives, availability of materials and all other causes beyond our control. Prices are based on costs and conditions existing on date of quotation and are subject to change by the Seller before final acceptance.

Typographical and stenographic errors subject to correction. Purchaser agrees to accept either average or shortage not in excess of ten percent to be charged for pro-rata. Purchaser assumes liability for patent and copyright infringement when goods are made to Purchaser's specifications. When quotation specifies material to be furnished by the purchaser ample allowance must be made for reasonable spoilage and material must be of suitable quality to facilitate efficient production.

Conditions not specifically stated herein shall be governed by established trade customs. Terms inconsistent with those stated herein which may appear on Purchaser's formal order will not be binding on the Seller.

Prices charged for molds or dies represent a partial tooling charge. These charges apply on the first order only and are made with the understanding that all molds and dies remain our property, we assume full responsibility for all necessary repairs, replacements, and insurance coverage.

Frank McPhillips

Above prices based on immediate acceptance unless otherwise stated

By: Frank McPhillips

STATUS QUO MATERIAL:	Dichloromethane, Technical
Manufacturer:	Ashland Chemical Co.
Building:	60
PROPOSED MATERIAL:	Pur-O-Shine Heavy Duty Cleaner
Manufacturer:	American Puro-Shine

MSDS

Pur-O-Shine Heavy Duty Cleaner	Page H5-1

Product Information

Pur-O-Shine Heavy Duty Cleaner	Page H5-3

Cost Data

Pur-O-Shine Heavy Duty Cleaner	Page H5-6

MATERIAL SAFETY DATA SHEET
PURO-O-SHINE HEAVY DUTY CLEANER

SECTION I - IDENTIFICATION

COMPANY NAME.....AMERICAN CONCRETE FLOORS SALVATION
PHONE NUMBER.....(209) 956-9328
EFFECTIVE DATE..... / /
CHEMICAL NAME.....PURE-O-SHINE CLEANER DEGREASER HDC
TRADE NAME.....PURE-O-SHINE CLEANER
CHEMICAL FAMILY.....SODIUM SILICATE N. POTASSIUM HYDROXIDE.L

SECTION II HAZARDOUS INGREDIENTS

PRODUCT CONTAINS "NO ACID" OR ANY HAZARDOUS MATERIAL.

SECTION III

EMERGENCY AND FIRST AID PROCEDURES.

EYES.....IMMEDIATELY FLUSH EYES WITH LARGE AMOUNT OF WATER
SKIN.....IMMEDIATELY FLUSH CONTAMINATED AREA WITH PLENTY OF WATER
INGESTION : NEVER GIVE ANYTHING BY MOUTH TO AN UNCONCIOUS PERSON, IF SWALLOWED, DO NOT INDUCE VOMITING, GIVE LARGE QUANTITIES OF WATER. IF AVAILABLE. GIVE SEVERAL GLASSES OF MILK. SEEK MEDICAL ATTENTION

SECTION IV - PHYSICAL DATA

FREEZING POINT "F".....N/A
MELTING POINT.....N/A
VAPOR PRESSURE.....N/A
SOLUBILITY IN H20.....COMPLETE
APPEARANCE/ODOR.....LITE RED LIQUID/NO ODOR
BOILING POINT @ 760 mm 290 F
SPECIFIC GRAVITY (H20 -1) 15.6 C

Manufactured by
Miles Romanose

900 Gary Street
Turlock, CA 95382
(209) 667-1649

MATERIAL SAFETY DATA SHEET : CONTINUED PAGE 2

SECTION V-FIRE AND EXPLOSION DATA

FLASH POINT.....NONE
FLAMMABLE LIMITS IN AIR % BY VOLUME. UPPER-N/A LOWER-N/A
AUTO IGNITION TEMPERATURE.....NON FLAMMABLE
EXTINGUISHING MEDIA.....THIS PRODUCT IS NOT COMBUSTABLE, WATER SPRAY, FOAM CARBON DIOXIDE, OR DRY CHEMICALS MAY BE USED WHERE THIS PRODUCT IS USED

SECTION VI - SPECIAL PERSONAL PROTECTION EQUIPMENT

GLOVES.....RUBBER GLOVES SUGGESTED
MONITORING EXPOSURE.....BIOLOGICAL - N/A

SECTION VII - REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY UNDER NORMAL CONDITIONS. THE MATERIAL IS STABLE.
HAZARDOUS DECOMPOSITION PRODUCTS: "NONE"
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERZATION: MATERIAL IS NOT KNOWN TO POLYMERIZE.

SECTION VIII - HANDLING AND STORAGE PRECAUTIONS:

WASH THOROGHLY AFTER HANDLING OR CONTACT
KEEP AWAY FROM REACH OF CHILDREN

SECTION IX - ENVIROMENTAL PROCEDURES

WASTE DISPOSAL METHODS.....SUBJECT TO SPECIFIC REGULATIONS PACKAGE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL AND STATE AND LOCAL HEALTH AND ENVIROMENTAL REGULATIONS.
INCASE OF SPILL OR LEAK - LEAK SHOULD BE STOPPED. SPRAY THE CONTAINMENT AREA WITH PLENTY OR WATER.

NON-WARRANTY: MANUFACTURER OR SELLER MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE USE OF THIS PRODUCT OTHER THAN FOR THE PURPOSE INDICATED IN THE PRODUCT LITERATURE. MANUFACTURER OR SELLER IS NOT LIABLE FOR ANY INJURY OR DAMAGE CAUSED BY THIS PRODUCT DUE TO MISUSE, MISHANDLING OR ANY APPLICATION NOT SPECIFICALLY DESCRIBED AND RECOMMENDED IN THE PRODUCT LITERATURE.

Manufactured by
Miles Romanose

900 Gary Street
Turlock, CA 95382
(209) 667-1649

NEW

NON-ACID

HEAVY DUTY INDUSTRIAL ALKALINE CLEANER

PURO-SHINE HEAVY DUTY

None of the ingredients are regulated under chemical "List of Lists" - California and Federal Government

USDA APROVED

PURO-SHINE is non-acid, non-flammable, non-toxide and non-aerosol, and is water based high performance solvent and does not have to be handled as hazardous material.

PURO-SHINE Heavy Duty Cleaner is especially designed for cleaning of all products and parts made of metal, copper, brass, aluminum, rubber that soon become coated with grease, oil, dust and other deposits that are very difficult to remove with ordinary detergents.

PURO-SHINE rapidly cleans grease, tars and dirt from metal parts and all kinds of engines, such as cars, trucks, heavy duty earth moving machines, air conditioning coils and electronic filters and condensors, planes, machinery equipment, transportation containers and will never corrode or tarnish metal, aluminum, copper, brass, plastic or rubber fittings when used at the recommended concentrations.

DIRECTIONS FOR USE

ADD ONE PART CLEANER TO TEN PARTS WATER: APPLY SOLUTION THOROUGHLY WITH LOW PRESSURE SPRAYER: SCRUB WITH PARTS - BRUSH IF NECESSARY:
RINSE WITH HIGH PRESSURE WATER: REPEAT IF NECESSARY FOR HEAVY GREASES.

DO NOT USE ON GLASS

PURO-SHINE Heavy Duty quickly disolves the most stubborn sole residues, grease and dirt by chemical action, not just by floating them away, and cleans without metal loss and can be mixed with water.

Manufactured by
Miles Romanose
900 Gary Street
Turlock, CA 95382
(209) 667-1649

DIN: 14-2-5/#03
31 December 1996

United States Department of Agriculture

Food Safety and Inspection Service

Regulatory Programs
Building 306, BARC-East
Beltsville, MD 20705

April 02, 1992

Mr. Miles Romanose
American Puro-Shine Industries
Post Office Box 3266
Turlock, CA 95381

Dear Mr. Romanose:

This is in reply to your request for compound authorization received on February 28, 1992 for your product Puro-Shine HDC.

This product is acceptable as a general cleaning agent on all surfaces, or for use with steam or mechanical cleaning devices in all departments of official establishments operating under the Federal meat, poultry, shell egg grading, and egg products inspection programs.

Before using this compound, food products and packaging materials must be removed from the room or carefully protected. After using this compound, surfaces must be thoroughly rinsed with potable water.

Acceptance of compounds by this Department is in no way to be construed as an endorsement of the compounds or of any claims made for them.

If any change is made in the labeling information or formulation, the authorization for use in official plants becomes void immediately.

Sincerely,

John M. Damaré

John M. Damaré, Chief
Compounds and Packaging Branch
Product Assessment Division

ORDER FOR SUPPLIES OR SERVICES

OMB No 0704-0187
Expires Aug 31, 1992

Page 1 of

...reporting burden for this collection of information is estimated to average 1 hour per response, including the time ...ewing instructions, searching existing data sources, gathering and maintaining the data needed and completing and ...ing the collection of information. Send comments regarding this burden estimate or any other aspect of this collectio... information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Infor... Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, Va. 22202-4302 and to the Office of ...ment and Budget, Paperwork Reduction Project (0704-0187), Washington, DC 20503.

1. CONT/PURCH ORDER NO.	2. DELIVERY ORDER NO.	3. DATE OF ORDER	4. REQUISITION/PURCH REQUEST NO.	5. CERTIFIED FO...
92P1103		92 FEB 21	SEE SCHEDULE	NATIONAL DEFENS... UNDER DMS REG 1 ...NO C9E

6. ADMINISTERED BY (other than 6) code

OPERATIONAL CONTRACTING
93 CONS/LGC, BLDG 708
CASTLE AFB, CA 95342-5320

8. DELIVERY FOB
[X] DEST
[ ] OTHER
see schedule if other

...ED BY code
...TIONAL CONTRACTING
...LGC, BLDG 708
..., CA 95342-5320
...M COMMODITIES 209 726-2486

...FOR code Z02095S Facility Code
209-667-1649

10 DELIVER TO FOB POINT BY:
92 MAR 27

11. Mark if business is
[ ] small
[ ] small/disadv
[ ] women-owned

12. DISCOUNT TERMS
.000 % 00 DAYS NET 30

13. MAIL INVOICES TO:
SEE BLOCK 15

...ED code FB4672
...SUPPLY OFFICER
...FOR: FB4672 92P1103
...5260
...S CA 95342-5350

15. PAYMENT WILL BE MADE BY: code FB4672
ACCOUNTING AND FINANCE
MRK FOR: FB4672 92P1103
93D WIMG/FMFM (FAX 2097262425)
CASTLE AFB CA 95342-5260

MARK ALL PACKAGES AND PAPERS WITH CONTRACT OR ORDER NUMBER

[ ] This delivery order is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.

PLEASE [X] Reference your 92T0967 furnish the following on terms specified herein.

ACCEPTANCE THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSL... HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SA...

NAME OF CONTRACTOR	SIGNATURE	TYPED NAME AND TITLE	DATE SIGNED

...is box is marked, supplier must sign acceptance and return the following number of copies:

...NTING AND APPROPRIATION DATA/LOCAL USE

...930.FC0C 6C 120 67 400

...NO	14. SCHEDULE OF SUPPLIES/SERVICES	20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
	SEE ATTACHED SCHEDULE(S) ITEMS: 1				

...TION ACCEPTED BY THE GOVERNMENT IS ...QUANTITY ORDERED, INDICATE BY X. ...QUANTITY, ENTER ACTUAL QUANTITY ...BELOW QUANTITY ORDERED & ENCIRCLE

24. UNITED STATES OF AMERICA
BY: EDWARD E SIMONS CONTRACTING/ORDERING OFFICER

25. TOTAL 448.50
26. DIFFER ENCES

...QUANTITY IN COLUMN 20 HAS BEEN:
...ECTED [ ] RECEIVED [ ] ACCEPTED AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

27. SHIP NO.
28. D.O. VOUCHER NO.
29. INITIALS

...SIGNATURE OF AUTHORIZED GOVERNMENT REP.

[ ] PARTIAL [ ] FINAL

32. PAID BY

33. AMT VERIFIED CORRECT FO...

...IFY THIS ACCOUNT CORRECT & PROPER FOR PAYMENT

31. PAYMENT [ ] COMPLETE [ ] PARTIAL [ ] FINAL

34. CHECK NUMBER

...E SIGNATURE AND TITLE OF CERTIFYING OFFICER

35. BILL OF LADING NO.

...TO	38. REC'D BY	39. DATE REC'D	40. TOTAL CONT	41. S/R. ACCOUNT NUMBER	42. S/R. VOUCHER NO.

...1155, SEP 89 previous editions are obsolete CONTRACTOR MUST SUBMIT FOUR COPIES OF INVOICE

Miles Romanose
900 GARY ST
TURLOSK, CALIFORNIA 95382
Tel (209)667.1649

11/6/1996

Messrs, Naval Supply System
1364 Beverly Rd Ste 201
Mclean, Va 22101.

Attn: Ms, Christine Palese.

Dear Mame,
Thank you for your call and your request for informations about my product Pure-O-Shine cleaner.
Enclosed please find the informations you need, also I am enclosing a copy of USDA acceptance-M S D S-Brochure and some references.
Pure-O-Shine comes in five gallons container and is sold for $14.95 per gallon FOB Turlock or Modesto.
Thank you for your request and hope to hear from you soon.

Miles Romanose

STATUS QUO MATERIAL:	So-Sure Lacquer, Aerosol Silver 17178
Manufacturer:	LHB Industries
Building:	64
PROPOSED MATERIAL:	Aerosol Coatings 01947, Lacquer 17178
Manufacturer:	Sprayon Products

MSDS

Aerosol Coatings 01947, Lacquer 17178	Page H6-1

Product Information

Aerosol Coatings 01947, Lacquer 17178	Page 982 - GSA Spring 1996 Supply Catalog

Cost Data

Aerosol Coatings 01947, Lacquer 17178	Page 982 - GSA Spring 1996 Supply Catalog

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF April 1996

Proprietary Version - For U.S. Government Use Only

FSC: 8010
NIIN: 007219751
Manufacturer's CAGE: 5E481
Part No. Indicator: A
Part Number/Trade Name: AEROSOL COATINGS 01947, ALUM LAC 17178

Nuclear Water Data

This is not a Nuclear Water Chemical NIIN.

Standard PMS Identification Number Data

SPIN FSC: 8010
SPIN NIIN: 007219751
SPIN: J370

General Information

Item Name: AEROSOL GENERAL PURPOSE, SILVER (ALUM) 17178
Company's Name: SPRAYON PRODUCTS
Company's Street: 26300 FARGO AVE.
Company's P. O. Box:
Company's City: BEDFORD HTS.
Company's State: OH
Company's Country: US
Company's Zip Code: 44146
Company's Emerg Ph #: 216-292-7400
Company's Info Ph #: 216-292-7400
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:

Safety Focal Point: G
Record No. For Safety Entry: 006
Tot Safety Entries This Stk#: 013
Status:
Date MSDS Prepared: 31MAY89
Safety Data Review Date: 30NOV89
Supply Item Manager: GSA
MSDS Preparer's Name: NK
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
□
Report for NIIN: 007219751

Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number:0BHFZL
Specification Number: CID-A-A-665
Spec Type, Grade, Class: NK
Hazard Characteristic Code:
Unit Of Issue: PT
Unit Of Issue Container Qty: 1 PT CN
Type Of Container: METAL
Net Unit Weight: NK
NRC/State License Number: NK
Net Explosive Weight: NK
Net Propellant Weight-Ammo: NK
Coast Guard Ammunition Code: NK

==========

Ingredients/Identity Information

==========

Proprietary: NO
Ingredient: ALUMINUM (SARA III)
Ingredient Sequence Number: 01
Percent: 1.737
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: BD0330000
CAS Number: 7429-90-5
OSHA PEL: 15MG/M3 DUST/5 FUME
ACGIH TLV: 10MG/M3 DUST; 9192
Other Recommended Limit: NK

Proprietary: NO
Ingredient: TOLUENE (SARA III)
Ingredient Sequence Number: 02
Percent: 60
Ingredient Action Code:

Ingredient Focal Point: G
NIOSH (RTECS) Number: XS5250000
CAS Number: 108-88-3
OSHA PEL: 200 PPM/150 STEL
ACGIH TLV: 50 PPM; 9293
Other Recommended Limit: NK

Proprietary: NO
Ingredient: ISOBUTANE
Ingredient Sequence Number: 03
Percent: 15
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: T24300000
CAS Number: 75-28-5
OSHA PEL: 1000 PPM
ACGIH TLV: 1000 PPM/ 1800 MG/M3
Other Recommended Limit: NK

□
Report for NIIN: 007219751

Proprietary: NO
Ingredient: PROPANE
Ingredient Sequence Number: 04
Percent: 15
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: TX2275000
CAS Number: 74-98-6
OSHA PEL: 1000 PPM
ACGIH TLV: ASPHYXIANT; 9192
Other Recommended Limit: NK
==========
==========

Physical/Chemical Characteristics

==========
==========
Appearance And Odor: COATINGS
Boiling Point: NR
Melting Point: NA
Vapor Pressure (MM Hg/70 F): NA
Vapor Density (Air=1): >AIR
Specific Gravity: NA
Decomposition Temperature: NK
Evaporation Rate And Ref: FASTER THAN ETHER
Solubility In Water: NA
Percent Volatiles By Volume: 91
Viscosity: KN
pH: NK
Radioactivity: NK

Form (Radioactive Matl):
Magnetism (Milligauss): N/P
Corrosion Rate (IPY): NK
Autoignition Temperature: NK

==========

Fire and Explosion Hazard Data

==========

Flash Point: <20F/-28.89C
Flash Point Method: TOC
Lower Explosive Limit: NK
Upper Explosive Limit: NK
Extinguishing Media: CARBON DIOXIDE, DRY CHEMICAL, OR FOAM
Special Fire Fighting Proc: WATER MAY BE INEFFECTIVE,WATER MAY BE USED TO
KEEP FIRE EXPOSED CONTAINERS COOL.
Unusual Fire And Expl Hazrds: DO NOT SPRAY NEAR OPEN FLAME. KEEP AT ROO M
TEMPERATURE AS EXPOSURE TO DIRECT SUNLIGHT OR OTHER HEAT MAY CAUSE BURS TING

==========

Reactivity Data

==========

Stability: YES
Cond To Avoid (Stability): DO NOT STORE ABOVE 120F
Materials To Avoid: NONE
Hazardous Decomp Products: CARBON MONOXIDE/DIOXIDE
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NK
□
Report for NIIN: 007219751

==========

Health Hazard Data

==========

LD50-LC50 Mixture: NK
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: IN A CONFINED AREA VAPORS IN HIGH CONCENTRATION ARE ANESTHETIC, IRRITANT TO SKINAND UPPER RESPIRATORY SYS TEM.
REPORTS HAVE ASSOCIATED REPEATED/PROLONGED OVEREX POSURE TO SOLVENTS WI TH
PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE, ALSO KIDNEY AND LIVER DAMAGE .

Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NK
Signs/Symptoms Of Overexp: MAY RESULT IN LIGHT HEADEDNESS, STAGGERING GAIT, GIDDINESS AND POSSIBLE NAUSEA. HARMFUL OR FATAL IF INGESTED.
Med Cond Aggravated By Exp: NK
Emergency/First Aid Proc: EYE: FLUSH WITH WATER FOR 15 MINUTES. SKIN: WASH
WITH SOAP AND WATER INHAL: REMOVE PATIENT TO FRESH AIR INGST: DO NOT INDUCE
VOMITING, CALL PHYSICIAN IMMEDIATELY

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: REMOVE ALL SOURCES OF IGNITION. VENTILATE.
AVOID BREATHING VAPORS AND REMOVE WITH INERT ABSORBENT.
Neutralizing Agent: NK
Waste Disposal Method: DO NOT INCINERATE. DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
Precautions-Handling/Storing: DO NOT STORE ABOVE 120F. KEEP AT ROOM TEMPERATURE AS EXPOSURE TO DIRECT SUNLIGHT OR HEAT MAY CAUSE BURSTING.
Other Precautions: DO NOT PUNCTURE OR INCINERATE, DO NOT SPRAY NEAR FIRE
OR OPEN FLAME. KEEP OUT OFREACH OF CHILDREN.

Control Measures

Respiratory Protection: AVOID BREATHING OF VAPOR OR SPRAY MIST.
Ventilation: LOCAL EXHAUST VENTILATION
Protective Gloves: RECOMMENDED
Eye Protection: SAFETY GLASSES W/UNPERFORATED SIDESHIELD
Other Protective Equipment: NK
Work Hygienic Practices: NK
Suppl. Safety & Health Data: NK

Transportation Data

Transportation Action Code:
Transportation Focal Point: G
Trans Data Review Date: 89334
DOT PSN Code: DTJ
DOT Symbol: D
DOT Proper Shipping Name: CONSUMER COMMODITY

DOT Class: ORM-D
□
Report for NIIN: 007219751

DOT ID Number:
DOT Pack Group:
DOT Label: NONE
DOT/DoD Exemption Number: NK
IMO PSN Code: AKH
IMO Proper Shipping Name: AEROSOLS/AEROSOL PRODUCT
IMO Regulations Page Number: SEE 9022
IMO UN Number: 1950
IMO UN Class: 9
IMO Subsidiary Risk Label: -
IATA PSN Code: ALS
IATA UN ID Number: 1950
IATA Proper Shipping Name: AEROSOLS, FLAMMABLE, N.O.S.
IATA UN Class: 2.1
IATA Subsidiary Risk Class:
IATA Label: FLAMMABLE GAS
AFI PSN Code: ALS
AFI Symbols:
AFI Prop. Shipping Name:
AFI Class: FORB
AFI ID Number:
AFI Pack Group:
AFI Label:
AFI Special Prov:
AFI Basic Pac Ref: FORBIDDEN
MMAC Code: NK
N.O.S. Shipping Name: NK
Additional Trans Data: NK

==========

Disposal Data

==========

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:

2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:
□
Report for NIIN: 007219751

==========

Label Data

==========

Label Required: YES
Technical Review Date:
Label Date:
MFR Label Number:
Label Status: F
Common Name:
Chronic Hazard: N/P
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: VAPORS MAY CAUSE DIZZINESS OR SUFFOCATION. CONTACT WITH LIQUID MAY CAUSE FROSTBITE. FIRE MAY PRODUCE IRRITATING OR POISONOUS GASES.
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: SPRAYON PRODUCTS
Label Street: 26300 FARGO AVE
Label P.O. Box:
Label City: BEDFORD HEIGHTS
Label State: OH
Label Zip Code: 44146-1310
Label Country: US
Label Emergency Number:

Year Procured:
☐

STATUS QUO MATERIAL:	Locite Grade A Anaerobic Adhesive
Manufacturer:	Locite Corp.
Building:	92
PROPOSED MATERIAL:	Accrabond Grade A MIL-S-22473
Manufacturer:	Accrabond, Inc.

MSDS

Accrabond Grade A MIL-S-22473	Page H7-1

Product Information

Accrabond Grade A MIL-S-22473	Page 1029 - GSA Spring 1996 Supply Catalog

Cost Data

Accrabond Grade A MIL-S-22473	Page 1029 - GSA Spring 1996 Supply Catalog

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF April 1996

Proprietary Version - For U.S. Government Use Only

FSC: 8030
NIIN: 000676744
Manufacturer's CAGE: 5V071
Part No. Indicator: A
Part Number/Trade Name: ACCRABOND GRADE A MIL-S-22473

Nuclear Water Data

This is not a Nuclear Water Chemical NIIN.

Standard PMS Identification Number Data

SPIN FSC: 8030
SPIN NIIN: 000676744
SPIN: 1590G

General Information

Item Name: SEALING, LOCKING & RETAINING COMPOUND, RED LIQUID GR-A
Company's Name: ACCRABOND, INC.
Company's Street: 8848 HACKS CROSS ROAD
Company's P. O. Box: N/K
Company's City: OLIVE BRANCH
Company's State: MS
Company's Country: US
Company's Zip Code: 38654
Company's Emerg Ph #: 601-895-4480
Company's Info Ph #: 601-895-4480
Distributor/Vendor # 1: STEVEN INDUSTRIES (201-437-6501)
Distributor/Vendor # 1 Cage: 33150
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:

Safety Focal Point: G
Record No. For Safety Entry: 004
Tot Safety Entries This Stk#: 007
Status: SM
Date MSDS Prepared: 01JAN87
Safety Data Review Date: 05JAN95
Supply Item Manager: GSA
MSDS Preparer's Name: N/K
Preparer's Company: N/K
Preparer's St Or P. O. Box: N/K
Preparer's City: N/K
Preparer's State: NK
□
Report for NIIN: 000676744

Preparer's Zip Code: N/K
Other MSDS Number:
MSDS Serial Number: ρBJYQN
Specification Number: MIL-S-22473
Spec Type, Grade, Class: N/K
Hazard Characteristic Code: N1
Unit Of Issue: BT
Unit Of Issue Container Qty: 250 CC BT
Type Of Container: PLASTIC
Net Unit Weight: N/K
NRC/State License Number: N/K
Net Explosive Weight: N/K
Net Propellant Weight-Ammo: N/K
Coast Guard Ammunition Code: N/K

==========

Ingredients/Identity Information

==========

Proprietary: NO
Ingredient: ETHYLENE GLYCOL METHACRYLATE MONOMER
Ingredient Sequence Number: 01
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: OZ4725000
CAS Number: 868-77-9
OSHA PEL: N/K
ACGIH TLV: N/K
Other Recommended Limit: NONE SPECIFIED

==========

Physical/Chemical Characteristics

==========

Appearance And Odor: RED

Boiling Point: >392F,>200C
Melting Point: N/K
Vapor Pressure (MM Hg/70 F): <0.01
Vapor Density (Air=1): 8.6
Specific Gravity: 1.06
Decomposition Temperature: N/K
Evaporation Rate And Ref: N/K
Solubility In Water: INSOLUBLE
Percent Volatiles By Volume: N/K
Viscosity: N/K
pH: N/K
Radioactivity: N/K
Form (Radioactive Matl):
Magnetism (Milligauss): N/P
Corrosion Rate (IPY): N/K
Autoignition Temperature: N/K

Fire and Explosion Hazard Data

Flash Point: >250 F/>120 C
Flash Point Method: COC
□
Report for NIIN: 000676744

Lower Explosive Limit: N/K
Upper Explosive Limit: N/K
Extinguishing Media: WATER, CO2, SAND OR FOAM
Special Fire Fighting Proc: NONE
Unusual Fire And Expl Hazrds: NONE

Reactivity Data

Stability: YES
Cond To Avoid (Stability): N/K
Materials To Avoid: ORGANIC PEROXIDES, SALTS, METALS & REACTIVE WITH WATER.
Hazardous Decomp Products: NONE
Hazardous Poly Occur: YES
Conditions To Avoid (Poly): TEMPERATURES ABOVE 55C

Health Hazard Data

LD50-LC50 Mixture: N/K
Route Of Entry - Inhalation: N/P
Route Of Entry - Skin: N/P

Route Of Entry - Ingestion: N/P
Health Haz Acute And Chronic: N/K
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: N/K
Signs/Symptoms Of Overexp: IRRITATION OF SKIN, HEADACHES & CRAMPING.
Med Cond Aggravated By Exp: N/K
Emergency/First Aid Proc: INHALATION: REMOVE TO FRESH AIR. EYES: FLUSH WITH WATER FOR 15 MINUTES. SKIN: WASH THOROUGHLY WITH SOAP & WATER. & INGESTION:SEE A PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: WIPE UP WITH PAPER TOWELS OR RAGS. CLEAN AREA WITH TOLUENE OR KETONES
Neutralizing Agent: N/K
Waste Disposal Method: REACT WITH PRIMER & DISPOSE AS INERT MATERIAL
Precautions-Handling/Storing: DO NOT FILL CONTAINER OVER HALF FULL
Other Precautions: N/K

Control Measures

Respiratory Protection: OPTIONAL
Ventilation: LOCAL EXHAUST:OPTIONAL & MECHANICAL(GENERAL):OPTIONAL
Protective Gloves: PLASTIC GLOVES OR PROTECTIVE HAND CREAM
Eye Protection: SAFETY GOGGLES OPTIONAL
Other Protective Equipment: NONE
Work Hygienic Practices: WASH CLOTHING WITH DISHWASHING DETERGENT
Suppl. Safety & Health Data: N/K
□
Report for NIIN: 000676744

Transportation Data

Transportation Action Code:
Transportation Focal Point: G
Trans Data Review Date: 91057
DOT PSN Code: ZZZ
DOT Symbol:
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
DOT Class: N/R
DOT ID Number: N/R
DOT Pack Group:

DOT Label: N/R
DOT/DoD Exemption Number: N/K
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IMO Regulations Page Number: N/R
IMO UN Number: N/R
IMO UN Class: N/R
IMO Subsidiary Risk Label: N/R
IATA PSN Code: ZZZ
IATA UN ID Number: N/R
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
IATA UN Class: N/R
IATA Subsidiary Risk Class: N/R
IATA Label: N/R
AFI PSN Code: ZZZ
AFI Symbols:
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI Class: N/R
AFI ID Number: N/R
AFI Pack Group:
AFI Label: N/R
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code: NK
N.O.S. Shipping Name: N/K
Additional Trans Data: N/K

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
□
Report for NIIN: 000676744

2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:

3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

Label Data

Label Required: YES
Technical Review Date:
Label Date:
MFR Label Number:
Label Status: G
Common Name: ACCRABOND GRADE A MIL-S-22473
Chronic Hazard: N/P
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: N/K IRRITATION OF SKIN, HEADACHES & CRAMPIN G.
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: ACCRABOND, INC.
Label Street: 8848 HACKS CROSS ROAD
Label P.O. Box: N/K
Label City: OLIVE BRANCH
Label State: MS
Label Zip Code: 38654
Label Country: US
Label Emergency Number: 601-895-4480
Year Procured:
□

STATUS QUO MATERIAL:	So-Sure Yellow Primer (84-331) Aerosol
Manufacturer:	LHB Industries
Building:	92
PROPOSED MATERIAL:	Zinc Chromate Primer GP-0004-1757
Manufacturer:	Seymour of Sycamore

MSDS

Zinc Chromate Primer GP-0004-1757	Page H8-1

Product Information

Zinc Chromate Primer GP-0004-1757	Page 957 - GSA Spring 1996 Supply Catalog

Cost Data

Zinc Chromate Primer GP-0004-1757	Page 957 - GSA Spring 1996 Supply Catalog

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF April 1996

Proprietary Version - For U.S. Government Use Only

FSC: 8010
NIIN: 002970593
Manufacturer's CAGE: 59581
Part No. Indicator: A
Part Number/Trade Name: ZINC CHROMATE PRIMER GP-0004-1757

Nuclear Water Data

This is not a Nuclear Water Chemical NIIN.

Standard PMS Identification Number Data

SPIN FSC: 8010
SPIN NIIN: 002970593
SPIN: 3515A

General Information

Item Name: PRIMER COATING, AEROSOL, YELLOW
Company's Name: SEYMOUR OF SYCAMORE, INC.
Company's Street: 917 CROSBY AVENUE
Company's P. O. Box: NA
Company's City: SYCAMORE
Company's State: IL
Company's Country: US
Company's Zip Code: 60178
Company's Emerg Ph #: (815) 895-9101
Company's Info Ph #: (815) 895-9101
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:

Safety Focal Point: G
Record No. For Safety Entry: 013
Tot Safety Entries This Stk#: 021
Status:
Date MSDS Prepared: 25SEP89
Safety Data Review Date: 29SEP89
Supply Item Manager: GSA
MSDS Preparer's Name: NK
Preparer's Company: NK
Preparer's St Or P. O. Box: NK
Preparer's City: NK
Preparer's State: NK
□
Report for NIIN: 002970593

Preparer's Zip Code: NK
Other MSDS Number:
MSDS Serial Number: BHFPM
Specification Number: TT-P-1757
Spec Type, Grade, Class: NK
Hazard Characteristic Code:
Unit Of Issue: PT
Unit Of Issue Container Qty: 1 PT CN
Type Of Container: METAL
Net Unit Weight: NK
NRC/State License Number: NK
Net Explosive Weight: NK
Net Propellant Weight-Ammo: NK
Coast Guard Ammunition Code: NK

==========

Ingredients/Identity Information

==========

Proprietary: NO
Ingredient: ZINC CHROMATE
Ingredient Sequence Number: 01
Percent: 6.73
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: GB3290000
CAS Number: 13530-65-9
OSHA PEL: 0.1 MG/M3 (CRO3)
ACGIH TLV: 0.01MG/M3(CR)A1;9192
Other Recommended Limit: NK

Proprietary: NO
Ingredient: METHYLENE CHLORIDE (SARA III)
Ingredient Sequence Number: 03
Percent: 23.40
Ingredient Action Code:

Ingredient Focal Point: G
NIOSH (RTECS) Number: PA8050000
CAS Number: 75-09-2
OSHA PEL: 500 PPM/C,1000; Z2
ACGIH TLV: 50 PPM, A2; 9192
Other Recommended Limit: NK

Proprietary: NO
Ingredient: TOLUENE (SARA III)
Ingredient Sequence Number: 04
Percent: 10.70
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: XS5250000
CAS Number: 108-88-3
OSHA PEL: 200 PPM/150 STEL
ACGIH TLV: 50 PPM; 9293
Other Recommended Limit: NK

□
Report for NIIN: 002970593

Proprietary: NO
Ingredient: ACETONE (SARA III)
Ingredient Sequence Number: 05
Percent: 14.09
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: AL3150000
CAS Number: 67-64-1
OSHA PEL: 1000PPM
ACGIH TLV: 750PPM/1000STEL;9293
Other Recommended Limit: NK

Proprietary: NO
Ingredient: METHYL ALCOHOL (METHANOL) (SARA III)
Ingredient Sequence Number: 06
Percent: .17
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: PC1400000
CAS Number: 67-56-1
OSHA PEL: S,200PPM/250STEL
ACGIH TLV: S,200PPM/250STEL; 93
Other Recommended Limit: NK

Proprietary: NO
Ingredient: MINERAL SPIRITS
Ingredient Sequence Number: 07
Percent: 1.11
Ingredient Action Code:

Ingredient Focal Point: G
NIOSH (RTECS) Number: NK
CAS Number: 64742-47-8
OSHA PEL: 100 PPM/525 MG/M3
ACGIH TLV: 100 PPM
Other Recommended Limit: NK

Proprietary: NO
Ingredient: ISOPROPYL ALCOHOL (SARA III)
Ingredient Sequence Number: 08
Percent: .38
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: NT8050000
CAS Number: 67-63-0
OSHA PEL: 400 PPM/500 STEL
ACGIH TLV: 400 PPM/500STEL;9192
Other Recommended Limit: NK

Proprietary: NO
Ingredient: ETHYL ALCOHOL (ETHANOL)
Ingredient Sequence Number: 09
Percent: 3.68
Ingredient Action Code:
□
Report for NIIN: 002970593

Ingredient Focal Point: G
NIOSH (RTECS) Number: KQ6300000
CAS Number: 64-17-5
OSHA PEL: 1000 PPM
ACGIH TLV: 1000 PPM; 9192
Other Recommended Limit: NK

Proprietary: NO
Ingredient: XYLENES (O-,M-,P- ISOMERS) (SARA III)
Ingredient Sequence Number: 10
Percent: 7.02
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: ZE2100000
CAS Number: 1330-20-7
OSHA PEL: 100 PPM/150 STEL
ACGIH TLV: 100 PPM/150STEL;9192
Other Recommended Limit: NK

Proprietary: NO
Ingredient: PROPANE
Ingredient Sequence Number: 11
Percent: 15.0
Ingredient Action Code:

Ingredient Focal Point: G
NIOSH (RTECS) Number: TX2275000
CAS Number: 74-98-6
OSHA PEL: 1000 PPM
ACGIH TLV: ASPHYXIANT; 9192
Other Recommended Limit: NK

Proprietary: NO
Ingredient: ISOBUTANE
Ingredient Sequence Number: 12
Percent: 10.0
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: T24300000
CAS Number: 75-28-5
OSHA PEL: NK
ACGIH TLV: NK
Other Recommended Limit: NK

Physical/Chemical Characteristics

Appearance And Odor: NK
Boiling Point: NA
Melting Point: NK
Vapor Pressure (MM Hg/70 F): NK
Vapor Density (Air=1): > AIR
Specific Gravity: NK
Decomposition Temperature: NK
Evaporation Rate And Ref: FASTER THAN ETHER
□
Report for NIIN: 002970593

Solubility In Water: NK
Percent Volatiles By Volume: 85
Viscosity: NK
pH: NK
Radioactivity: NK
Form (Radioactive Matl):
Magnetism (Milligauss): N/P
Corrosion Rate (IPY): NK
Autoignition Temperature: NK

Fire and Explosion Hazard Data

Flash Point: 10F/ -12.22C
Flash Point Method: TOC
Lower Explosive Limit: NK

Upper Explosive Limit: NK
Extinguishing Media: USE CARBON DIOXIDE, DRY CHEMICAL OR FOAM
Special Fire Fighting Proc: WATER SPRAY MAY BE INEFFECTIVE. WATER MAY B
E
USED TO COOL CONTAINERS TO PREVENT BURSTING. IF WATER IS USED, FOG NOZZ
LES
ARE PREFERABLE.WEAR GOGGLES/SCBA
Unusual Fire And Expl Hazrds: EXPOSURE TO HEAT MAY CAUSE BURSTING OF
AEROSOL CAN.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): DO NOT STORE ABOVE 120F. KEEP FROM SPARKS,
PILOT LIGHTS OR OPEN FLAME.
Materials To Avoid: STRONG OXIDIZING MATERIALS
Hazardous Decomp Products: MAY PROD FUMES W/HEATED TO DECOMPSTN.FUMES M
AY
CONTAIN CARBNDIOXIDE/MONOXIDE/HYDROGEN CHLORIDE VAPOR,& TRACES PHOSGENE
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NA

Health Hazard Data

LD50-LC50 Mixture: NK
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: INHALATION OF SOLVENT VAPORS CONCENTRATIO
N
EXCEEDING THE ESTABLISHED TLV CAN CAUSE RESPORATORY SYSTEM IRRITATION.
Carcinogenicity - NTP: N/P
Carcinogenicity - IARC: N/P
Carcinogenicity - OSHA: N/P
Explanation Carcinogenicity: ZINC CHROMATE,METHYLENE CHLORIDE,TOLUNE,
ACETONE,METHYL ALCHL(SKIN)ISOPROPYL ALCHL & KYLENE TOC CONFRMD HUMAN
CARCINOGEN.
Signs/Symptoms Of Overexp: INHL: IRRITATION, HEADACHE,DIZZINESS,NAUSEA,
POSSIBLE UNCONSCIOUSNESS & ASPHYXIATION. EYE:MAY CAUSE IRRITATION
ESPECIALLY UPON DIRECT CONTACT WITH THE SPRAY. SKIN: PROLONGED/REPEATED
LIQ
CONTACT MAY CAUSE DEFATTING OF SKIN, LEADING TO IRRITATION/ DERMATITIS.
INGST: ACCIDENTAL INGST. IS UNLIKELY FROM AN AEROSOL CAN.
□
Report for NIIN: 002970593

Med Cond Aggravated By Exp: NK

Emergency/First Aid Proc: INHALATION: REMOVE PATIENT TO FRESH AIR. IF BREATHING STOPS, BEGIN ARTIFICIAL RESPIRATION. SEEK IMMEDIATE MEDICAL ATTENTION. EYE: IMMEDIATEYL FLUSH EYES WITH PLENTY OF WATER FOR 15 MINU TES.
GET MEDICAL ATTENTION. SKIN: WASH W/SOAP & WATERINGESTION: CALL A PHYSI CIAN
IMMEDIATELY.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: REMOVE ALL SOURCES OF IGNITION, AVOID BREATHING VAPORS, VENTILATE AREA. WIPE UP W/INERT MATERIAL AND PLACE IN APPROPRIATE CONTAINER.
Neutralizing Agent: NK
Waste Disposal Method: DONOT INCINERATE AEROSOL, DISPOSE OF IN ACCORDANCEW/LOCAL,STATE, & FEDERAL REGULATION. DONOT PLACE AEROSOL CANS IN
HOME COMPACTOR. DO NOT PUNCTURE.
Precautions-Handling/Storing: DONOT STORE ABOVE 120F. EXPOSURE TO HEAT OR
PROLNGEXPOSURE TO SUN MAY CAUSE BURSTING.
Other Precautions: USE ONLY AS DIRECTED. INTENTIAL MISUSE BY DILIBERATE LY
CONCENTRATING VAPORS AND INHALING CONTENTS CAN BE HARMFUL OR FATAL.

Control Measures

Respiratory Protection: AVOID CONTINUOUS BREATHING OF VAPORS & SPRAY MI ST.
A SELF CONTAINED BREATHING APPARATUS IS REQUIRED FOR CONCENTRATIONS ABO VE
TLV LIMITS.
Ventilation: USE WITH ADEQUATE VENTILATION, SUFFICIENT TO PREVENT INHAL A
TION OF SOLVENT VAPORS.
Protective Gloves: OPTIONAL
Eye Protection: ONLY WHERE SPRAY MIST MIGHT GET IN EYES
Other Protective Equipment: NONE
Work Hygienic Practices: NONE
Suppl. Safety & Health Data: NK

Transportation Data

Transportation Action Code:
Transportation Focal Point: G

Trans Data Review Date: 89272
DOT PSN Code: DTJ
DOT Symbol: D
DOT Proper Shipping Name: CONSUMER COMMODITY
DOT Class: ORM-D
DOT ID Number:
DOT Pack Group:
DOT Label: NONE
DOT/DoD Exemption Number: NK
IMO PSN Code: AIY
IMO Proper Shipping Name: AEROSOL DISPENSERS
IMO Regulations Page Number: 9022
IMO UN Number: 1950
IMO UN Class: 9
IMO Subsidiary Risk Label: -
□
Report for NIIN: 002970593

IATA PSN Code: ALS
IATA UN ID Number: 1950
IATA Proper Shipping Name: AEROSOLS, FLAMMABLE, N.O.S.
IATA UN Class: 2.1
IATA Subsidiary Risk Class:
IATA Label: FLAMMABLE GAS
AFI PSN Code: ALS
AFI Symbols:
AFI Prop. Shipping Name:
AFI Class: FORB
AFI ID Number:
AFI Pack Group:
AFI Label:
AFI Special Prov:
AFI Basic Pac Ref: FORBIDDEN
MMAC Code: NK
N.O.S. Shipping Name: NK
Additional Trans Data: NK

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:

1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

Label Data

Label Required: YES
Technical Review Date:
Label Date:
MFR Label Number:
Label Status: F
Common Name:
Chronic Hazard: N/P
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
□
Report for NIIN: 002970593

Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: VAPORS MAY CAUSE DIZZINESS OR SUFFOCATION. CONTACT WITH LIQUID MAY CAUSE FROSTBITE. FIRE MAY PRODUCE IRRITATING OR POISONOUS GASES.
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: SEYMOUR OF SYCAMORE INC
Label Street: 917 CROSBY AVE
Label P.O. Box:
Label City: SYCAMORE

Label State: IL
Label Zip Code: 60178-1343
Label Country: US
Label Emergency Number:
Year Procured:
□

STATUS QUO MATERIAL:	01920 Black Lacquer 17038 Aerosol
Manufacturer:	Sprayon Products
Building:	92
PROPOSED MATERIAL:	306 Black 11A Rustproof Paint
Manufacturer:	Aervoe-Pacific Co., Inc.

MSDS

306 Black 11A Rustproof Paint Page H9-1

Product Information

306 Black 11A Rustproof Paint Page H9-3

Cost Data

306 Black 11A Rustproof Paint Page H9-11

Material Safety Data Sheet

TO: MSDS USERS

Please find below the material safety data sheet as per your request.

The information presented in these forms is believed to be correct and sufficient to meet the requirements of OSHA Hazard Communication standard (29 CFR 1910.1200) concerning worker's right to know. In order for the information contained in the MSDS to be most helpful we recommend that these forms be made available to all those who handle or may otherwise be exposed to the product.

The following material safety data sheet covers the hazardous ingredients associated with more than one color aerosol spray paint.

As per 29 CFR 1900. 1200 paragraph (g); whenever the hazards associated with similar mixtures are the same, then one MSDS may be prepared to cover several products.

This MSDS covers the following Aervoe Pacific aerosol spray paints.

RUST PROOF PAINT

300	PURPLE	308	BRITE RED	319	ROYAL BLUE	361	LIGHT GRAY
301	RED	309	ALUMINUM	320	FOREST GREEN	380	FREIGHT CAR RED
302	YELLOW	310	SILVER	321	EQUIPMENT ORANGE	381	OMAHA ORANGE
303	BLUE	311	GOLD	333	MED. DARK GRAY	384	BELL WHITE
304	GREEN	312	FLAT BLACK	344	SATIN BLACK	385	BELL GRAY/GREEN
305	ORANGE	313	FLAT WHITE	347	COPPERTONE	115	HIGH GLOSS
306	BLACK	314	BROWN	349	MED. LIGHT GRAY		
307	WHITE	317	TAN				

PRODUCT NAME: (11A) RUSTPROOF - ALL COLORS **PRODUCT CODE:** 11 A **HMIS CODES:** H F R P 2 4 1

PRODUCT USE: AEROSOL PAINT

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: Aervoe-Pacific Company, Inc.
ADDRESS: 1198 Sawmill Rd., Gardnerville, NV 89410
EMERGENCY PHONE: 1-800-424-9300
DATE REVISED: 02-07-96

INFORMATION PHONE: (702) 782-0100
NAME OF PREPARER: Mike A. Traquina
REASON REVISED: Updated

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

OCCUPATIONAL EXPOSURE LIMITS

HAZARDOUS COMPONENTS/WEIGHT PERCENT		OSHA PEL	ACGIH TLV	OTHER	LD50 SPECIES & ROUTE	LC50 SPECIES & ROUTE
SS 43 METHYL PROPYL KETONE (CAS 107 87 9)	<5.0%	250 PPM	250 PPM		N/A	N/A
*SS 12 XYLENE (CAS 1330 20 7)	10	100 PPM	100 PPM		4300mg/kg RAT ORAL	6700 PPM; 4hr RAT INHA
*SS 41 ACETONE (CAS 67 64 1)	18	750 PPM	750 PPM		9750mg/kg RAT ORAL	N/A
PR 01A PROPANE (CAS 74 98 6)	15	1000 PPM	1000 PPM		N/A	N//A
PR 01B ISOBUTANE (CAS 75 28 5)	<5.0%	800 PPM	800 PPM	<-ESTIMATE	N/A	520000 PPM;2hrMouse Exp
PR 01C NORMAL BUTANE (CAS 106 97 8)	5	600 PPM	600 PPM		N/A	658mg/L; 4hr RAT INHA

*Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

NOTE: N/A applies to not available or not applicable

PRODUCT CODE: 11 A

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: -10 DEG F **SPECIFIC GRAVITY (H20=1):** 0.8 **COEFFICIENT OF WATER/OIL DIST:** N/A **ODOR THRESHOLD:** N/A

VAPOR DENSITY: HEAVIER THAN AIR **SOLUBILITY IN WATER:** NEGLIGIBLE

EVAPORATION RATE: FASTER THAN n-BUTYL ACETATE **APPEARANCE AND ODOR:** OPAQUE LIQUID / SOLVENT BASED ODOR

COATING V.O.C. :5.37 LBS/IMP GAL 4.47 LBS/US GAL 535 GMS/LTR **FREEZING POINT:** N/A **pH:** N/A

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: -28 DEG C **METHOD USED:** TCC **FLAMMABLE LIMITS IN AIR BY VOLUME - LOWER:** 1.0% **UPPER:** 12.8%

EXTINGUISHING MEDIA: FOAM. ALCOHOL FOAM, CO2. DRY CHEMICAL, WATER FOG.

SPECIAL FIREFIGHTING PROCEDURES - WATER SPRAY MAY BE INEFFECTIVE, BUT WATER SPRAY MAY BE USED TO COOL CONTAINERS EXPOSED TO HEAT OR FIRE TO PREVENT PRESSURE BUILD UP.

UNUSUAL FIRE AND EXPLOSION HAZARDS - CLOSED CONTAINERS MAY EXPLODE DUE TO BUILD UP OF PRESSURE FROM EXTREME HEAT OR FIRE. AEROSOL SPRAY IS EXTREMELY FLAMMABLE.

FLAMMABILITY - T.D.G.R. CLASS -CLASS ORM-D CONSUMER COMMODITY. (UN1950 CLASS 9)

SENSITIVITY TO IMPACT - DO NOT PUNCTURE **SENSITIVITY TO STATIC DISCHARGE** - PRIMARILY VAPORS.

SECTION V - REACTIVITY DATA

STABILITY: STABLE **CONDITION TO AVOID** - HIGH TEMPERATURES

INCOMPATIBILITY (MATERIALS TO AVOID) - STRONG OXIDIZING AGENTS

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS - CARBON MONOXIDE, CARBON DIOXIDE AND POSSIBLY ACROLEIN.

HAZARDOUS POLYMERIZATION - WILL NOT OCCUR - N/A

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE - MAY CAUSE NAUSEA OR DIZZINESS.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE - SKIN: MAY CAUSE IRRITATION OR BURNING SENSATION. EYES: PRIMARY IRRITATION.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE - N/A

HEALTH HAZARDS (ACUTE AND CHRONIC) - INHALATION: ANESTHETIC. IRRITATION OF THE RESPIRATORY TRACT, OR NERVOUS SYSTEM DEPRESSION-CHARACTERIZED BY HEADACHE, DIZZINESS, NAUSEA, OR POSSIBLE UNCONSCIOUSNESS. SKIN OR EYE CONTACT: PRIMARY IRRITATION. PROLONGED OR REPEATED CONTACT TO SKIN MAY CAUSE DERMITITUS - EXERCISE DUE CARE.

CARCINOGENICITY: NTP? NO **IARC MONOGRAPHS?** NO **OSHA REGULATED?** NO

THIS PRODUCT DOES NOT CONTAIN ANY RECOGNIZED CARCINOGEN

TETATOGENICITY - N/A **MUTAGENICITY** - N/A **TOXICOLOGICALLY SYNERGISTIC PRODUCT** - N/A

MEDICAL CONDITION GENERALLY AGGRAVATED BY EXPOSURE - NONE KNOWN

EMERGENCY AND FIRST AID PROCEDURES - VAPORS: REMOVE FROM EXPOSURE AND RESTORE BREATHING, SEEK MEDICAL ATTENTION.
SPLASH: (SKIN) WASH AFFECTED AREA, REMOVE CONTAMINATED CLOTHING, SEE PHYSICIAN IF ANY IRRITATION PERSISTS.
SPLASH: (EYES) FLUSH IMMEDIATELY WITH WATER FOR 15 MINUTES AND TAKE TO A PHYSICIAN.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - REMOVE ALL SOURCES OF IGNITION; FLAMES, SPARKS, STATIC ELECTRICITY & ELECTRICAL. VENTILATE AREA AND SOAK UP WITH INERT ABSORBENT USING NON-SPARKING TYPE TOOLS.

WASTE DISPOSAL METHOD - DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. DO NOT INCINERATE CLOSED CONTAINERS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING - DO NOT STORE ABOVE 120 DEG. F. DO NOT STORE OR USE NEAR HEAT, SPARKS, OR FLAME.

OTHER PRECAUTIONS - DO NOT GET IN EYES. DO NOT BREATHE VAPORS AVOID SKIN CONTACT. DO NOT TAKE INTERNALLY. SMOKING WHILE USING THIS PRODUCT MUST BE STRICTLY PROHIBITED. IN ADDITION TO ALL OTHER HAZARDS AND PRECAUTIONS - DUST FROM SANDING THE DRY PAINT FILMS SHOULD BE TREATED AS A NUISANCE DUST WITH A TLV OF 10mg/CUBIC METER.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION - OUTDOORS: WE RECOMMEND AN APPROVED PARTICULATE FILTER TO REMOVE ANY AIRBORNE OVERSPRAY. IN RESTRICTED AREAS WITH POOR VENTILATION AND CLOSE TO THE T.L.V., A HIOSH APPROVED RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE IS RECOMMENDED.

VENTILATION - ALL APPLICATION AREAS SHOULD BE ADEQUATELY VENTILATED IN ORDER TO KEEP THE SECTION II INGREDIENTS BELOW THEIR EXPOSURE LIMITS.

PROTECTIVE GLOVES - IMPERVIOUS GLOVES ARE RECOMMENDED TO PREVENT SKIN CONTACT.

EYE PROTECTION - SAFETY GLASSES WITH SIDE SHIELDS IS RECOMMENDED TO PREVENT EYE CONTACT.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT - EYE WASH FOUNTAIN AND SAFETY SHOWER. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE RE-USE

WORK/HYGIENIC PRACTICES - AVOID PROLONGED OR REPEATED CONTACT. DO NOT BREATHE VAPORS.

SECTION IX - DISCLAIMER

DISCLAIMER - THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE SO.
NOTHING CONTAINED HEREIN CONSTITUTES A SPECIFICATION NOR IS IT INTENDED TO WARRANT SUITABILITY FOR THE INTENDED USE.

Product Data Sheet

No. 1301 - 5/96

RUST PROOF PAINT

Aerosol and Bulk Liquid
AEROSOL VOC <65% GLOSS, <60% FLAT, <80% METALLIC

PRODUCT NUMBERS:

300 Purple	307 White	314 Brown	347 Coppertone
301 Red	308 Brite Red	317 Tan	349 Meter Gray (ASA-49)
302 Yellow	309 Aluminum	319 Royal Blue	361 Light Gray (ASA-61)
303 Blue	310 Silver (Lacquer)	320 Forest Green	380 Freight Car Red
304 Green	311 Gold	321 Equipment Orange	381 Omaha Orange
305 Orange	312 F. Black	333 Dark Gray (ASA-33)	384 Bell White
306 Black	313 F. White	344 Satin Black	385 Bell Gray/Green

Product number plus letter designation is as follows:
Q = 6 one-quart cans; G = 4 one-gallon cans per case; F = 1 five-gallon pail; D = 1 fifty gallon drum.

I. GENERAL DESCRIPTION

Features: This high performance rust proof industrial coating is formulated for industrial and commercial applications. Good resistance to harsh environments including water, moisture, temperature, and abrasiveness beyond that expected of standard decorator colors. High gloss, high-hide coverage (with or without primer) provides corrosive protection especially on metal surfaces. Wide color selection provides commercial, O.S.H.A. safety, and selected factory equipment touch-up colors.

Benefits: Most colors will give full coverage in one coat. The finish dries to the touch in minutes and yields full cure benefits in 72 hours. This high-solids formula is USDA approved as a chemically acceptable coating for application to structural surfaces or surfaces where there is a possibility of incidental food contact in official establishments operating under the federal meat and poultry products inspection program.

Uses: Ideal for equipment maintenance as well as O.E.M. production. Exceeds many performance standards of nationally recognized home improvement brands. May be used on metal, wood, and other common surfaces including non-porous plaster.

Application: Can be applied over firmly rusted areas, however loose flakes or particles should be removed first with a wire brush or sandpaper. For maximum rust preventive protection on metal surfaces, prime first with Aervoe Primers 119, 127, 128, 129, 132, or 135. Product should be used at temperatures between 60° and 80°F (16° and 27°C) for best results. Shake can for at least 1 minute after agitator ball begins to rattle. Hold can 6 to 8 inches from surface. Press spray head firmly, and apply with steady, even strokes. Two light coats are better than one heavy one. Bulk product is ready for brush use or dipping as is. See bulk label for thinning instructions when using in an air applicator, airless, or hot spray.

Limitations: Please refer to the Material Safety Data Sheets for specific information on material hazards, etc. Please check your local air quality standards before using any bulk paint. Check all plastic surfaces for adhesion and compatibility before use.

Packaging:

Aerosol	Cans	12.5 oz. net wt.	(354 grams)	16.0 fl. oz.	(473 ml)
	12 cans/case	14 lbs.	(6.4 kg)	.47 CF	(.013 CM)
Liquid Bulk	1 case of 6 quarts	17 lbs.	(7.2 kg)	.88 CF	(.025 CM)
	1 case of 4 gallons	40 lbs.	(18.2 kg)	1.0 CF	(.028 CM)
	5-gallon pail	49 lbs.	(22.3 kg)	1.2 CF	(.034 CM)
	50-gallon drum	465 lbs.	(211.4 kg)	8.5 CF	(.241 CM)

AERVOE™ AERVOE-PACIFIC Company, Inc.
P.O. Box 485, Gardnerville, NV 89410 • Information 702-782-0100 • Order Desk 800-227-0196 • FAX 702-782-4027

II. CHARACTERISTICS AND PROPERTIES

Average for all colors

Specifications:

Safety colors formulated to meet OSHA Spec. 1910.144.

Compositionally equal to FED SPEC TT-E-489F Class A, TT-E-488B, and A-A-665A.

Appearance:	**Aerosol**	**Bulk**
Gloss at ∠60°	90	<5.0
Class	High Gloss	Flat
Coverage:	**Aerosol**	**Bulk**
Theoretical at 1 mil dry	23 sq. ft./can	651 sq. ft/gal.
Practical at ½ mil dry	46 sq. ft./can	1302 sq. ft/gal.
Drying Schedule: (At 77°F [25°C], 50% Humidity at 1 mil dry)		
To touch	15 min.	15 min.
To handle	30 min.	30 min.
Full cure	72 hrs.	72 hrs.
To recoat	Before 2 hrs. or after 72 hrs. to avoid lifting.	
Performance and Chemical Properties:		
Weight per gallon	6.3 lbs.	8.4 lbs.
Specific gravity	0.76 lbs.	1.01 lbs.
Viscosity	Not applicable	65 KU
Flammability: Label Marking	Extremely Flammable	Flammable
Flash Point	–15°F (–28°C)	<73°F (<23°C)
Operating temperature range	55° to 80°F (13° to 27°C)	55° to 80°F (13° to 27°C)
Percent solids by weight	See attached	See attached
Percent solids by volume	See attached	See attached
Percent pigment by volume	1.1%	4.0%
Volatile Organic Compound level	<65% (GL), <60% (FL), <80% (MT)	420 grams/liter
Interior durability	Excellent	Excellent
Exterior durability	Good	Good
Temperature resistance	Excellent to 200°F; 200° to 300°F (93° to 149°C) slightly darkening	
Color fastness	Good	Good
Adhesion	Excellent over properly prepared surface	
Salt spray corrosion	200 hrs.	200 hrs.
Paint thinner resistance	Good	Good
Gasoline resistance	Poor	Poor
Motor oil resistance	Good	Good
Pencil hardness	H	H
Food contact rating	USDA authorized	Not applicable
Base Materials:		
Resin system	Alkyd Copolymer	Alkyd Copolymer
Solvents (top two)	Ketone and Aromatic	Ketone and Aromatic
Propellant system	Hydrocarbon Propellant	Not applicable

III. SHIPPING STORAGE AND HEALTH

	Aerosol	**Bulk**
IMDG number	UN1950	UN1263
D.O.T. container spec.	2P	1A1, 1A2
D.O.T. shipping description	Consumer commodity	Paint Related Material
Warehouse storage level number	NFPA 30B Level 2	Flammable liquid Class I-C
Hazardous class (CFR-49)	ORM-D	Flammable liquid
Storage temperature	50° to 120°F (10° to 49°C)	40° to 120°F (4° to 49°C)
Shelf life	12–24 months	24–60 months
HMIS ratings		
Health	2	2
Fire	4	3
Reactivity	1	0

IV. MISCELLANEOUS

Contains no Ozone Depleting Substances (O.D.S.). This product meets V.O.C. requirements for the state of California.

V. WARRANTY

The statements made herein on labels, product bulletins, or by any of our employees or agents concerning this material are given for information only. Any liability whatsoever of Aervoe-Pacific of the user of the product is limited to replacement of the product or purchase price refunded.

AEROSOL PRODUCT DATA SHEET

Rust Proof Decorator Paints

PRODUCTS		% SOLIDS BY WEIGHT	% SOLIDS BY VOLUME
300	Purple	18.5	11.8
301	Red	17.2	11.6
302	Yellow	19.0	11.8
303	Blue	17.4	11.1
304	Green	18.0	10.9
305	Orange	19.0	12.4
306	Black	19.7	13.7
307	White	21.6	11.2
308	Brite Red	16.7	11.4
309	Aluminum	17.0	10.8
310	Silver	12.0	6.9
311	Gold	20.5	11.2
312	Flat Black	21.3	11.0
313	Flat White	21.7	9.7
314	Brown	17.3	11.0
317	Tan	19.6	10.9
319	Royal Blue	16.9	11.2
320	Forest Green	17.4	11.2
321	Equipment Orange	19.7	12.6
333	Dark Gray	20.1	11.7
344	Satin Black	20.2	12.0
347	Coppertone	19.7	11.0
349	Meter Gray	21.2	11.0
361	Light Gray	21.4	11.1
380	Freight Car Red	17.6	11.0
381	Omaha Orange	17.5	11.6
384	Bell White	20.9	11.0
385	Bell Gray/Green	20.8	13.0

AERVOE

COLOR GUIDE

Superior Paints & Coatings From AERVOE-PACIFIC

ENGINE PAINT

Specially formulated for refinishing engines and transmissions. Excellent adhesion prevents rust and pitting. Heat resistant to 300° F. No peeling or checking; this paint is matched to O.E.M. standards for non-blistering at engine operating temperatures.

510 Universal Clear

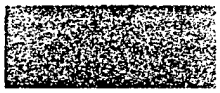
511 Universal White

512 Flat Black

513 Satin Black

514 Gloss Black

520 Chevrolet Orange


530 Cadillac Gold

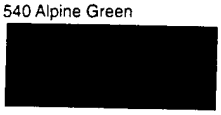
540 Alpine Green

550 Ford Red

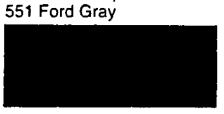
551 Ford Gray

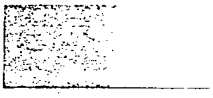
560 Ford Blue

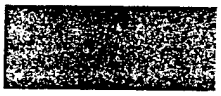
561 Chevrolet Blue


562 General Motors Blue

566 Ford-Mercury Blue


568 Chrysler Blue


570 Universal Silver


575 Dull Aluminum

580 Cummins Beige

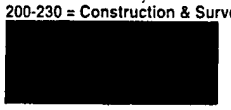
582 Cast Iron Gray

583 Steel Blast Gray

MARKING PAINT

Use these inverted marking paints to deliver professional applications in construction, survey, athletic fields, and location identification. Specially formulated to identify and code such surfaces as asphalt, concrete, wood, dirt. Safe on turf grass and fields of play.
200-230 = Construction & Survey / 246-259 = Water-based Turf / ***261S-279S = INVERT-A-CAP®***

200 Clear


201 / 256 / ***261S*** Red

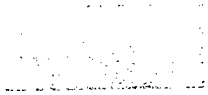
202 / 258 / ***262S*** Yellow

203 / 254 / ***263S*** Blue

204 / 259 / ***264S*** Green

205 / 257 / ***265S*** Orange

206 / 251 / ***266S*** Black


207 / 255 / ***267S*** White

210 / Silver

213 / 252 Brown

220 / 246 / ***270S*** Fl. Red

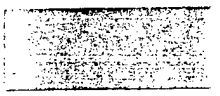
222 / 247 / ***272S*** Fl. Orange

224 / 248 / ***274S*** Fl. Green

226 Fl. Yellow

227 Fl. Blue

228 Fl. Magenta


229 / 249 / ***279S*** Fl. Pink

230 / ***275S*** Fl. Red-Orange

STRIPING PAINT

Available in both solvent and water-based formulations. Provides high-hide and durability in a true VOC compliant product.
701-702 = Supreme / 710-785 = Solvent-based / ***790-796 = Water-based***

701 / 710 / ***790*** Traffic White

702 / 720 / ***791*** Traffic Yellow

730 / ***793*** Traffic Red

740 Traffic Orange

750 / ***792*** Traffic Blue

760 Traffic Green

770 Asphalt Black

780 Concrete Gray

785 Fl. Red-Orange

796 Athletic Fl. Orange

CAMOUFLAGE PAINT

Matches U.S. Federal Color Code 595-A or B. Fights corrosion and salt spray. Not shown: Black, White.

951 Light Green (34151)

952 Dark Green (34102)

957 Earth Yellow (30257)

967 Earth Red (30117)

968 Field Drab (30118)

977 Sand (30277)

979 Forest Green (34079)

987A Olive Drab (34087)

987B Olive Drab (34088)

992 Marine Corps Green (34052)

997A Olive Drab Semigloss (24087)

997B Olive Drab Semigloss (24084)

999 Earth Brown (30099)

APPLIANCE EPOXY

Spray touch-up for cosmetic nicks and chips on appliances to provide a hard and durable finish.

175 White

176 Almond

AERVOE® Your Symbol of Quality in Paints for Home and Industry

DECORATOR WATER-BASED PAINT

An interior exterior corrosion-fighting formula. Won't harm plastics or Styrofoam. Reduced VOCs. low odor and Ozone Depleting Substance Free!

1000 Clear
1002 Black
1003 Semigloss Black
1004 Flat Black

Not Shown:
1005 Orange (see #305)
1006 White
1007 Flat White
1049 Meter Gray (see #349)

1009 Yellow

1010 Sun Yellow

1012 Horizon Blue

1013 Blue

1015 Banner Red

1016 Red

1018 Green

1019 Forest Green

1021 Smoke Gray

1023 Mandarin

1025 Dark Brown

1027 Beige

1030 Pearl Gray

1031 Pink Ice

1032 Rose

1033 Jade Green

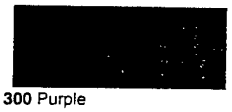
1034 Almond

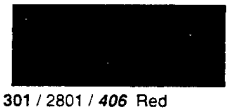
1040 Red Oxide Primer

RUST-PROOF PAINT / STENCIL INKS / *POLYSHIELD*®

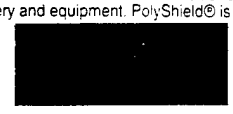
301-384 = Rust-Proof / 2801-2811 = Stencil Inks / ***405-412 = PolyShield***®

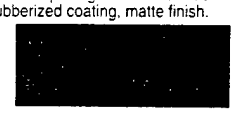
Interior/exterior gloss colors low in VOCs. low odor, and Ozone Depleting Substance Free. For finishing machinery and equipment. PolyShield® is a rubberized coating, matte finish.


300 Purple


301 / 2801 / ***406*** Red

302 / 2802 / ***405*** Yellow


303 / 2803 / ***408*** Blue


304 / 2804 Green

305 / 2805 / ***407*** Orange

308 Bright Red

309 Aluminum

310 Silver (Lacquer)

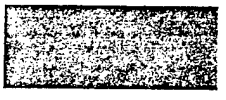
311 Gold

314 Brown

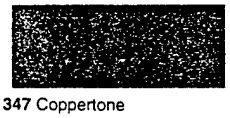
317 / 2811 Tan

319 Royal Blue

320 Forest Green


321 Equipment Orange

344 Satin Black


347 Coppertone

333 Dark Gray (ASA-33)

349 Meter Gray (ASA-49)

361 Light Gray (ASA-61)

380 Freight Car Red

381 Omaha Orange

384 Bell White

385 Bell Gray/Green

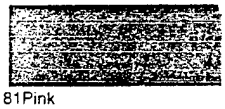
Not Shown:

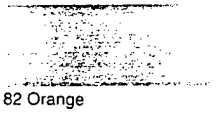
306 / ***409*** Black
307 / 2807 / ***410*** White
312 / 2806 Flat Black
313 / 2810 Flat White

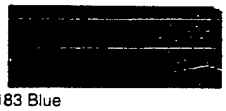
FLO GLO™

Highly vibrant colors made to stand out brightly. Use on signs or where you desire blacklight reactions in advertising or decorating.

180 Red


181Pink


182 Orange


183 Blue

184 Green

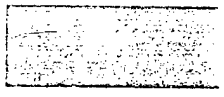
185 Yellow

HIGH HEAT

To 1,000°F temperature resistant to cracking, peeling and flaking.

190 Black

192 Aluminum


193 White

195 Beige

FLEET & CUSTOM EQUIPMENT PAINT

Our highest quality industrial finish with fastest air-dry time. Outstanding hardness and durability.

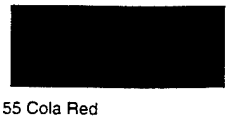
150 John Deere Green

151 Allis Chalmers Orange

152 Honda Red

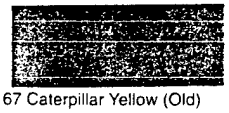
153 Int'l Harvester Red

154 Cola Blue

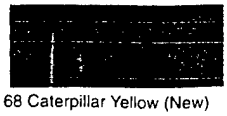

155 Cola Red

161 White (7331)

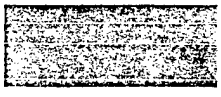
162 White (4775)


163 White (817)

167 Caterpillar Yellow (Old)


168 Caterpillar Yellow (New)

177 Ryder Yellow


178 School Bus Yellow

ROYAL COAT PAINT

This superior enamel coating provides the utmost in rust protection, corrosion resistance, and quality finish on metal, wood, and other surfaces. Specially formulated for industrial, commercial or institutional applications.

5001 Aluminum

5002 Silver

5003 Gold

5004 Safety Blue

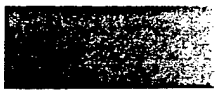
5005 Sky Blue

5006 Safety Green

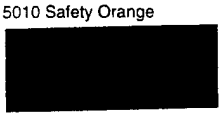
5007 Hunter Green

5008 Safety Yellow

5009 Equipment Yellow



5010 Safety Orange



5011 Equipment Orange

5012 Safety Red

5013 Cerise

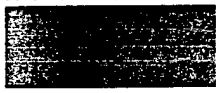
5014 Sand

5015 Brown

5016 Flat Black

5017 Black

5018 Flat White



5019 White

5020 Light Gray

5021 Dark Gray

NOT SHOWN:

PRIMERS

119 Yellow
127 Black
128 Gray
129 White
132 Green
135 Red Oxide

TREE MARKING PAINT

610 Red
620 Orange
630 Yellow
640 Green
645 Dark Green
650 Blue
660 Black
670 White
680 Silver
690 Fl. Red
691 Fl. Pink
692 Fl. Orange
693 Fl. Yellow

WET COAT

694 Blue
695 Blue
697 Red
698 Orange
699 Yellow

The Aervoe Advantage©

Aervoe-Pacific Paints & Coatings

The Aervoe Advantage©: This Color Guide displays most of Aervoe-Pacific's stock-paint items in aerosol and bulk packaging. Each product is formulated to deliver superior levels of performance. Each represents the cost-effectiveness of large production volume in aerosol or bulk giving you the best purchase value—*The Aervoe Advantage©*

Aervoe-Pacific Company, Inc., offers ***Custom Colormatch Service*** in both aerosol and bulk industrial coatings. This special capability allows you to customize orders to any specific need. Aervoe also manufactures a full line of top-quality maintenance and specialty products available in aerosol and bulk. Ask your Aervoe Distributor for the complete Aervoe-Pacific product catalog, or call **800-227-0196.**

Other Products in *The Aervoe Advantage©*

- Art/Craft Sealers
- Cold Galvanize Coatings
- Undercoating & Sound Deadener
- Polyurethane Varnish
- Industrial Seal Coats
- Epoxy Insulating Coating
- Spot Cleaner and Degreaser
- Anti-Static Spray
- Contact Cleaner
- Defluxer
- Dustair™
- Freeze-All™
- Cable Cleaner
- Electrical Lube
- Silicone Lube/Cleaner
- Carburetor Treatment
- Cosmoline Protective Coating
- Brake Cleaner
- Belt Dressing
- Battery Protector
- Graphite Dry Lube
- Multipurpose Spray Adhesive
- High Strength Spray Adhesive
- Anti-Spatter
- Cutting Oil
- Moly Open Gear Grease
- Moly Open Gear Oil
- Moly Dry Film Lube
- Lube-Eze™
- Food Grade Lube Oil
- Food Grade Lube Grease
- Dry Film Lube & Release Agent
- Tef-Lube™
- Silicone Lube
- Silicone Paintable Release Agent
- H.D. Wire Rope & Gear Lube
- White Lithium Grease
- Penetrating Fluid
- Rust Solv®
- Portable Gas Stoves
- Butane & Isobutane Fuel
- Gas Stove Accessories
- Silver & Jewelry Protection
- Metal, Copper & Brass Polishes
- Coin Cleaner
- Lemon Oil Wood Polish
- Marble Cleaner & Polish
- Tile Cleaner
- Glass Cleaner
- Hornet & Wasp Spray
- Graffiti Remover

AERVOE-PACIFIC Company, Inc.
Gardnerville, Nevada 89410 • 702-782-0100 • 800-227-0196

Distributed by:

Aervoe-Pacific products are made in the U.S.A. Copyright 1996 Aervoe-Pacific Company, Inc. All Rights Reserved.
Colors shown on this color guide are as close as possible to the actual colors.

DIN: 14-2-5/#03
31 December 1996

NATIONAL INDUSTRIAL / INSTITUTIONAL I-1 PRICE LIST

Effective February 1, 1996

Aervoe-Pacific Company, Inc.

For over 25 Years — The Professionals' Choice®

P.O. Box 485
Gardnerville, NV 89410
(702) 782-0100 Office (800) 227-0196 Order Desk
Fax (702) 782-4027

Prices, terms and conditions of sale subject to change without notice.

Your first source

— ALL PRODUCTS ARE FREE OF OZONE DEPLETING SUBSTANCES, LEAD, TOLUENE, AND CHLORINATED SOLVENTS —

SALES TERMS

MINIMUM ORDER—$50.00 (NO EXCEPTIONS)
ONLY FULL CASES SHIPPED. ALL PRODUCTS AND CASES MAY BE ASSORTED FOR QUANTITY PRICE AND FREIGHT.

PAYMENT
1% DISCOUNT 10 DAYS, NET 30 DAYS. SERVICE CHARGE OF 1½% PER MONTH ON ALL ACCOUNTS OVER 30 DAYS.

CREDIT
OPEN ACCOUNT WITH: APPROVED 3 SUPPLIERS AND 1 BANK REFERENCE. OTHER: C.O.D. ON FIRST ORDER. NO ORDERS SHIPPED WHEN OUTSTANDING BILL OVER 45 DAYS.

RETURNS
NO GOODS MAY BE RETURNED WITHOUT WRITTEN AUTHORITY. ALL RETURNS MUST BE VIA AUTHORIZED CARRIER AND ARE SUBJECT TO A 20% RE-CERTIFICATION CHARGE.

DEFECTIVES
1 YEAR PERFORMANCE WARRANTY ON ALL PRODUCTS FROM DATE OF PURCHASE. REPORT TO HOME OFFICE OR LOCAL AERVOE REPRESENTATIVE FOR EXAMINATION.

FREIGHT TERMS*

F.O.B. GARDNERVILLE, NEVADA. INSPECT GOODS UPON RECEIPT FOR CORRECT COUNT AND/OR POSSIBLE DAMAGE; ALL CLAIMS MUST BE MADE WITH DELIVERING CARRIER.

NET-DOLLAR AMOUNT OF ORDER	FREIGHT CREDIT
LESS THAN $1000.00	NO FREIGHT ALLOWED. FREIGHT COLLECT.
$1000.01 AND OVER	FULL FREIGHT ALLOWED. FREIGHT PREPAID.

***SHIPPED TO NEAREST CONTINENTAL U.S. PORT. AERVOE RESERVES RIGHT TO SELECT CARRIER.**

Aervoe-Pacific Company, Inc. shall not be liable for failure to make delivery caused by circumstances beyond its control and may cancel orders due to said causes. Aervoe reserves the right at all times to choose and select its customers, to accept or refuse any order and to change product and price specifications without notice. Because the Seller cannot control the Buyers' handling or use of product, Seller makes no warranty expressed or implied when not used or stored in accordance with directions.

PRINTED IN U.S.A.

PAINTS AND COATINGS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
	DECORATOR WATER BASED ENAMELS **VOC Compliant**	16-OZ. AEROSOL	6	7 LBS.	$16.80	$2.80
1000 CRYSTAL CLEAR	1007 FLAT WHITE (1113)	1015 BANNER RED	1023 MANDARIN		1032 ROSE	
1002 GLOSS BLACK (1106)	1009 YELLOW (1102)	1016 RED (1101)	1025 DARK BROWN		1033 JADE GREEN	
1003 S.G. BLACK	1010 SUN YELLOW	1018 GREEN (1104)	1027 BEIGE		1034 ALMOND	
1004 FLAT BLACK (1112)	1012 HORIZON BLUE	1019 FOREST GREEN	1030 PEARL GRAY		1040 RED OXIDE PRIMER	
1005 ORANGE (1105)	1013 BLUE (1103)	1021 SMOKE GRAY	1031 PINK ICE		1049 METER GRAY	
1006 GLOSS WHITE (1107)						
	RUST PROOF ENAMELS **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$31.80	$2.65
		1 QUART	6	15 LBS.	39.78	6.63
		1 GALLON	4	45 LBS.	102.52	25.63
		*1 GALLON	4	45 LBS.	125.00	31.25
300 PURPLE	306 BLACK	312 F. BLACK	321 EQUIPMENT ORANGE*		380 FREIGHT CAR RED	
301 RED*	307 WHITE	313 F. WHITE	333 DARK GRAY (ASA-33)		381 OMAHA ORANGE*	
302 YELLOW*	308 BRITE RED*	314 BROWN	344 SATIN BLACK		384 BELL WHITE	
303 BLUE	309 ALUMINUM	317 TAN	347 COPPERTONE*		385 BELL GRAY/GREEN	
304 GREEN	310 SILVER (LACQUER)	319 ROYAL BLUE*	349 METER GRAY (ASA-49)			
305 ORANGE*	311 GOLD	320 FOREST GREEN*	361 LIGHT GRAY (ASA-61)			
	PREMIUM SPRAY PAINT **VOC Compliant**	20-OZ. AEROSOL	6	9 LBS.	$24.00	$4.00
	– ROYAL COAT –					
5001 ALUMINUM	5006 SAFETY GREEN	5010 SAFETY ORANGE	5014 SAND		5018 FLAT WHITE	
5002 SILVER	5007 HUNTER GREEN	5011 EQUIPMENT ORANGE	5015 BROWN		5019 WHITE	
5003 GOLD	5008 SAFETY YELLOW	5012 SAFETY RED	5016 FLAT BLACK		5020 LIGHT GRAY	
5004 SAFETY BLUE	5009 EQUIPMENT YELLOW	5013 CERISE	5017 BLACK		5021 DARK GRAY	
5005 SKY BLUE						
	STENCIL INKS **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$36.00	$3.00
	SPRAY INKS		**COVER-UP (Carton saver)**			
2801 RED	2805 ORANGE		2810 WHITE			
2802 YELLOW	2806 BLACK		2811 TAN			
2803 BLUE	2807 WHITE					
2804 GREEN						
	117 CLEAR ACRYLIC COATING **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$27.00	$2.25
		1 GALLON	4	42 LBS.	65.20	16.30
	PRIMERS **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$29.76	$2.48
		1 GALLON	4	45 LBS.	80.60	20.15
119 YELLOW	129 WHITE					
127 BLACK	132 GREEN					
128 GRAY	135 RED OXIDE					
	APPLIANCE EPOXY **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$37.80	$3.15
175 WHITE	176 ALMOND					
	FLUORESCENT GLO **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$36.96	$3.08
		1 QUART	6	15 LBS.	77.76	12.96
		1 GALLON	4	45 LBS.	176.20	44.05
180 RED	183 BLUE					
181 PINK	184 GREEN					
182 ORANGE	185 YELLOW					
	POLYURETHANE VARNISH **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$29.76	$2.48
		1 GALLON	4	45 LBS.	80.60	20.15
186 GLOSS	187 SATIN					
	HIGH HEAT PAINT **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$39.72	$3.31
		1 QUART	6	15 LBS.	82.50	13.75
		1 GALLON	4	47 LBS.	190.00	47.50
190 BLACK	193 WHITE					
192 ALUMINUM	195 BEIGE					
	ENGINE ENAMELS **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$31.80	$2.65
		1 GALLON	4	45 LBS.	102.52	25.63
510 UNIVERSAL CLEAR	520 CHEVROLET ORANGE	560 FORD BLUE	570 UNIVERSAL SILVER			
511 UNIVERSAL WHITE	530 CADILLAC GOLD	561 CHEVROLET BLUE	575 DULL ALUMINUM			
512 FLAT BLACK	540 ALPINE GREEN	562 G.M. BLUE	580 CUMMINS BEIGE			
513 SATIN BLACK	550 FORD RED	566 FORD-MERC. BLUE	582 CAST IRON GRAY			
514 GLOSS BLACK	551 FORD GRAY	568 CHRYSLER BLUE	583 STEEL BLAST GRAY			

VOC COMPLIANT = MEETS CALIF. VOC STANDARDS FOR AEROSOL PAINT. FOR BULK PAINT, REFERENCE TECHNICAL DATA SHEETS AND LOCAL AIR QUALITY STANDARDS.

PAINTS AND COATINGS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
	FLEET & CUSTOM EQUIPMENT ENAMELS VOC Compliant	16-OZ. AEROSOL	12	14 LBS.	$45.60	$3.80
		1 GALLON	1	10 LBS.	35.63	35.63
150	JOHN DEERE GREEN	153 INT'L HARVESTER RED	161 WHITE (7331)		167 CAT. YELLOW (OLD)	177 RYDER YELLOW
151	ALLIS CHALMERS ORANGE	154 COLA BLUE	162 WHITE (4775)		168 CAT. YELLOW (NEW)	178 SCHOOL BUS YELLOW
152	HONDA RED	155 COLA RED	163 WHITE (817)			
	CATALYST 27-OX-1000	1 PINT	1	1 LB.	$6.56	$6.56
	NOTE: For best results bulk paint should be catalyzed at ratio of 1 pint to 1 gallon.	1 GALLON	1	10 LBS.	38.06	38.06
	MILITARY VEHICLE & RECREATION CAMOUFLAGE PAINT VOC Compliant	16-OZ. AEROSOL	6	7 LBS.	$17.46	$2.91
		1 GALLON	4	40 LBS.	119.64	29.91
951	LIGHT GREEN (34151)	975 WHITE (37875)	988 BLACK (37038)			
952	DARK GREEN (34102)	977 SAND (30277)	992 MARINE CORPS GREEN (34052)			
957	EARTH YELLOW (30257)	979 FOREST GREEN (34079)	997A OLIVE DRAB SEMI GLOSS (24087)			
967	EARTH RED (30117)	987A OLIVE DRAB (34087)	997B OLIVE DRAB SEMI GLOSS (24084)			
968	FIELD DRAB (30118)	987B OLIVE DRAB (34088)	999 EARTH BROWN (30099)			
	ART/CRAFT SEALERS VOC Compliant					
110	CLEAR GLOSS					
115	HIGH GLOSS	16-OZ. AEROSOL	12	13 LBS.	$27.00	$2.25
120	FLAT MATTE					
	COLD GALVANIZE COATINGS VOC Compliant					
141	ZINC RICH GALV	16-OZ. AEROSOL	12	16 LBS.	$47.28	$3.94
142	BRITE GALV	1 QUART	6	18 LBS.	75.78	12.63
		1 GALLON	1	14 LBS.	48.69	48.69
	POLYSHIELD™ PROTECTIVE COAT VOC Compliant					
405	YELLOW	16-OZ. AEROSOL	6	7 LBS.	$29.40	$4.90
406	RED	1 PINT	6	9 LBS.	33.36	5.56
407	ORANGE	1 GALLON	1	12 LBS.	47.38	47.38
408	BLUE					
409	BLACK					
410	WHITE					
411	CLEAR					
412	FL. ORANGE					
	INDUSTRIAL SEAL COATS					
	SHOP PRIMERS	5 GALLON	1	44 LBS.	$37.50	$37.50
1501	BLACK	50 GALLON	1	410 LBS.	358.33	358.33
1502	GRAY					
1510	RED OXIDE					

THINNERS AND SOLVENTS

See Product Data Sheets for thinning guide.

		ALL CODES
1 GALLON CAN	1 PACK CASE	$8.75
1 GALLON CAN	4 PACK CASE	32.50
5 GALLON PAIL	1 PACK	38.25
50 GALLON DRUM	1 PACK	366.25

DRUM CHARGE OF $25.00 ADDED TO ALL 55 GALLON ORDERS.

BULK PACKAGING - Products with pricing in gallon packaging are also available in 5 and 55 gallon containers. To determine the price per gallon, take the 1 gallon price (divide case packs) and deduct $.75 per gallon for 5s and $1.25 per gallon for 55s. Products with pricing in aerosol only are not available in bulk. Use aerosol order number with Q, G, F and D for Quarts, Gallon, Five Gallon, or 55 Gallon Drum when ordering in bulk.

MARKING AND STRIPING SYSTEMS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
CONSTRUCTION AND SURVEY MARKING PAINT	**VOC Compliant**					
REGULAR (Solvent-based)		20-OZ. AEROSOL	12	18 LBS.	$39.72	$3.31
200 CLEAR, 203 BLUE, 206 BLACK, 213 BROWN		1 GALLON	4	43 LBS.	86.12	21.53
201 RED, 204 GREEN, 207 WHITE						
202 YELLOW, 205 ORANGE, 210 SILVER						
FLUORESCENT (Solvent-based)		20-OZ. AEROSOL	12	18 LBS.	$39.72	$3.31
220 RED, 226 YELLOW, 229 PINK		1 GALLON	4	43 LBS.	119.72	29.93
222 ORANGE, 227 BLUE, 230 RED ORANGE						
224 GREEN, 228 MAGENTA						
SPRAY CHALK (Water-based)		20-OZ. AEROSOL	12	18 LBS.	$39.72	$3.31
214 BLUE, 216 RED, 218 YELLOW		1 GALLON	4	45 LBS.	86.12	21.53
215 WHITE, 217 ORANGE, 219 GREEN						
TURF MARKING PAINT	**VOC Compliant**					
REGULAR (Water-based)		20-OZ. AEROSOL	12	18 LBS.	$41.52	$3.46
251 BLACK, 254 BLUE, 256 RED, 258 YELLOW		1 GALLON	4	47 LBS.	96.40	24.10
252 BROWN, 255 WHITE, 257 ORANGE, 259 GREEN						
FLUORESCENT (Water-based)		20-OZ. AEROSOL	12	18 LBS.	$41.52	$3.46
246 RED, 247 ORANGE, 248 GREEN, 249 PINK		1 GALLON	4	47 LBS.	126.64	31.66
INVERT-A-CAP® MARKING PAINT	**VOC Compliant**					
REGULAR (Solvent-based)		16-OZ. AEROSOL	12	14 LBS.	$28.68	$2.39
261S RED, 264S GREEN, 267S WHITE		1 GALLON	4	43 LBS.	86.12	21.53
262S YELLOW, 265S ORANGE						
263S BLUE, 266S BLACK						
FLUORESCENT (Solvent-based)		1 GALLON	4	43 LBS.	$119.72	$29.93
270S RED, 274S GREEN, 279S PINK						
272S ORANGE, 275S RED-ORANGE						
PAINT HOLDERS AND APPLICATORS						
242 CAN-HAND'LER		—	12	2 LBS.	$16.20	$1.35
243 CAN HOLDER		—	1	1 LB.	7.06	7.06
244 SPOT MARKER		11 INCH	1	1 LB.	10.13	10.13
245 MARKING STICK		38 INCH	1	2 LBS.	19.94	19.94
STRIPING PAINT	**VOC Compliant**	20-OZ. AEROSOL	12	18 LBS.	$49.56	$4.13
		1 GALLON	4	50 LBS.	99.64	24.91
SOLVENT-BASED						
710 TRAFFIC WHITE, 740 TRAFFIC ORANGE, 770 ASPHALT BLACK	**WATER-BASED**	792 ATHLETIC BLUE				
720 TRAFFIC YELLOW, 750 TRAFFIC BLUE, 780 CONCRETE GRAY	790 ATHLETIC WHITE	793 ATHLETIC RED				
730 TRAFFIC RED, 760 TRAFFIC GREEN, 785 FLO. RED/ORANGE	791 ATHLETIC YELLOW	796 ATHLETIC FLO. ORANGE				
HIGH SOLIDS, SOLVENT-BASED						
701 TRAFFIC WHITE SUPREME, 702 TRAFFIC YELLOW SUPREME		20-OZ. AEROSOL	12	18 LBS.	$56.28	$4.69
STRIPING PAINT APPLICATORS AND ACCESSORIES						
794 VERS-A-STRIPER® TURF WHEEL KIT		SET	1	10 LBS.	$32.43	$32.43
795 VERS-A-STRIPER® GLASS BEAD DISPENSER KIT		SET	1	7 LBS.	33.16	33.16
799 VERS-A-STRIPER® (for aerosol cans)		26" x 10"	1	16 LBS.	98.09	98.09
798 DEFLECTOR DISKS & BAR		6"	1-PAIR	1 LB.	2.88	2.88
800 VERS-A-STRIPER® ACCESSORY KIT		SET	1	5 LBS.	43.69	43.69
797 STENCIL KIT		17 PIECE	1	13 LBS.	33.13	33.13
810 FIELD STRIPER (for bulk paint)		28" x 32" x 44"	1	150 LBS. (+freight)	1,039.06	1,039.06
819 GLASS BEAD DISPENSER KIT		—	1	15 LBS.	49.91	49.91
820 REFLECTIVE GLASS BEADS		1 BAG	1	50 LBS.	81.44	81.44
821 REFLECTIVE GLASS BEADS		QUART	12	42 LBS.	88.11	88.11
TREE MARKING PAINT						
REGULAR		16-OZ. AEROSOL	12	14 LBS.	$29.76	$2.48
610 RED, 640 GREEN, 660 BLACK		1 QUART	12	30 LBS.	49.08	4.09
620 ORANGE, 645 DARK GREEN, 670 WHITE		1 GALLON	4	42 LBS.	61.84	15.46
630 YELLOW, 650 BLUE, 680 SILVER						
FLUORESCENT		16-OZ. AEROSOL	12	14 LBS.	$35.76	$2.98
690 RED, 692 ORANGE		1 QUART	12	29 LBS.	96.00	8.00
691 PINK, 693 YELLOW		1 GALLON	4	39 LBS.	111.40	27.85
WET COAT™ TREE MARKING PAINT		16-OZ. AEROSOL	12	14 LBS.	$37.92	$3.16
694 WHITE, 695 BLUE, 697 RED, 698 ORANGE, 699 YELLOW						

Note: Tracer regular paint available on special order basis for government agencies. Minimum 50-gallon yield production. (A) $27.90 (Q) $45.50 (G) $79.80

LUBRICANTS AND PRODUCTION SPECIALTY PRODUCTS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET PRICE CASE	NET PRICE EACH
TOOLMATES®						
400	CLEANER & DEGREASER (NF)	20-OZ. AEROSOL	12	16 LBS.	$48.00	$4.00
		1 GALLON	4	45 LBS.	80.00	20.00
404VG	CLEANER & DEGREASER	1 GALLON	1	4 LBS.	13.00	13.00
[illegible]	MULTIPURPOSE SPRAY ADHESIVE	20-OZ. AEROSOL	12	18 LBS.	39.72	3.31
[illegible]6	HIGH STRENGTH SPRAY ADHESIVE	20-OZ. AEROSOL	12	18 LBS.	42.00	3.50
887	ANTI SPATTER	16-OZ. AEROSOL	12	14 LBS.	29.76	2.48
		1 GALLON	4	41 LBS.	55.52	13.88
890	CUTTING OIL	16-OZ. AEROSOL	12	14 LBS.	24.96	2.08
		1 GALLON	4	41 LBS.	66.52	16.63
928	MOLY OPEN GEAR GREASE	16-OZ. AEROSOL	12	16 LBS.	61.80	5.15
929	MOLY OPEN GEAR OIL	16-OZ. AEROSOL	12	14 LBS.	57.72	4.81
		1 GALLON	1	10 LBS.	25.10	25.10
930	MOLY DRY FILM LUBE	16-OZ. AEROSOL	12	14 LBS.	57.72	4.81
932	FOOD GRADE LUBE OIL	16-OZ. AEROSOL	12	14 LBS.	48.00	4.00
		1 GALLON	4	32 LBS.	79.76	19.94
933	FOOD GRADE LUBE GREASE	16-OZ. AEROSOL	12	16 LBS.	42.00	3.50
		1 GALLON	1	10 LBS.	28.75	28.75
934	DRY FILM LUBE & RELEASE AGENT	16-OZ. AEROSOL	12	14 LBS.	57.72	4.81
		1 GALLON	1	8 LBS.	34.06	34.06
935	SILICONE PAINTABLE RELEASE AGENT	16-OZ. AEROSOL	12	14 LBS.	31.92	2.66
		1 GALLON	1	9 LBS.	28.19	28.19
936	SILICONE LUBE	16-OZ. AEROSOL	12	14 LBS.	30.96	2.58
		1 GALLON	4	25 LBS.	86.64	21.66
941	ANTI-SEIZE COMPOUND	16-OZ. AEROSOL	12	14 LBS.	73.80	6.15
942	ANTI-SEIZE COMPOUND	8-OZ. JAR	12	8 LBS.	87.00	7.25
947	H.D. WIRE ROPE & GEAR LUBE	16-OZ. AEROSOL	12	16 LBS.	57.72	4.81
		1 GALLON	1	10 LBS.	31.25	31.25
948	WHITE LITHIUM GREASE	16-OZ. AEROSOL	12	16 LBS.	48.00	4.00
949	PENETRATING FLUID	16-OZ. AEROSOL	12	14 LBS.	30.96	2.58
		1 GALLON	4	32 LBS.	80.52	20.13
ELECTRAMATES®						
	EPOXY INSULATING COATING	16-OZ. AEROSOL	12	14 LBS.	30.96	2.58
401 RED	402 BLACK 403 CLEAR	1 GALLON	4	45 LBS.	95.56	23.89
414	ANTI STATIC SPRAY	16-OZ. AEROSOL	12	16 LBS.	48.72	4.06
		1 GALLON	4	36 LBS.	39.76	9.94
[illegible]	CONTACT CLEANER (F)	20-OZ. AEROSOL	12	16 LBS.	49.56	4.13
		1 GALLON	4	36 LBS.	62.00	15.50
416	DEFLUXER	16-OZ. AEROSOL	12	14 LBS.	49.56	4.13
417	CONTACT CLEANER (NF)	20-OZ. AEROSOL	12	16 LBS.	103.56	8.63
419VG	CONTACT CLEANER	1 GALLON	1	9 LBS.	14.25	14.25
420	DUSTAIR™	12-OZ. AEROSOL	6	6 LBS.	51.00	8.50
421	DUSTAIR™	6-OZ. AEROSOL	6	3 LBS.	29.28	4.88
425	FREEZE ALL™	12-OZ. AEROSOL	6	6 LBS.	51.00	8.50
430	CABLE CLEANER	20-OZ. AEROSOL	12	14 LBS.	49.80	4.15
		1 GALLON	4	45 LBS.	51.24	12.81
434	ELECTRICAL LUBE	16-OZ. AEROSOL	12	9 LBS.	57.72	4.81
		1 GALLON	1	10 LBS.	44.88	44.88
435	SILICONE LUBE/CLEANER	16-OZ. AEROSOL	12	13 LBS.	37.56	3.13
AUTOMATES®						
590	CARBURETOR TREATMENT	16-OZ. AEROSOL	12	14 LBS.	24.48	2.04
		1 GALLON	4	35 LBS.	48.24	12.06
591	CORROSION PREVENTIVE COATING	16-OZ. AEROSOL	12	14 LBS.	28.92	2.41
		1 GALLON	4	32 LBS.	70.00	17.50
592	BRAKE CLEANER	20-OZ. AEROSOL	12	18 LBS.	30.72	2.56
		1 GALLON	4	45 LBS.	49.00	12.25
593	BELT DRESSING	16-OZ. AEROSOL	12	14 LBS.	25.80	2.15
594	BATTERY PROTECTOR	16-OZ. AEROSOL	12	14 LBS.	25.92	2.16
595	UNDERCOATING AND SOUND DEADENER	20-OZ. AEROSOL	12	21 LBS.	39.00	3.25
		1 GALLON	4	46 LBS.	96.24	24.06
597	GRAPHITE DRY LUBE	16-OZ. AEROSOL	12	14 LBS.	26.52	2.21
		1 GALLON	4	28 LBS.	73.16	18.29
SPECIALTY-LUBRICANTS AND PENETRANTS						
851	FORMULA 5	16-OZ. AEROSOL	12	14 LBS.	39.00	3.25
		1 GALLON	4	32 LBS.	82.52	20.63
931	LUBE EZE™*	16-OZ. AEROSOL	12	14 LBS.	27.96	2.33
		1 GALLON	4	32 LBS.	63.32	15.83
937	TEF-LUBE™	16-OZ. AEROSOL	12	14 LBS.	37.32	3.11
		1 GALLON	1	10 LBS.	33.25	33.25
[illegible]	TEF-LUBE™	8-OZ. AEROSOL	12	8 LBS.	23.76	1.98
[illegible]	TEF-LUBE™	2.5-OZ. AEROSOL	12	4 LBS.	21.00	1.75
940	TEF-LUBE™	2-OZ. BOTTLE	12	2 LBS.	17.76	1.48
950-A	RUST-SOLV®	16-OZ. AEROSOL	12	14 LBS.	33.72	2.81
950-B	RUST-SOLV®	6-OZ. AEROSOL	12	8 LBS.	22.56	1.88
950-P	RUST-SOLV®	1 PINT	12	14 LBS.	24.00	2.00
950-G	RUST-SOLV®	1 GALLON	4	32 LBS.	54.00	13.50

DUSTAIR™ LUBE-EZE™ TEF-LUBE™ TOOLMATES™, ELECTRAMATES™, AUTOMATES™, FREEZE ALL™, and FORMULA 5® are T.M., Aervoe-Pacific Co., Inc. All Rights Reserved *24-pack Counter Displays (C.D.) available at twice the 12-pack case price. VG=Vari-Spray concentrate only

MAINTENANCE AND INSTITUTIONAL SPECIALTY PRODUCTS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
MAINTENANCE SPECIALTY						
860	GLASS CLEANER	20-OZ. AEROSOL	12	18 LBS.	$ 20.88	$1.74
		1 GALLON	4	34 LBS.	19.96	4.99
861	FOAM CLEAN™ (E.P.A. REGISTRATION)	20-OZ. AEROSOL	12	19 LBS.	24.96	2.08
862	HORNET & WASP SPRAY (E.P.A. REGISTRATION)	16-OZ. AEROSOL	12	13 LBS.	45.72	3.81
870	GRAFFITI REMOVER	20-OZ. AEROSOL	12	17 LBS.	31.56	2.63
		1 GALLON	4	40 LBS.	54.84	13.71
880	HAND CLEANER	12-OZ. LIQUID BOTTLE	12	11 LBS.	24.72	2.06
859VG	STATIC CLEAN	1 GALLON	1	8 LBS.	9.94	9.94
MOLD MATES™						
	AVAILABLE JULY 1, 1996					
	A complete new line of mold release and maintenance products.					
e-Z-est®						
SILVER & JEWELRY PROTECTION						
1949	SILVER POLISH	12-OZ. LIQUID BOTTLE	12	10 LBS.	$40.68	$3.39
		1 GAL. LIQUID BOTTLE	4	40 LBS.	86.12	21.53
1951	SPEEDIP™ CLEANER	8-OZ. LIQUID JAR	12	6 LBS.	22.56	1.88
		1 GAL. LIQUID BOTTLE	4	40 LBS.	73.16	18.29
1954	ROUGE CLOTHS	12 PK. CLOTH PACKET	12	1 LB.	36.12	3.01
1953	JEWELDIP™ CLEANER	5-OZ. LIQUID JAR	12	6 LBS.	22.80	1.90
		1 GAL. LIQUID BOTTLE	4	40 LBS.	86.12	21.53
POLISHES AND CLEANERS						
1958	MARBLE CLEANER & POLISH	12-OZ. LIQUID BOTTLE	12	10 LBS.	$39.96	$3.33
		1 GAL. LIQUID BOTTLE	4	44 LBS.	83.12	20.78
1962	METAL POLISH	12-OZ. LIQUID BOTTLE	12	11 LBS.	39.96	3.33
		1 GAL. LIQUID BOTTLE	4	48 LBS.	86.12	21.53
1979	TILE CLEANER	12-OZ. LIQUID BOTTLE	12	11 LBS.	25.32	2.11
		1 GAL. LIQUID BOTTLE	4	40 LBS.	79.80	19.95
1982	LEMON OIL WOOD POLISH	12-OZ. LIQUID BOTTLE	12	10 LBS.	34.08	2.84
		1 GAL. LIQUID BOTTLE	4	40 LBS.	54.00	13.50
1985	COIN CLEANER	5-OZ. LIQUID BOTTLE	12	6 LBS.	22.56	1.88
		1 GAL. LIQUID BOTTLE	4	46 LBS.	79.00	19.75
865	LEMON OIL POLISH & CLEANER	16-OZ. AEROSOL	12	14 LBS.	25.80	2.15
		1 GAL. LIQUID BOTTLE	4	40 LBS.	83.32	20.83
ATHENA®						
PORTABLE GAS STOVES						
1S74 RED	TABLE TOP - 7400 BTU STOVE (BUTANE)	CARTON	6	43 LBS.	$261.48	$43.58
1U90 BEIGE	TABLE TOP (3 IN 1) - 9000 BTU STOVE (BUTANE)	CARTON	4	41 LBS.	281.64	70.41
1S25 RED	POCKETSTOVE - 7000 BTU STOVE (ISOBUTANE)	CARTON	4	7 LBS.	124.72	31.18
1225	POCKETSTOVE™ CLAMSHELL KIT (STOVE, 2 FUEL, CASE, SCREEN)	CARTON	4	9 LBS.	165.52	41.38
1235	POCKETSTOVE™ GIFT BOX KIT (STOVE, 2 FUEL, DELUXE CASE, SCREEN)	CARTON	6	12 LBS.	293.64	48.94
FUEL CANS						
1213	BUTANE APPLIANCE REFILL (w/special tip)	16-OZ. AEROSOL	12	11 LBS.	$41.28	$3.44
1215	BUTANE TABLE TOP FUEL SINGLE	16-OZ. AEROSOL	12	11 LBS.	28.80	2.40
0315	BUTANE TABLE TOP FUEL 4 (3 PACK DISPLAY)	16-OZ. AEROSOL	4	12 LBS.	30.84	7.71
1219	ISOBUTANE POCKETSTOVE REFILL	2-OZ. AEROSOL	12	4 LBS.	19.92	1.66
1220	ISOBUTANE POCKETSTOVE CAMP FUEL	6-OZ. AEROSOL	12	9 LBS.	30.00	2.50
ACCESSORIES						
1221	CONNECTOR HOSE FOR MODEL 1220/1S25	I EACH	1	3 LBS.	$13.69	$13.69
1250	MICRO TORCH & SOLDER KIT (BUTANE)	I EACH	4	4 LBS.	169.00	42.25
1297	POCKETSTOVE™ CAMP CASE	I EACH	1	1 LB.	12.23	12.23
1298	POCKESTOVE™ BELT CASE	I EACH	1	1 LB.	4.94	4.94
1299	TABLE TOP CARRYING CASE	I EACH	1	1 LB.	6.91	6.91
COMPACTION & RECYCLING HARDWARE (Net Prices)						
1099	AEROSOL CAN EVACUATOR - MANUAL	1 EACH (+ freight)	1	15 LBS.	$531.25	$531.25
1401	OIL FILTER/GAL. CAN COMPACTOR - HYDRAULIC	1 EACH (+ freight)	1	450 LBS.	2,937.50	2,937.50

VG = Vari-Spray concentrate only. **ATHENA®** is a registered trademark of Aervoe-Pacific Company. **E-Z-EST®** is a registered trademark of Aervoe-Pacific Company.
SPEEDIP™, JEWELDIP™, and POCKETSTOVE™, are Trademarks of Aervoe-Pacific Co., Inc. All Rights Reserved.

STATUS QUO MATERIAL:	Omega 3812 SN 313-2 Paint Remover
Manufacturer:	Omega Chemical Corp.
Building:	18
PROPOSED MATERIAL:	TT-R-251J Type III C1 B Paint Remover
Manufacturer:	MSCI, Ltd.

MSDS

TT-R-251J Type III C1 B Paint Remover	Page H10-1

Product Information

TT-R-251J Type III C1 B Paint Remover	Page 977 - GSA Spring 1996 Supply Catalog

Cost Data

TT-R-251J Type III C1 B Paint Remover	Page 977 - GSA Spring 1996 Supply Catalog

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF April 1996

Proprietary Version - For U.S. Government Use Only

FSC: 8010
NIIN: 001605800
Manufacturer's CAGE: 60672
Part No. Indicator: A
Part Number/Trade Name: TT-R-251J, TYPE III, CLASS B

Nuclear Water Data

This is not a Nuclear Water Chemical NIIN.

Standard PMS Identification Number Data

SPIN FSC: 8010
SPIN NIIN: 001605800
SPIN: 3985G

General Information

Item Name: REMOVER, PAINT
Company's Name: MSCI, LTD
Company's Street:
Company's P. O. Box:
Company's City:
Company's State:
Company's Country:
Company's Zip Code:
Company's Emerg Ph #: 312-586-8000
Company's Info Ph #:
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:

Safety Focal Point: G
Record No. For Safety Entry: 007
Tot Safety Entries This Stk#: 011
Status:
Date MSDS Prepared: 01JAN85
Safety Data Review Date: 17OCT85
Supply Item Manager: GSA
MSDS Preparer's Name:
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
□
Report for NIIN: 001605800

Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number: PBDDHP
Specification Number: TT-R-251J
Spec Type, Grade, Class:
Hazard Characteristic Code: N1
Unit Of Issue: GL
Unit Of Issue Container Qty: 1 GALLON
Type Of Container:
Net Unit Weight:
NRC/State License Number:
Net Explosive Weight:
Net Propellant Weight-Ammo:
Coast Guard Ammunition Code:

==========

Ingredients/Identity Information

==========

Proprietary: YES
Ingredient: CHLORINATED HYDROCARBONS
Ingredient Sequence Number: 01
Percent: <75
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 1000014CH
CAS Number:
OSHA PEL:
ACGIH TLV: 500 PPM
Other Recommended Limit:

==========

Physical/Chemical Characteristics

==========

Appearance And Odor: OFF-WHITE, VISCOUS LIQUID, MILD ODOR.

Boiling Point: 105F
Melting Point:
Vapor Pressure (MM Hg/70 F):
Vapor Density (Air=1):
Specific Gravity: 1.10
Decomposition Temperature:
Evaporation Rate And Ref:
Solubility In Water: NEGLIGIBLE
Percent Volatiles By Volume:
Viscosity:
pH:
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss): N/P
Corrosion Rate (IPY):
Autoignition Temperature:

Fire and Explosion Hazard Data

Flash Point: NONE
Flash Point Method: N/P
□
Report for NIIN: 001605800

Lower Explosive Limit:
Upper Explosive Limit:
Extinguishing Media: N/A
Special Fire Fighting Proc:
Unusual Fire And Expl Hazrds:

Reactivity Data

Stability: YES
Cond To Avoid (Stability):
Materials To Avoid:
Hazardous Decomp Products:
Hazardous Poly Occur: NO
Conditions To Avoid (Poly):

Health Hazard Data

LD50-LC50 Mixture:
Route Of Entry - Inhalation: N/P
Route Of Entry - Skin: N/P
Route Of Entry - Ingestion: N/P

Health Haz Acute And Chronic:
Carcinogenicity - NTP: N/P
Carcinogenicity - IARC: N/P
Carcinogenicity - OSHA: N/P
Explanation Carcinogenicity:
Signs/Symptoms Of Overexp:
Med Cond Aggravated By Exp:
Emergency/First Aid Proc: IN CASE OF SKIN OR EYE CONTACT, FLUSH WELL W/WATER. SEE DR, IF EYE IRRITATION PERSISTS.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: ALLOW SOLVENTS TO EVAPORATE. ABSORB RESIDUE W/INERT.
Neutralizing Agent:
Waste Disposal Method: DETERMINED BY LOC POLLUTION STANDARDS.
Precautions-Handling/Storing: STORE AWAY FROM HEAT & OUT OF DIRECT SUNLIGHT.
Other Precautions: OPEN CAREFULLY TO AVOID SPURTING.

Control Measures

Respiratory Protection: LOC EXHAUST-DESIRABLE
Ventilation: LOC EXHAUST- DESIRABLE
Protective Gloves: RUBBER, POLY
Eye Protection: GOGGLES
Other Protective Equipment:
Work Hygienic Practices:
Suppl. Safety & Health Data:
□
Report for NIIN: 001605800

Transportation Data

Transportation Action Code:
Transportation Focal Point: G
Trans Data Review Date: 85290
DOT PSN Code: ZZZ
DOT Symbol: N/R
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
DOT Class: N/R
DOT ID Number: N/R
DOT Pack Group: N/R

DOT Label: N/R
DOT/DoD Exemption Number:
IMO PSN Code:
IMO Proper Shipping Name:
IMO Regulations Page Number:
IMO UN Number:
IMO UN Class:
IMO Subsidiary Risk Label:
IATA PSN Code:
IATA UN ID Number:
IATA Proper Shipping Name:
IATA UN Class:
IATA Subsidiary Risk Class:
IATA Label:
AFI PSN Code: ZZZ
AFI Symbols:
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI Class: N/R
AFI ID Number: N/R
AFI Pack Group: N/R
AFI Label: N/R
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code:
N.O.S. Shipping Name:
Additional Trans Data:

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
□
Report for NIIN: 001605800

2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:

3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

Label Data

Label Required: YES
Technical Review Date:
Label Date:
MFR Label Number:
Label Status: G
Common Name: TT-R-251J, TYPE III, CLASS B
Chronic Hazard: N/P
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions:
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: MSCI, LTD
Label Street:
Label P.O. Box:
Label City:
Label State:
Label Zip Code:
Label Country:
Label Emergency Number: 312-586-8000
Year Procured:
□

STATUS QUO MATERIAL:	T-10 Paint Thinner
Manufacturer:	Devoe Coatings Co.
Building:	18
PROPOSED MATERIAL:	Odorless Thin-X
Manufacturer:	Sterling-Clark-Lurton Corp.

MSDS

Odorless Thin-X	Page H11-1

Product Information

Odorless Thin-X	Page H11-6

Cost Data

Odorless Thin-X	Obtained over the phone

Sterling

MATERIAL SAFETY DATA SHEET

MSDS NUMBER 1010 PAGE 1

24 HOUR EMERGENCY ASSISTANCE	GENERAL MSDS ASSISTANCE	BE SAFE
CHEMTREC: 800-424-9300	SCL 617-322-0163	READ OUR PRODUCT SAFETY INFORMATION ...AND PASS IT ON (PRODUCT LIABILITY LAW REQUIRES IT)

ACUTE HEALTH	FIRE	REACTIVITY	HAZARD RATING
2	2	0	LEAST - 0 SLIGHT - 1 MODERATE - 2 HIGH - 3 EXTREME - 4

*FOR ACUTE AND CHRONIC HEALTH EFFECTS REFER TO THE DISCUSSION IN SECTION III

SECTION 1 NAME

PRODUCT ODORLESS THIN-X

CHEMICAL NAME NAPHTHA (PETROLEUM) HEAVY ALKYLATE

FAMILY HYDROCARBON SOLVENT

SCL CODE 1010

SECTION II-A PRODUCT/INGREDIENT

NO.	COMPOSITION	CAS NUMBER	PERCENT
P	ODORLESS THIN-X	64741-65-7	100

* A COMPLEX MIXTURE OF PREDOMINATELY BRANCHED CHAIN, SATURATED C9-C12 HYDROCARBONS.

SECTION II-B ACUTE TOXICITY DATA

NO.	ACUTE ORAL LD50	ACUTE DERMAL LD50	ACUTE INHALATION LC50
**	>25 ML/KG (RAT)	>5 ML/KG (RABBIT)	NO DEATHS AT 592 PPM/4H (RAT)

**BASED ON EITHER PRODUCT OR ESSENTIALLY SIMILAR PRODUCT TESTING.

SECTION III HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

EYE CONTACT
LIQUID IS EXPECTED TO BE NONIRRITATING TO PRACTICALLY NONIRRITATING TO EYES.

SKIN CONTACT
LIQUID IS EXPECTED TO BE SLIGHTLY TO MODERATELY IRRITATING TO THE SKIN. PROLONGED OR REPEATED LIQUID CONTACT CAN RESULT IN DEFATTING AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS.

INHALATION
HIGH VAPOR CONCENTRATIONS MAY RESULT IN CNS DEPRESSION.

INGESTION
INGESTION OF PRODUCT MAY RESULT IN VOMITTING; ASPIRATION (BREATHING) OF VOMITUS INTO THE LUNGS MUST BE AVOIDED AS EVEN SMALL QUANTITIES MAY RESULT IN ASPIRATION PNEUMONITIS.

SIGNS AND SYMPTOMS
IRRITATION AS NOTED ABOVE. EARLY TO MODERATE CNS (CENTRAL NERVOUS SYSTEM) DEPRESSION MAY BE EVIDENCED BY GIDDINESS, HEADACHE, DIZZINESS AND NAUSEA; IN EXTREME CASES, UNCONSCIOUSNESS AND DEATH MAY OCCUR.

[redacted]Sterling

PRODUCT NAME: ODORLESS THIN-X

AGGRAVATED MEDICAL CONDITIONS
PREEXISTING EYE AND SKIN DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT.

SECTION IV OCCUPATIONAL EXPOSURE LIMITS

	OSHA		ACGIH	OTHER
NO.	PEL/TWA	PEL/CEILING	TLV/TWA	TLV/STEL
P	100 PPM*		100 PPM*	

*LIMITS FOR STODDARD SOLVENT: TO BE USED AS A GUIDE ONLY.

SECTION V EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT
FLUSH EYES WITH WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION.

SKIN CONTACT
REMOVE CONTAMINATED CLOTHING/SHOES. AND WIPE EXCESS FROM SKIN. FLUSH SKIN WITH WATER. FOLLOW BY WASHING WITH SOAP AND WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION. DO NOT REUSE CLOTHING UNTIL CLEANED.*

INHALATION
REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION.

INGESTION
DO NOT INDUCE VOMITING. IF VOMITING OCCURS SPONTANEOUSLY, KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF LIQUID INTO THE LUNGS. GET MEDICAL ATTENTION.*

NOTE TO PHYSICIAN
*IF MORE THAN 2.0 ML PER KG HAS BEEN INGESTED AND VOMITING HAS NOT OCCURRED, EMESIS SHOULD BE INDUCED WITH SUPERVISION. KEEP VICTIM'S HEAD BELOW HIPS TO PREVENT ASPIRATION. IF SYMPTOMS SUCH AS LOSS OF GAG REFLEX, CONVULSIONS OR UNCONSCIOUSNESS OCCUR BEFORE EMESIS, GASTRIC LAVAGE USING A CUFFED ENDOTRACHAEL TUBE SHOULD BE CONSIDERED.

SECTION VI SUPPLEMENTAL HEALTH INFORMATION

MALE RATS EXPOSED TO VAPORS OF A SIMILAR SOLVENT FOR 6 WEEKS SHOWED EVIDENCE OF KIDNEY DAMAGE. THE RELEVANCE OF THIS EFFECT TO MAN IS UNKNOWN. IN A 13 WEEK INHALATION STUDY WITH MALE RATS SIMILAR KIDNEY EFFECTS WERE SEEN ALONG WITH A LOW GRADE ANEMIA.

SECTION VII PHYSICAL DATA

BOILING POINT: (DEG F)	355-395	SPECIFIC GRAVITY: (H20=1)	0.76	VAPOR PRESSURE: (MM HG)	<5@100 DEG. F
MELTING POINT: (DEG F)	NOT AVAILABLE	SOLUBILITY: (IN WATER)	NEGLIGIBLE	VAPOR DENSITY: (AIR=1)	5.3

Sterling

PRODUCT NAME: ODORLESS THIN-X

EVAPORATION RATE (N-BUTYL ACETATE = 1): < 0.1

APPEARANCE AND ODOR:
LIGHT COLORED LIQUID. HYDROCARBON ODOR

SECTION VIII FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD:
125 DEG. F (TCC)

FLAMMABLE LIMITS /% VOLUME IN AIR
LOWER: 1 UPPER: 7

EXTINGUISHING MEDIA
USE WATER FOG, FOAM, DRY CHEMICAL OR CO2. DO NOT USE A DIRECT STREAM OF WATER. PRODUCT WILL FLOAT AND CAN BE REIGNITED ON SURFACE OF WATER.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS
CAUTION. COMBUSTIBLE. DO NOT ENTER CONFINED FIRE SPACE WITHOUT FULL BUNKER GEAR (HELMET WITH FACE SHIELD, BUNKER COATS, GLOVES AND RUBBER BOOTS), INCLUDING A POSITIVE PRESSURE NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER.

UNUSUAL FIRE AND EXPLOSION HAZARDS
CONTAINERS EXPOSED TO INTENSE HEAT FROM FIRES SHOULD BE COOLED WITH WATER TO PREVENT VAPOR PRESSURE BUILDUP WHICH COULD RESULT IN CONTAINER RUPTURE. CONTAINER AREAS EXPOSED TO DIRECT FLAME CONTACT SHOULD BE COOLED WITH LARGE QUANTITIES OF WATER AS NEEDED TO PREVENT WEAKENING OF CONTAINER STRUCTURE.

SECTION IX REACTIVITY

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS AND MATERIALS TO AVOID:
AVOID HEAT, FLAME AND CONTACT WITH STRONG OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS
CARBON MONOXIDE AND UNIDENTIFIED ORGANIC COMPOUNDS MAY BE FORMED DURING COMBUSTION.

SECTION X EMPLOYEE PROTECTION

RESPIRATORY PROTECTION
AVOID PROLONGED OR REPEATED BREATHING OF VAPORS. USE A NIOSH-APPROVED RESPIRATOR AS REQUIRED TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134, USE EITHER AN ATMOSPHERE-SUPPLYING RESPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR ORGANIC VAPORS.

OSHA HAS ESTABLISHED TRANSITIONAL OCCUPATIONAL EXPOSURE LIMITS FOR THIS PRODUCT AND/OR COMPONENTS OF THIS PRODUCT. REFER TO 29 CFR 1910.1000 FOR THESE TRANSITIONAL LIMITS AND REQUIREMENTS FOR MEETING THESE LIMITS.

PROTECTIVE CLOTHING
AVOID CONTACT WITH EYES. WEAR SAFETY GLASSES OR GOGGLES AS APPROPRIATE. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. WEAR CHEMICAL-RESISTANT GLOVES AND OTHER CLOTHING AS REQUIRED TO MINIMIZE CONTACT.

ADDITIONAL PROTECTIVE MEASURES
USE VENTILATION AS REQUIRED TO CONTROL VAPOR CONCENTRATIONS. AIR-DRY CONTAMINATED CLOTHING IN A WELL VENTILATED AREA, THEN LAUNDER BEFORE REUSINT.

Sterling

NAME: ODORLESS THIN-X

MSDS 1010
PAGE 4

SECTION XI ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES
CAUTION. COMBUSTIBLE. *** LARGE SPILLS *** ELIMINATE POTENTIAL SOURCES OF IGNITION. WEAR APPROPRIATE RESPIRATOR AND OTHER PROTECTIVE CLOTHING. SHUT OFF SOURCE OF LEAK ONLY IF SAFE TO DO SO. DIKE AND CONTAIN. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND, OR OTHER SUITABLE MATERIAL; PLACE IN NON-LEAKING CONTAINERS AND SEAL TIGHTLY FOR PROPER DISPOSAL. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE; DISPOSE OF FLUSH SOLUTION AS ABOVE. *** SMALL SPILLS *** TAKE UP WITH AN ABSORBENT MATERIAL AND PLACE IN NON-LEAKING CONTAINERS FOR PROPER DISPOSAL.

SECTION XII SPECIAL PRECAUTIONS

KEEP LIQUID AND VAPOR AWAY FROM HEAT, SPARKS AND FLAME. SURFACES THAT ARE SUFFICIENTLY HOT MAY IGNITE EVEN LIQUID PRODUCT IN THE ABSENCE OF SPARKS OR FLAME. EXTINGUISH PILOT LIGHTS, CIGARETTES AND TURN OFF OTHER SOURCES OF IGNITION PRIOR TO USE AND UNTIL ALL VAPORS ARE GONE. VAPORS MAY ACCUMULATE AND TRAVEL TO IGNITION SOURCES DISTANT FROM THE HANDLING SITE; FLASH-FIRE CAN RESULT. KEEP CONTAINERS CLOSED WHEN NOT IN USE. USE WITH ADEQUATE VENTILATION.

CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, CAN CONTAIN EXPLOSIVE VAPORS. DO NOT CUT, DRILL, GRIND, WELD OR PERFORM SIMILAR OPERATIONS ON OR NEAR CONTAINERS.

STATIC ELECTRICITY MAY ACCUMULATE AND CREATE A FIRE HAZARD. GROUND FIXED EQUIPMENT. BOND AND GROUND TRANSFER CONTAINERS AND EQUIPMENT.

SECTION XIII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION:
COMBUSTIBLE LIQUID

D.O.T. PROPER SHIPPING NAME:
PETROLEUM NAPHTHA

OTHER REQUIREMENTS:
UN 1255. GUIDE SHEET 27.

SECTION XIV OTHER REGULATORY CONTROLS

THIS PRODUCT IS LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL SUBSTANCES

IN ACCORDANCE WITH SARA TITLE III, SECTION 313, THE EDS SHOULD ALWAYS BE COPIED AND SENT WITH THE MSDS.

SECTION XV STATE REGULATORY INFORMATION

THIS INFORMATION IS BEING SYSTEMATICALLY ADDED TO OUR MSDS. IT HAS PREVIOUSLY BEEN PROVIDED TO YOU IN VARIOUS WAYS, INCLUDING THE MSDS. THE NEW MSDS FORMAT IS IINTENDED TO PROVIDE THE USER WITH THE INFORMATION IN A MORE CONVENIENT MANNER.

Sterling

PRODUCT NAME: ODORLESS THIN-X

MSDS 1010
PAGE 5

SECTION XVI SPECIAL NOTES

THE OCCUPATIONAL EXPOSURE LIMITS (SECTION IV) AND/OR THE RESPIRATORY PROTECTION PRECAUTIONS (SECTION X) HAVE BEEN REVISED.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, SCL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SCL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

DATE PREPARED: January 28, 1993

BE SAFE

READ OUR PRODUCT
SAFETY INFORMATION ....AND PASS IT ON
(PRODUCT LIABILITY LAW REQUIRES IT)

STERLING-CLARK-LURTON CORP.
184 COMMERCIAL STREET, BOX J
MALDEN, MA 02148

Sterling

ENVIRONMENTAL DATA SHEET

EDS NUMBER 1010 PAGE 1

PRODUCT	ODORLESS THIN-X
PRODUCT CODE	1010

SECTION I PRODUCT/COMPOSITION

NO.	COMPONENT	CAS NUMBER	PERCENT
PRODUCT	ODORLESS THIN-X	64741-65-7	100

*A COMPLEX MIXTURE OF PREDOMINATELY BRANCHED CHAIN, SATURATED C9-C12 HYDROCARBONS.

SECTION II SARA TITLE III INFORMATION

NO.	EHS RQ (LBS) (*1)	EHS TPQ (LBS) (*2)	SEC 313 (*3)	313 CATEGORY (*4)	311/312 CATEGORIES (*5)
PRODUCT					H-1, H-2, P-3

FOOTNOTES

*1 = REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE, SEC, 302
*2 = THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE, SEC 302
*3 = TOXIC CHEMICAL, SEC 313
*4 = CATEGORY AS REQUIRED BY SEC 313 (40 CFR 372.65C), MUST BE USED ON TOXIC RELEASE INVENTORY FORM
*5 = HAZARD CATEGORY FOR SARA SEC. 311/312 REPORTING

HEALTH H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD H-2 = DELAYED (CHRONIC) HEALTH HAZARD
PHYSICAL P-3 = FIRE HAZARD P-4 = SUDDEN RELEASE OF PRESSURE HAZARD
P-5 = REACTIVE HAZARD

SECTION III ENVIRONMENTAL RELEASE INFORMATION

UNDER EPA-CWA, THIS PRODUCT IS CLASSIFIED AS AN OIL UNDER SECTION 311. SPILLS INTO OR LEADING TO SURFACE WATERS THAT CAUSE A SHEEN MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802

SECTION IV RCRA INFORMATION

UNDER EPA - RCRA (40 CFR 261.21, IF THIS PRODUCT BECOMES A WASTE MATERIAL, IT WOULD BE IGNITABLE HAZARDOUS WASTE, HAZARDOUS WASTE NUMBER D001. REFER TO LATEST EPA OR STATE REGULATIONS REGARDING PROPER DISPOSAL.

[redacted]Sterling

PRODUCT NAME: ODORLESS THIN-X

EDS NUMBER 1010
PAGE 2

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, SCL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SCL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

DATE PREPARED: January 29, 1993

STERLING-CLARK-LURTON CORP
184 COMMERCIAL STREET, BOX J
MALDEN, MA 02148

FOR ADDITIONAL INFORMATION ON THIS ENVIRONMENTAL DATA PLEASE CALL 617-322-0163

FOR EMERGENCY ASSISTANCE PLEASE CALL
CHEMTREC: (800) 424-9300

STATUS QUO MATERIAL:	Devoe ABC #3 Red AF Paint
Manufacturer:	Devoe Marine Coatings
Building:	18
PROPOSED MATERIAL:	N-5564 Gloss Red Silicone Enamel 11105
Manufacturer:	Niles Chemical Paint Co.

MSDS

N-5564 Gloss Red Silicone Enamel 11105	Page H12-1

Product Information

N-5564 Gloss Red Silicone Enamel 11105	Page 960 - GSA Spring 1996 Supply Catalog

Cost Data

N-5564 Gloss Red Silicone Enamel 11105	Page 960 - GSA Spring 1996 Supply Catalog

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF April 1996

Proprietary Version - For U.S. Government Use Only

FSC: 8010
NIIN: 013499006
Manufacturer's CAGE: 02388
Part No. Indicator: B
Part Number/Trade Name:. N-5564 GLOSS RED SILICONE ENAMEL 11105

Nuclear Water Data

This is not a Nuclear Water Chemical NIIN.

Standard PMS Identification Number Data

This is not a Standard PMS Identification Number NIIN.

General Information

Item Name: ENAMEL RED 11105
Company's Name: NILES CHEMICAL PAINT CO
Company's Street: 225 FORT STREET
Company's P. O. Box: 307
Company's City: NILES
Company's State: MI
Company's Country: US
Company's Zip Code: 49120
Company's Emerg Ph #: 219-236-5856
Company's Info Ph #: 616-683-3377
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:
Safety Focal Point: G
Record No. For Safety Entry: 002

Tot Safety Entries This Stk#: 002
Status: FE
Date MSDS Prepared: 13OCT94
Safety Data Review Date: 27FEB95
Supply Item Manager: GSA
MSDS Preparer's Name: MIKE LICHATOWICH
Preparer's Company: NILES CHEMICAL PAINT CO
Preparer's St Or P. O. Box: 225 FORT STREET; PO BOX 307
Preparer's City: NILES
Preparer's State: MI
Preparer's Zip Code: 49120
Other MSDS Number:
□
Report for NIIN: 013499006

MSDS Serial Number: PBWRGT
Specification Number: MIL-E-24635A
Spec Type, Grade, Class: TYPE 2; CLASS 1
Hazard Characteristic Code: NK
Unit Of Issue: CN
Unit Of Issue Container Qty: 5 GL CN
Type Of Container: METAL
Net Unit Weight: N/K
NRC/State License Number: N/K
Net Explosive Weight: N/K
Net Propellant Weight-Ammo: N/K
Coast Guard Ammunition Code: N/K

==========

Ingredients/Identity Information

==========

Proprietary: NO
Ingredient: HIGH SOLIDS SILICONE (VAPOR PRESSURE 1.5 MM HG @ 20C)
Ingredient Sequence Number: 01
Percent: 39
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 1002193SI
CAS Number:
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: GROUND LIMESTONE
Ingredient Sequence Number: 02
Percent: 24
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: EV9580000

CAS Number: 1317-65-3
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: MINERAL SPIRITS (VAPOR PRESSURE 0 MM HG @ 20C)
Ingredient Sequence Number: 03
Percent: 18
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: WJ8925000
CAS Number: 8052-41-3
OSHA PEL: 100 PPM
ACGIH TLV: 100 PPM
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: # 100 SOLVENT (VAPOR PRESSURE 4.4 MM HG @ 20C)
□
Report for NIIN: 013499006

Ingredient Sequence Number: 04
Percent: 9
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 1003761AR
CAS Number: 64742-95-6
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: 100 PPM
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: COBALT COMPOUNDS (AS CO) (SARA 313)
Ingredient Sequence Number: 05
Percent: <1
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: GF8750000
CAS Number: 7440-48-4
OSHA PEL: 0.1 MG/M3
ACGIH TLV: 2 MG/M3
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: PROPRIETARY INGREDIENTS (MFR STATES UNIDENTIFIED NOT CONSIDERED HAZARDOUS UNDER FEDERAL HAZARD COMMUNICATION REGS)
Ingredient Sequence Number: 06
Percent: BALANCE
Ingredient Action Code:
Ingredient Focal Point: G

NIOSH (RTECS) Number: 1004255PI
CAS Number:
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: VOC: 2.78 LBS/GAL
Ingredient Sequence Number: 07
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 9999999VO
CAS Number:
OSHA PEL: N/K
ACGIH TLV: N/K
Other Recommended Limit: NONE RECOMMENDED

Physical/Chemical Characteristics

Appearance And Odor: LIQUID, ODOR OF SOLVENTS
Boiling Point: 285 TO 398F
Melting Point: N/K
Vapor Pressure (MM Hg/70 F): N/K
□
Report for NIIN: 013499006

Vapor Density (Air=1): > AIR
Specific Gravity: 1.168
Decomposition Temperature: N/K
Evaporation Rate And Ref: SLOWER THAN ETHER
Solubility In Water: SLIGHT
Percent Volatiles By Volume: 41.14
Viscosity: 100 KU MAX
pH: N/R
Radioactivity: N/K
Form (Radioactive Matl):
Magnetism (Milligauss): N/P
Corrosion Rate (IPY): MINIMAL
Autoignition Temperature: N/K

Fire and Explosion Hazard Data

Flash Point: 107F,42C
Flash Point Method: TCC
Lower Explosive Limit: 0.8
Upper Explosive Limit: 0.0

Extinguishing Media: DRY CHEMICAL, FOAM, CO2
Special Fire Fighting Proc: WEAR SCBA W/FULL FACPIECE (POSITIVE PRESSUR
E
MODE) & FULL PROTECT CLOTH. USE WATER TO COOL CLOSED CNTNR TO PREVENT
PRESSURE BLDUP/AUTO IGNIT/EXPLOSION W/HEAT.
Unusual Fire And Expl Hazrds: KEEP CNTNR CLSD.VAPOR HEAVY,TRAVEL ON GRN
D
TO IGNIT.KEEP FROM HEAT/IGNIT.CLSD CNTNR EXPLODE W/HEAT.APPLIC TO HOT S
RFCS
REQ SPCL CAUTN.DECOMP PRODUCT-HEALTH HZD.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): HIGH TEMPERATURES
Materials To Avoid: STRONG OXIDIZERS, STRONG ACIDS
Hazardous Decomp Products: CAN PRODUCE CARBON MONOXIDE AND/OR CARBON
DIOXIDE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): HIGH TEMPERATURES

Health Hazard Data

LD50-LC50 Mixture: N/K
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: N/P
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: EYE:SEVERE IRRIT, TEARING, REDNESS, BLURR
ED
VISION. SKIN:REDNESS, IRRIT, DEFATTING (LEADING TO DERMATITIS). INHAL:N
ASAL
& RESPIRATORY IRRIT, CNS DEPRESSION (DIZZINESS, DROWSINESS, WEAKNESS,
FATIGUE, CONFUSION) NAUSEA,HEADACHE,VERTIGO,UNCONSCIOUSNESS,ASPHYXIATIO
N.
INGEST:GI IRRIT,ABDOMINAL PAIN,NAUSEA,VOMITING,DIARRHEA.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: N/K
□
Report for NIIN: 013499006

Signs/Symptoms Of Overexp: CHRONIC: LIVER, KIDNEYS, CNS. PROLONGED
EXPOSURE TO SOLVENTS MAY CAUSE CHRONIC HEALTH EFFECTS. TARGET ORGANS: L
IVER
KIDNEY, CNS, SKIN, EYES, RESPIRATORY SYSTEM, CNS.
Med Cond Aggravated By Exp: NONE KNOWN

Emergency/First Aid Proc: INHAL:MOVE TO FRESH AIR IMMED.IF BREATH STOPPD,GIVE ARTIF RESPRTN.GET MED AID ASAP.SKIN:IMMED FLUSH W/PLENTY H2O.IF MAT'L PENETRATES CLOTH,IMMED REMOVE CONTAM CLOTH & FLUSH SKIN W/H2O.GET MED AID.WASH CLOTH & DECONTAM SHOES BEFORE REUSE.EYE:IMMED FLUSH W/LRG AMT H2O 15 MIN,LIFT UPPER/LOWER LIDS.GET MED AID IMMED.INGEST:DRINK 1-2 GLASS H2O. DON'T INDUCE VOMIT.SEE DR/POISON CTR IMMED.TREAT SYMPTOMS.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: ELIM IGNIT SOURCE.MINIMIZE BREATHING OF VAPOR.AVOID SKIN CONTACT.SMALL:ABSORB W/INERT MAT'L (CLAY,SOIL,COMMERCL ABSORB) SHOVEL RECLAIMED LIQ & ABSORBNT INTO RECOVERY/SALVAGE DRUMS FOR DISPOSAL.LRG:DIKE,RECLAIM INTO RECOVERY/SALVAGE DRUMS/TANK TRUCK.
Neutralizing Agent: N/K
Waste Disposal Method: DISPOSE OF IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATION. EPA HAZARDOUS WASTE CODE: D001 (IGNITABLE)
Precautions-Handling/Storing: AVOID STORAGE IN HIGH TEMPERATURE AREA OR NEAR FIRE OR OPEN FLAME. KEEP CONTAINERS CLOSED WHEN NOT IN USE. AVOID ROUGH HANDLING.
Other Precautions: CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTY. DO NOT WELD OR FLAME CUT ON EMTPY DRUMS. SHOCK FROM DROPPING MAY SPLIT CONTAINER.

Control Measures

Respiratory Protection: WEAR AN APPROPRIATE PROPERLY FITTED HALF-MASK OR FULL FACEPIECE RESPIRATOR (NIOSH/MSHA) DURING & AFTER APPLICATION UNLESS AIR MONITORING DEMONSTRATES VAPOR/MIST LEVELS ARE BELOW APPLICABLE LIMITS. FOLLOW RESPIRATOR MFR'S DIRECTIONS FOR USE.
Ventilation: KEEP AIR CONC BELOW TLV/PEL.REMOVE DECOMP PRODCT FORMED DURING WELD/FLAME CUT COATED SRFCS.VENT VAPOR FROM BAKING FINISH
Protective Gloves: CHEM RESISTANT (NITRILE/VITON) GLOVES
Eye Protection: CHEM GOGGLES,SAFETY GLASSES,FACE SHIELD
Other Protective Equipment: DON'T WEAR CONTACT LENSES WHILE WORKING WITH PRODUCT.
Work Hygienic Practices: WASH PROMPTLY WHEN SKIN BECOMES CONTAMINATED. REMOVE ANY CLOTHING THAT BECOMES WET (AVOID FLAMMABILITY HAZARD) *
Suppl. Safety & Health Data: * WASH BEFORE REUSE. WASH HANDS BEFORE

EATING, SMOKING OR USING RESTROOM.

Transportation Data

Transportation Action Code:
Transportation Focal Point: G
Trans Data Review Date: 95058
DOT PSN Code: LFD
DOT Symbol:
DOT Proper Shipping Name: PAINT
DOT Class: 3
□
Report for NIIN: 013499006

DOT ID Number: UN1263
DOT Pack Group: II
DOT Label: FLAMMABLE LIQUID
DOT/DoD Exemption Number: N/K
IMO PSN Code: LCP
IMO Proper Shipping Name: PAINT OR PAINT RELATED MATERIAL
IMO Regulations Page Number: 3268
IMO UN Number: 1263
IMO UN Class: 3.2
IMO Subsidiary Risk Label: -
IATA PSN Code: SXI
IATA UN ID Number: 1263
IATA Proper Shipping Name: PAINT
IATA UN Class: 3
IATA Subsidiary Risk Class:
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: SXI
AFI Symbols:
AFI Prop. Shipping Name: PAINT OR PAINT RELATED MATERIAL
AFI Class: 3
AFI ID Number: UN1263
AFI Pack Group: II
AFI Label: FLAMMABLE LIQUID
AFI Special Prov:
AFI Basic Pac Ref: 7-8
MMAC Code: NK
N.O.S. Shipping Name: N/K
Additional Trans Data: N/K

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:

Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:
□
Report for NIIN: 013499006

==========
====

Label Data

==========
====
Label Required: YES
Technical Review Date:
Label Date:
MFR Label Number:
Label Status: G
Common Name: N-5564 GLOSS RED SILICONE ENAMEL 11105
Chronic Hazard: N/P
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: EYE:SEVERE IRRIT, TEARING, REDNESS, BLURRED VISION. SKIN:REDNESS, IRRIT, DEFATTING (LEADING TO DERMATITIS). INHAL:N

ASAL
& RESPIRATORY IRRIT, CNS DEPRESSION (DIZZINESS, DROWSINESS, WEAKNESS, FATIGUE, CONFUSION) NAUSEA,HEADACHE,VERTIGO,UNCONSCIOUSNESS,ASPHYXIATIO N.
INGEST:GI IRRIT,ABDOMINAL PAIN,NAUSEA,VOMITING,DIARRHEA.CHRONIC: LIVER, KIDNEYS, CNS. PROLONGED EXPOSURE TO SOLVENTS MAY CAUSE CHRONIC HEALTH EFFECTS. TARGET ORGANS: LIVER KIDNEY, CNS, SKIN, EYES, RESPIRATORY SYST EM,
CNS.
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: NILES CHEMICAL PAINT CO
Label Street: 225 FORT STREET
Label P.O. Box: 307
Label City: NILES
Label State: MI
Label Zip Code: 49120
Label Country: US
Label Emergency Number: 219-236-5856
Year Procured:
□

STATUS QUO MATERIAL:	Locquic Primer T
Manufacturer:	Loctite Corp.
Building:	300
PROPOSED MATERIAL:	Accrabond Grade A MIL-S-22473
Manufacturer:	Accrabond, Inc.

MSDS

Accrabond Grade A MIL-S-22473	Page H13-1

Product Information

Accrabond Grade A MIL-S-22473	Page 1029- GSA Spring 1996 Supply Catalog

Cost Data

Accrabond Grade A MIL-S-22473	Page 1029 - GSA Spring 1996 Supply Catalog

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF April 1996

Proprietary Version - For U.S. Government Use Only

FSC: 8030
NIIN: 000676744
Manufacturer's CAGE: 5V071
Part No. Indicator: A
Part Number/Trade Name: ACCRABOND GRADE A MIL-S-22473

==========

Nuclear Water Data

==========

This is not a Nuclear Water Chemical NIIN.

==========

Standard PMS Identification Number Data

==========

SPIN FSC: 8030
SPIN NIIN: 000676744
SPIN: 1590G

==========

General Information

==========

Item Name: SEALING, LOCKING & RETAINING COMPOUND, RED LIQUID GR-A
Company's Name: ACCRABOND, INC.
Company's Street: 8848 HACKS CROSS ROAD
Company's P. O. Box: N/K
Company's City: OLIVE BRANCH
Company's State: MS
Company's Country: US
Company's Zip Code: 38654
Company's Emerg Ph #: 601-895-4480
Company's Info Ph #: 601-895-4480
Distributor/Vendor # 1: STEVEN INDUSTRIES (201-437-6501)
Distributor/Vendor # 1 Cage: 33150
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:

Safety Focal Point: G
Record No. For Safety Entry: 004
Tot Safety Entries This Stk#: 007
Status: SM
Date MSDS Prepared: 01JAN87
Safety Data Review Date: 05JAN95
Supply Item Manager: GSA
MSDS Preparer's Name: N/K
Preparer's Company: N/K
Preparer's St Or P. O. Box: N/K
Preparer's City: N/K
Preparer's State: NK
□
Report for NIIN: 000676744

Preparer's Zip Code: N/K
Other MSDS Number:
MSDS Serial Number:PBJYQN
Specification Number: MIL-S-22473
Spec Type, Grade, Class: N/K
Hazard Characteristic Code: N1
Unit Of Issue: BT
Unit Of Issue Container Qty: 250 CC BT
Type Of Container: PLASTIC
Net Unit Weight: N/K
NRC/State License Number: N/K
Net Explosive Weight: N/K
Net Propellant Weight-Ammo: N/K
Coast Guard Ammunition Code: N/K

==========

Ingredients/Identity Information

==========

Proprietary: NO
Ingredient: ETHYLENE GLYCOL METHACRYLATE MONOMER
Ingredient Sequence Number: 01
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: OZ4725000
CAS Number: 868-77-9
OSHA PEL: N/K
ACGIH TLV: N/K
Other Recommended Limit: NONE SPECIFIED

==========

Physical/Chemical Characteristics

==========

Appearance And Odor: RED

Boiling Point: >392F,>200C
Melting Point: N/K
Vapor Pressure (MM Hg/70 F): <0.01
Vapor Density (Air=1): 8.6
Specific Gravity: 1.06
Decomposition Temperature: N/K
Evaporation Rate And Ref: N/K
Solubility In Water: INSOLUBLE
Percent Volatiles By Volume: N/K
Viscosity: N/K
pH: N/K
Radioactivity: N/K
Form (Radioactive Matl):
Magnetism (Milligauss): N/P
Corrosion Rate (IPY): N/K
Autoignition Temperature: N/K

Fire and Explosion Hazard Data

Flash Point: >250 F/>120 C
Flash Point Method: COC
□
Report for NIIN: 000676744

Lower Explosive Limit: N/K
Upper Explosive Limit: N/K
Extinguishing Media: WATER, CO2, SAND OR FOAM
Special Fire Fighting Proc: NONE
Unusual Fire And Expl Hazrds: NONE

Reactivity Data

Stability: YES
Cond To Avoid (Stability): N/K
Materials To Avoid: ORGANIC PEROXIDES, SALTS, METALS & REACTIVE WITH WATER.
Hazardous Decomp Products: NONE
Hazardous Poly Occur: YES
Conditions To Avoid (Poly): TEMPERATURES ABOVE 55C

Health Hazard Data

LD50-LC50 Mixture: N/K
Route Of Entry - Inhalation: N/P
Route Of Entry - Skin: N/P

Route Of Entry - Ingestion: N/P
Health Haz Acute And Chronic: N/K
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: N/K
Signs/Symptoms Of Overexp: IRRITATION OF SKIN, HEADACHES & CRAMPING.
Med Cond Aggravated By Exp: N/K
Emergency/First Aid Proc: INHALATION: REMOVE TO FRESH AIR. EYES: FLUSH WITH WATER FOR 15 MINUTES. SKIN: WASH THOROUGHLY WITH SOAP & WATER. & INGESTION:SEE A PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: WIPE UP WITH PAPER TOWELS OR RAGS. CLEAN AREA WITH TOLUENE OR KETONES
Neutralizing Agent: N/K
Waste Disposal Method: REACT WITH PRIMER & DISPOSE AS INERT MATERIAL
Precautions-Handling/Storing: DO NOT FILL CONTAINER OVER HALF FULL
Other Precautions: N/K

Control Measures

Respiratory Protection: OPTIONAL
Ventilation: LOCAL EXHAUST:OPTIONAL & MECHANICAL(GENERAL):OPTIONAL
Protective Gloves: PLASTIC GLOVES OR PROTECTIVE HAND CREAM
Eye Protection: SAFETY GOGGLES OPTIONAL
Other Protective Equipment: NONE
Work Hygienic Practices: WASH CLOTHING WITH DISHWASHING DETERGENT
Suppl. Safety & Health Data: N/K
□
Report for NIIN: 000676744

Transportation Data

Transportation Action Code:
Transportation Focal Point: G
Trans Data Review Date: 91057
DOT PSN Code: ZZZ
DOT Symbol:
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
DOT Class: N/R
DOT ID Number: N/R
DOT Pack Group:

DOT Label: N/R
DOT/DoD Exemption Number: N/K
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IMO Regulations Page Number: N/R
IMO UN Number: N/R
IMO UN Class: N/R
IMO Subsidiary Risk Label: N/R
IATA PSN Code: ZZZ
IATA UN ID Number: N/R
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
IATA UN Class: N/R
IATA Subsidiary Risk Class: N/R
IATA Label: N/R
AFI PSN Code: ZZZ
AFI Symbols:
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI Class: N/R
AFI ID Number: N/R
AFI Pack Group:
AFI Label: N/R
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code: NK
N.O.S. Shipping Name: N/K
Additional Trans Data: N/K

==========

Disposal Data

==========

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:

Report for NIIN: 000676744

2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:

3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

==========

Label Data

==========

Label Required: YES
Technical Review Date:
Label Date:
MFR Label Number:
Label Status: G
Common Name: ACCRABOND GRADE A MIL-S-22473
Chronic Hazard: N/P
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: N/K IRRITATION OF SKIN, HEADACHES & CRAMPIN G.
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: ACCRABOND, INC.
Label Street: 8848 HACKS CROSS ROAD
Label P.O. Box: N/K
Label City: OLIVE BRANCH
Label State: MS
Label Zip Code: 38654
Label Country: US
Label Emergency Number: 601-895-4480
Year Procured:
□

STATUS QUO MATERIAL:	So-Sure Lacquer Aerosol Red 11136
Manufacturer:	LHB Industries
Building:	300
PROPOSED MATERIAL:	301 Red 11A Rustproof Paint
Manufacturer:	Aervoe-Pacific Co., Inc.

MSDS

301 Red 11A Rustproof Paint	Page H14-1

Product Information

301 Red 11A Rustproof Paint	Page H14-3

Cost Data

301 Red 11A Rustproof Paint	Page H14-11

Material Safety Data Sheet

TO: MSDS USERS

Please find below the material safety data sheet as per your request.

The information presented in these forms is believed to be correct and sufficient to meet the requirements of OSHA Hazard Communication standard (29 CFR 1910.1200) concerning worker's right to know. In order for the information contained in the MSDS to be most helpful we recommend that these forms be made available to all those who handle or may otherwise be exposed to the product.

The following material safety data sheet covers the hazardous ingredients associated with more than one color aerosol spray paint.

As per 29 CFR 1900. 1200 paragraph (g); whenever the hazards associated with similar mixtures are the same, then one MSDS may be prepared to cover several products.

This MSDS covers the following Aervoe Pacific aerosol spray paints.

RUST PROOF PAINT

300	PURPLE	308	BRITE RED	319	ROYAL BLUE	361	LIGHT GRAY
301	RED	309	ALUMINUM	320	FOREST GREEN	380	FREIGHT CAR RED
302	YELLOW	310	SILVER	321	EQUIPMENT ORANGE	381	OMAHA ORANGE
303	BLUE	311	GOLD	333	MED. DARK GRAY	384	BELL WHITE
304	GREEN	312	FLAT BLACK	344	SATIN BLACK	385	BELL GRAY/GREEN
305	ORANGE	313	FLAT WHITE	347	COPPERTONE	115	HIGH GLOSS
306	BLACK	314	BROWN	349	MED. LIGHT GRAY		
307	WHITE	317	TAN				

PRODUCT NAME: (11A) RUSTPROOF - ALL COLORS **PRODUCT CODE:** 11 A **HMIS CODES:** H F R P
PRODUCT USE: AEROSOL PAINT 2 4 1

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: Aervoe-Pacific Company, Inc.
ADDRESS: 1198 Sawmill Rd., Gardnerville, NV 89410
EMERGENCY PHONE: 1-800-424-9300
DATE REVISED: 02-07-96
INFORMATION PHONE: (702) 782-0100
NAME OF PREPARER: Mike A. Traquina
REASON REVISED: Updated

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION
OCCUPATIONAL EXPOSURE LIMITS

HAZARDOUS COMPONENTS/WEIGHT PERCENT	OSHA PEL	ACGIH TLV	OTHER	LD50 SPECIES & ROUTE	LC50 SPECIES & ROUTE
SS 43 METHYL PROPYL KETONE (CAS 107 87 9) <5.0%	250 PPM	250 PPM		N/A	N/A
*SS 12 XYLENE (CAS 1330 20 7) 10	100 PPM	100 PPM		4300mg/kg RAT ORAL	6700 PPM; 4hr RAT INHA
*SS 41 ACETONE (CAS 67 64 1) 18	750 PPM	750 PPM		9750mg/kg RAT ORAL	N/A
PR 01A PROPANE (CAS 74 98 6) 15	1000 PPM	1000 PPM		N/A	N//A
PR 01B ISOBUTANE (CAS 75 28 5) <5.0%	800 PPM	800 PPM	<-ESTIMATE	N/A	520000 PPM;2hrMouse Exp
PR 01C NORMAL BUTANE (CAS 106 97 8) 5	600 PPM	600 PPM		N/A	658mg/L; 4hr RAT INHA.

*Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

NOTE: N/A applies to not available or not applicable

PRODUCT CODE: 11 A

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: -10 DEG F **SPECIFIC GRAVITY (H20=1):** 0.8 **COEFFICIENT OF WATER/OIL DIST:** N/A **ODOR THRESHOLD:** N/A
VAPOR DENSITY: HEAVIER THAN AIR **SOLUBILITY IN WATER:** NEGLIGIBLE
EVAPORATION RATE: FASTER THAN n-BUTYL ACETATE **APPEARANCE AND ODOR:** OPAQUE LIQUID / SOLVENT BASED ODOR
COATING V.O.C. :5.37 LBS/IMP GAL 4.47 LBS/US GAL 535 GMS/LTR **FREEZING POINT:** N/A **pH:** N/A

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: -28 DEG C **METHOD USED:** TCC **FLAMMABLE LIMITS IN AIR BY VOLUME - LOWER:** 1.0% **UPPER:** 12.8%
EXTINGUISHING MEDIA: FOAM. ALCOHOL FOAM, CO2. DRY CHEMICAL, WATER FOG.
SPECIAL FIREFIGHTING PROCEDURES - WATER SPRAY MAY BE INEFFECTIVE, BUT WATER SPRAY MAY BE USED TO COOL CONTAINERS EXPOSED TO HEAT OR FIRE TO PREVENT PRESSURE BUILD UP.
UNUSUAL FIRE AND EXPLOSION HAZARDS - CLOSED CONTAINERS MAY EXPLODE DUE TO BUILD UP OF PRESSURE FROM EXTREME HEAT OR FIRE. AEROSOL SPRAY IS EXTREMELY FLAMMABLE.
FLAMMABILITY - T.D.G.R. CLASS -CLASS ORM-D CONSUMER COMMODITY. (UN1950 CLASS 9)
SENSITIVITY TO IMPACT - DO NOT PUNCTURE **SENSITIVITY TO STATIC DISCHARGE** - PRIMARILY VAPORS.

SECTION V - REACTIVITY DATA

STABILITY: STABLE **CONDITION TO AVOID** - HIGH TEMPERATURES
INCOMPATIBILITY (MATERIALS TO AVOID) - STRONG OXIDIZING AGENTS
HAZARDOUS DECOMPOSITION OR BY-PRODUCTS - CARBON MONOXIDE, CARBON DIOXIDE AND POSSIBLY ACROLEIN.
HAZARDOUS POLYMERIZATION - WILL NOT OCCUR - N/A

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE - MAY CAUSE NAUSEA OR DIZZINESS.
SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE - SKIN: MAY CAUSE IRRITATION OR BURNING SENSATION. EYES: PRIMARY IRRITATION.
INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE - N/A
HEALTH HAZARDS (ACUTE AND CHRONIC) - INHALATION: ANESTHETIC. IRRITATION OF THE RESPIRATORY TRACT, OR NERVOUS SYSTEM DEPRESSION-CHARACTERIZED BY HEADACHE, DIZZINESS, NAUSEA, OR POSSIBLE UNCONSCIOUSNESS. SKIN OR EYE CONTACT: PRIMARY IRRITATION. PROLONGED OR REPEATED CONTACT TO SKIN MAY CAUSE DERMITITUS - EXERCISE DUE CARE.
CARCINOGENICITY: NTP? NO **IARC MONOGRAPHS?** NO **OSHA REGULATED?** NO
THIS PRODUCT DOES NOT CONTAIN ANY RECOGNIZED CARCINOGEN
TETATOGENICITY - N/A **MUTAGENICITY** - N/A **TOXICOLOGICALLY SYNERGISTIC PRODUCT** - N/A
MEDICAL CONDITION GENERALLY AGGRAVATED BY EXPOSURE - NONE KNOWN
EMERGENCY AND FIRST AID PROCEDURES - VAPORS: REMOVE FROM EXPOSURE AND RESTORE BREATHING, SEEK MEDICAL ATTENTION.
SPLASH: (SKIN) WASH AFFECTED AREA, REMOVE CONTAMINATED CLOTHING, SEE PHYSICIAN IF ANY IRRITATION PERSISTS.
SPLASH: (EYES) FLUSH IMMEDIATELY WITH WATER FOR 15 MINUTES AND TAKE TO A PHYSICIAN.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - REMOVE ALL SOURCES OF IGNITION; FLAMES, SPARKS, STATIC ELECTRICITY & ELECTRICAL. VENTILATE AREA AND SOAK UP WITH INERT ABSORBENT USING NON-SPARKING TYPE TOOLS.
WASTE DISPOSAL METHOD - DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. DO NOT INCINERATE CLOSED CONTAINERS.
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING - DO NOT STORE ABOVE 120 DEG. F. DO NOT STORE OR USE NEAR HEAT, SPARKS, OR FLAME.
OTHER PRECAUTIONS - DO NOT GET IN EYES. DO NOT BREATHE VAPORS AVOID SKIN CONTACT. DO NOT TAKE INTERNALLY. SMOKING WHILE USING THIS PRODUCT MUST BE STRICTLY PROHIBITED. IN ADDITION TO ALL OTHER HAZARDS AND PRECAUTIONS - DUST FROM SANDING THE DRY PAINT FILMS SHOULD BE TREATED AS A NUISANCE DUST WITH A TLV OF 10mg/CUBIC METER.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION - OUTDOORS: WE RECOMMEND AN APPROVED PARTICULATE FILTER TO REMOVE ANY AIRBORNE OVERSPRAY. IN RESTRICTED AREAS WITH POOR VENTILATION AND CLOSE TO THE T.L.V.. A HIOSH APPROVED RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE IS RECOMMENDED.
VENTILATION - ALL APPLICATION AREAS SHOULD BE ADEQUATELY VENTILATED IN ORDER TO KEEP THE SECTION II INGREDIENTS BELOW THEIR EXPOSURE LIMITS.
PROTECTIVE GLOVES - IMPERVIOUS GLOVES ARE RECOMMENDED TO PREVENT SKIN CONTACT.
EYE PROTECTION - SAFETY GLASSES WITH SIDE SHIELDS IS RECOMMENDED TO PREVENT EYE CONTACT.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT - EYE WASH FOUNTAIN AND SAFETY SHOWER. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE RE-USE
WORK/HYGIENIC PRACTICES - AVOID PROLONGED OR REPEATED CONTACT. DO NOT BREATHE VAPORS.

SECTION IX - DISCLAIMER

DISCLAIMER - THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE SO.
NOTHING CONTAINED HEREIN CONSTITUTES A SPECIFICATION NOR IS IT INTENDED TO WARRANT SUITABILITY FOR THE INTENDED USE.

Product Data Sheet

No. 1301 - 5/96

RUST PROOF PAINT

Aerosol and Bulk Liquid
AEROSOL VOC <65% GLOSS, <60% FLAT, <80% METALLIC

PRODUCT NUMBERS:

300 Purple	307 White	314 Brown	347 Coppertone
301 Red	308 Brite Red	317 Tan	349 Meter Gray (ASA-49)
302 Yellow	309 Aluminum	319 Royal Blue	361 Light Gray (ASA-61)
303 Blue	310 Silver (Lacquer)	320 Forest Green	380 Freight Car Red
304 Green	311 Gold	321 Equipment Orange	381 Omaha Orange
305 Orange	312 F. Black	333 Dark Gray (ASA-33)	384 Bell White
306 Black	313 F. White	344 Satin Black	385 Bell Gray/Green

Product number plus letter designation is as follows:
Q = 6 one-quart cans; G = 4 one-gallon cans per case; F = 1 five-gallon pail; D = 1 fifty gallon drum.

I. GENERAL DESCRIPTION

Features: This high performance rust proof industrial coating is formulated for industrial and commercial applications. Good resistance to harsh environments including water, moisture, temperature, and abrasiveness beyond that expected of standard decorator colors. High gloss, high-hide coverage (with or without primer) provides corrosive protection especially on metal surfaces. Wide color selection provides commercial, O.S.H.A. safety, and selected factory equipment touch-up colors.

Benefits: Most colors will give full coverage in one coat. The finish dries to the touch in minutes and yields full cure benefits in 72 hours. This high-solids formula is USDA approved as a chemically acceptable coating for application to structural surfaces or surfaces where there is a possibility of incidental food contact in official establishments operating under the federal meat and poultry products inspection program.

Uses: Ideal for equipment maintenance as well as O.E.M. production. Exceeds many performance standards of nationally recognized home improvement brands. May be used on metal, wood, and other common surfaces including non-porous plaster.

Application: Can be applied over firmly rusted areas, however loose flakes or particles should be removed first with a wire brush or sandpaper. For maximum rust preventive protection on metal surfaces, prime first with Aervoe Primers 119, 127, 128, 129, 132, or 135. Product should be used at temperatures between 60° and 80°F (16° and 27°C) for best results. Shake can for at least 1 minute after agitator ball begins to rattle. Hold can 6 to 8 inches from surface. Press spray head firmly, and apply with steady, even strokes. Two light coats are better than one heavy one. Bulk product is ready for brush use or dipping as is. See bulk label for thinning instructions when using in an air applicator, airless, or hot spray.

Limitations: Please refer to the Material Safety Data Sheets for specific information on material hazards, etc. Please check your local air quality standards before using any bulk paint. Check all plastic surfaces for adhesion and compatibility before use.

Packaging:

Aerosol	Cans	12.5 oz. net wt.	(354 grams)	16.0 fl. oz.	(473 ml)
	12 cans/case	14 lbs.	(6.4 kg)	.47 CF	(.013 CM)
Liquid Bulk	1 case of 6 quarts	17 lbs.	(7.2 kg)	.88 CF	(.025 CM)
	1 case of 4 gallons	40 lbs.	(18.2 kg)	1.0 CF	(.028 CM)
	5-gallon pail	49 lbs.	(22.3 kg)	1.2 CF	(.034 CM)
	50-gallon drum	465 lbs.	(211.4 kg)	8.5 CF	(.241 CM)

AERVOE™ AERVOE-PACIFIC Company, Inc.
P.O. Box 485, Gardnerville, NV 89410 • Information 702-782-0100 • Order Desk 800-227-0196 • FAX 702-782-4027

II. CHARACTERISTICS AND PROPERTIES

Average for all colors

Specifications:

Safety colors formulated to meet OSHA Spec. 1910.144.

Compositionally equal to FED SPEC TT-E-489F Class A, TT-E-488B, and A-A-665A.

Appearance:	**Aerosol**	**Bulk**
Gloss at ∠60°	90	<5.0
Class	High Gloss	Flat
Coverage:	**Aerosol**	**Bulk**
Theoretical at 1 mil dry	23 sq. ft./can	651 sq. ft/gal.
Practical at ½ mil dry	46 sq. ft./can	1302 sq. ft/gal.
Drying Schedule: (At 77°F [25°C], 50% Humidity at 1 mil dry)		
To touch	15 min.	15 min.
To handle	30 min.	30 min.
Full cure	72 hrs.	72 hrs.
To recoat	Before 2 hrs. or after 72 hrs. to avoid lifting.	
Performance and Chemical Properties:		
Weight per gallon	6.3 lbs.	8.4 lbs.
Specific gravity	0.76 lbs.	1.01 lbs.
Viscosity	Not applicable	65 KU
Flammability: Label Marking	Extremely Flammable	Flammable
Flash Point	–15°F (–28°C)	<73°F (<23°C)
Operating temperature range	55° to 80°F (13° to 27°C)	55° to 80°F (13° to 27°C)
Percent solids by weight	See attached	See attached
Percent solids by volume	See attached	See attached
Percent pigment by volume	1.1%	4.0%
Volatile Organic Compound level	<65% (GL), <60% (FL), <80% (MT)	420 grams/liter
Interior durability	Excellent	Excellent
Exterior durability	Good	Good
Temperature resistance	Excellent to 200°F; 200° to 300°F (93° to 149°C) slightly darkening	
Color fastness	Good	Good
Adhesion	Excellent over properly prepared surface	
Salt spray corrosion	200 hrs.	200 hrs.
Paint thinner resistance	Good	Good
Gasoline resistance	Poor	Poor
Motor oil resistance	Good	Good
Pencil hardness	H	H
Food contact rating	USDA authorized	Not applicable
Base Materials:		
Resin system	Alkyd Copolymer	Alkyd Copolymer
Solvents (top two)	Ketone and Aromatic	Ketone and Aromatic
Propellant system	Hydrocarbon Propellant	Not applicable

III. SHIPPING STORAGE AND HEALTH

	Aerosol	**Bulk**
IMDG number	UN1950	UN1263
D.O.T. container spec.	2P	1A1, 1A2
D.O.T. shipping description	Consumer commodity	Paint Related Material
Warehouse storage level number	NFPA 30B Level 2	Flammable liquid Class I-C
Hazardous class (CFR-49)	ORM-D	Flammable liquid
Storage temperature	50° to 120°F (10° to 49°C)	40° to 120°F (4° to 49°C)
Shelf life	12–24 months	24–60 months
HMIS ratings		
Health	2	2
Fire	4	3
Reactivity	1	0

IV. MISCELLANEOUS

Contains no Ozone Depleting Substances (O.D.S.). This product meets V.O.C. requirements for the state of California.

V. WARRANTY

The statements made herein on labels, product bulletins, or by any of our employees or agents concerning this material are given for information only. Any liability whatsoever of Aervoe-Pacific of the user of the product is limited to replacement of the product or purchase price refunded.

AEROSOL PRODUCT DATA SHEET

Rust Proof Decorator Paints

PRODUCTS		% SOLIDS BY WEIGHT	% SOLIDS BY VOLUME
300	Purple	18.5	11.8
301	Red	17.2	11.6
302	Yellow	19.0	11.8
303	Blue	17.4	11.1
304	Green	18.0	10.9
305	Orange	19.0	12.4
306	Black	19.7	13.7
307	White	21.6	11.2
308	Brite Red	16.7	11.4
309	Aluminum	17.0	10.8
310	Silver	12.0	6.9
311	Gold	20.5	11.2
312	Flat Black	21.3	11.0
313	Flat White	21.7	9.7
314	Brown	17.3	11.0
317	Tan	19.6	10.9
319	Royal Blue	16.9	11.2
320	Forest Green	17.4	11.2
321	Equipment Orange	19.7	12.6
333	Dark Gray	20.1	11.7
344	Satin Black	20.2	12.0
347	Coppertone	19.7	11.0
349	Meter Gray	21.2	11.0
361	Light Gray	21.4	11.1
380	Freight Car Red	17.6	11.0
381	Omaha Orange	17.5	11.6
384	Bell White	20.9	11.0
385	Bell Gray/Green	20.8	13.0

AERVOE™

COLOR GUIDE

Superior Paints & Coatings From AERVOE-PACIFIC

ENGINE PAINT

Specially formulated for refinishing engines and transmissions. Excellent adhesion prevents rust and pitting. Heat resistant to 300 F. No peeling or checking, this paint is matched to O.E.M. standards for non-blistering at engine operating temperatures.

510 Universal Clear

511 Universal White

512 Flat Black

513 Satin Black

514 Gloss Black

520 Chevrolet Orange

530 Cadillac Gold

540 Alpine Green

550 Ford Red

551 Ford Gray

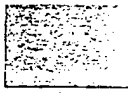
560 Ford Blue

561 Chevrolet Blue

562 General Motors Blue

566 Ford-Mercury Blue

568 Chrysler Blue


570 Universal Silver

575 Dull Aluminum

580 Cummins Beige

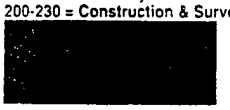
582 Cast Iron Gray

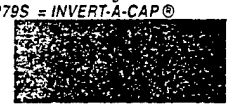
583 Steel Blast Gray

MARKING PAINT

Use these inverted marking paints to deliver professional applications in construction, survey, athletic fields, and location identification. Specially formulated to identify and code such surfaces as asphalt, concrete, wood, dirt. Safe on turf grass and fields of play.
200-230 = Construction & Survey 246-259 = Water-based Turf / ***261S-279S = INVERT-A-CAP®***

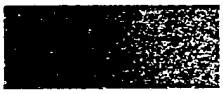
200 Clear


201 / 256 / *261S* Red


202 / 258 / *262S* Yellow

203 / 254 / *263S* Blue

204 / 259 / *264S* Green

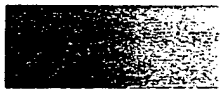

205 / 257 / *265S* Orange

206 / 251 / *266S* Black

207 / 255 / *267S* White

210 / Silver

213 / 252 Brown


220 / 246 / *270S* Fl. Red

222 / 247 / *272S* Fl. Orange

224 / 248 / *274S* Fl. Green

226 Fl. Yellow

227 Fl. Blue

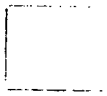
228 Fl. Magenta

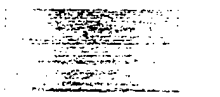
229 / 249 / *279S* Fl. Pink

230 / *275S* Fl. Red-Orange

STRIPING PAINT

Available in both solvent and water-based formulations. Provides high-hide and durability in a true VOC compliant product.
701-702 = Supreme / 710-785 = Solvent-based / ***790-796 = Water-based***


701 / 710 / *790* Traffic White


702 / 720 / *791* Traffic Yellow

730 / ***793*** Traffic Red

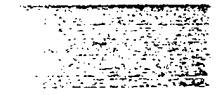
740 Traffic Orange

750 / ***792*** Traffic Blue

760 Traffic Green

770 Asphalt Black

780 Concrete Gray


785 Fl. Red-Orange

796 Athletic Fl. Orange

CAMOUFLAGE PAINT

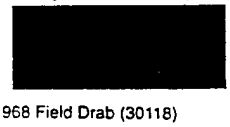
Matches U.S. Federal Color Code 595-A or B. Fights corrosion and salt spray. Not shown: Black, White.

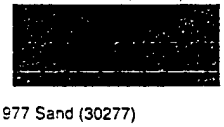
951 Light Green (34151)

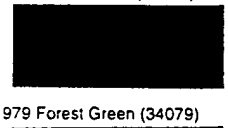
952 Dark Green (34102)

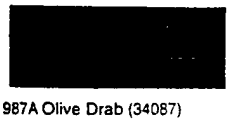
957 Earth Yellow (30257)

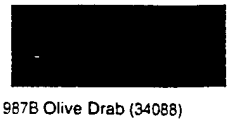
967 Earth Red (30117)

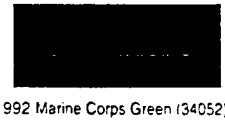

968 Field Drab (30118)

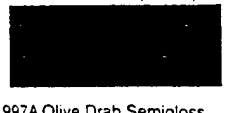

977 Sand (30277)


979 Forest Green (34079)

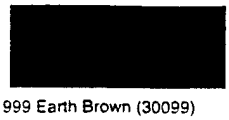

987A Olive Drab (34087)


987B Olive Drab (34088)


992 Marine Corps Green (34052)


997A Olive Drab Semigloss (24087)

997B Olive Drab Semigloss (24064)


999 Earth Brown (30099)

APPLIANCE EPOXY

Spray touch-up for cosmetic nicks and chips on appliances to provide a hard and durable finish.

175 White

176 Almond

AERVOE *Your Symbol of Quality in Paints for Home and Industry*

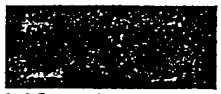
DECORATOR WATER-BASED PAINT

An interior/exterior gloss one-shot lighting formula. Won't harm plastics or Styrofoam. Reduced VOCs, low odor and Ozone Depleting Substance Free!

1000 Clear
1002 Black
1003 Semigloss Black
1004 Flat Black
1005 Orange (see #305)
1006 White
1007 Flat White
1049 Meter Gray (see #349)

1012 Horizon Blue

1013 Blue


1015 Banner Red

1016 Red

1018 Green

1019 Forest Green

1021 Smoke Gray

1023 Mandarin

1025 Dark Brown

1027 Beige

1030 Pearl Gray

1032 Rose

1033 Jade Green

1034 Almond

1040 Red Oxide Primer

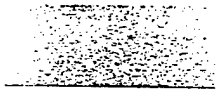
1031 Pink Ice

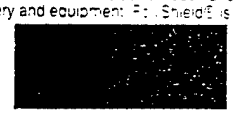
RUST-PROOF PAINT / STENCIL INKS / *POLYSHIELD®*

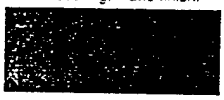
301-384 = Rust-Proof **2801-2811** = Stencil Inks / ***405-412*** = ***PolyShield®*** Interior/exterior gloss colors low in VOCs, low odor and Ozone Depleting Substance Free. For finishing machinery and equipment. PolyShield® is a rubberized coating, matte finish.

300 Purple

301 / 2801 / ***406*** Red


302 / 2802 / ***405*** Yellow


303 / 2803 / ***408*** Blue


304 / 2804 Green

305 / 2805 / ***407*** Orange

308 Bright Red

309 Aluminum

310 Silver (Lacquer)

311 Gold

314 Brown

317 / 2811 Tan

319 Royal Blue

320 Forest Green

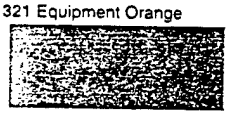
321 Equipment Orange

344 Satin Black

347 Coppertone

333 Dark Gray (ASA-33)

349 Meter Gray (ASA-49)


361 Light Gray (ASA-61)

380 Freight Car Red

381 Omaha Orange

384 Bell White

385 Bell Gray/Green

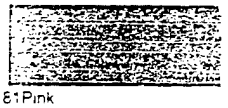
Not Shown:

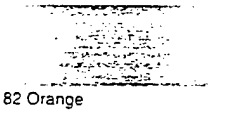
306 / ***409*** Black
307 / 2807 / ***410*** White
312 / 2806 Flat Black
313 / 2810 Flat White

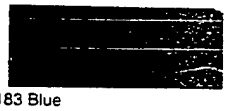
FLO GLO™

Highly vibrant colors made to stand out brightly. Use on signs or where you desire blacklight reactions in advertising or decorating.

180 Red


181 Pink


182 Orange


183 Blue

184 Green

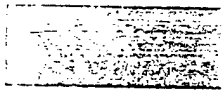
185 Yellow

HIGH HEAT

To 1,000°F temperature resistant to cracking, peeling and flaking.

190 Black

192 Aluminum


193 White

195 Beige

FLEET & CUSTOM EQUIPMENT PAINT

Our highest quality industrial finish with fastest air-dry time. Outstanding hardness and durability.

150 John Deere Green

151 Allis Chalmers Orange

152 Honda Red

153 Int'l Harvester Red

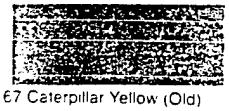
154 Cola Blue

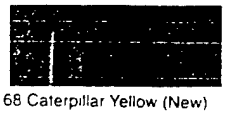
155 Cola Red

161 White (733)

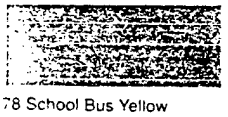
162 White (4775)

163 White (817)


167 Caterpillar Yellow (Old)


168 Caterpillar Yellow (New)

177 Ryder Yellow


178 School Bus Yellow

ROYAL COAT PAINT

This superior enamel coating provides the utmost in rust protection, corrosion resistance and quality finish on metal, wood, and other surfaces. Specially formulated for industrial, commercial or institutional applications.

5001 Aluminum

5002 Silver

5003 Gold

5004 Safety Blue

5005 Sky Blue

5006 Safety Green

5007 Hunter Green

5008 Safety Yellow

5009 Equipment Yellow

5010 Safety Orange

5011 Equipment Orange

5012 Safety Red

5013 Cerise

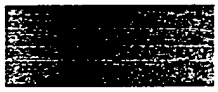
5014 Sand

5015 Brown

5016 Flat Black

5017 Black

5018 Flat White


5019 White

5020 Light Gray

5021 Dark Gray

NOT SHOWN:

PRIMERS

119 Yellow
127 Black
128 Gray
129 White
132 Green
135 Red Oxide

TREE MARKING PAINT

610 Red
620 Orange
630 Yellow
640 Green
645 Dark Green
650 Blue
660 Black
670 White
680 Silver
690 Fl. Red
691 Fl. Pink
692 Fl. Orange
693 Fl. Yellow

WET COAT

694 White
695 Blue
698 Orange
699 Yellow

The Aervoe Advantage©

Aervoe-Pacific Paints & Coatings

The Aervoe Advantage©: This Color Guide displays most of Aervoe-Pacific's stock-paint items in aerosol and bulk packaging. Each product is formulated to deliver superior levels of performance. Each represents the cost-effectiveness of large production volume in aerosol or bulk giving you the best purchase value—*The Aervoe Advantage©*

Aervoe-Pacific Company, Inc., offers ***Custom Colormatch Service*** in both aerosol and bulk industrial coatings. This special capability allows you to customize orders to any specific need. Aervoe also manufactures a full line of top-quality maintenance and specialty products available in aerosol and bulk. Ask your Aervoe Distributor for the complete Aervoe-Pacific product catalog, or call **800-227-0196.**

Other Products in ***The Aervoe Advantage©***

- Art/Craft Sealers
- Cold Galvanize Coatings
- Undercoating & Sound Deadener
- Polyurethane Varnish
- Industrial Seal Coats
- Epoxy Insulating Coating
- Spot Cleaner and Degreaser
- Anti-Static Spray
- Contact Cleaner
- Defluxer
- Dustair™
- Freeze-All™
- Cable Cleaner
- Electrical Lube
- Silicone Lube/Cleaner
- Carburetor Treatment
- Cosmoline Protective Coating
- Brake Cleaner
- Belt Dressing
- Battery Protector
- Graphite Dry Lube
- Multipurpose Spray Adhesive
- High Strength Spray Adhesive
- Anti-Spatter
- Cutting Oil
- Moly Open Gear Grease
- Moly Open Gear Oil
- Moly Dry Film Lube
- Lube-Eze™
- Food Grade Lube Oil
- Food Grade Lube Grease
- Dry Film Lube & Release Agent
- Tef-Lube™
- Silicone Lube
- Silicone Paintable Release Agent
- H.D. Wire Rope & Gear Lube
- White Lithium Grease
- Penetrating Fluid
- Rust Solv®
- Portable Gas Stoves
- Butane & Isobutane Fuel
- Gas Stove Accessories
- Silver & Jewelry Protection
- Metal, Copper & Brass Polishes
- Coin Cleaner
- Lemon Oil Wood Polish
- Marble Cleaner & Polish
- Tile Cleaner
- Glass Cleaner
- Hornet & Wasp Spray
- Graffiti Remover

AERVOE-PACIFIC Company, Inc.
Gardnerville, Nevada 89410 • 702-782-0100 • 800-227-0196

Distributed by:

Aervoe-Pacific products are made in the U.S.A. Copyright 1996 Aervoe-Pacific Company, Inc. All Rights Reserved.
Colors shown on this color guide are as close as possible to the actual colors.

DIN: 14-2-5/#03
31 December 1996

NATIONAL INDUSTRIAL / INSTITUTIONAL I-1 PRICE LIST

Effective February 1, 1996

Aervoe-Pacific Company, Inc.

For over 25 Years — The Professionals' Choice

P.O. Box 485
Gardnerville, NV 89410
(702) 782-0100 Office (800) 227-0196 Order Desk
Fax (702) 782-4027

Prices, terms and conditions of sale subject to change without notice.

Your first source

— ALL PRODUCTS ARE FREE OF OZONE DEPLETING SUBSTANCES, LEAD, TOLUENE, AND CHLORINATED SOLVENTS —

SALES TERMS

MINIMUM ORDER—$50.00 (NO EXCEPTIONS)
ONLY FULL CASES SHIPPED. ALL PRODUCTS AND CASES MAY BE ASSORTED FOR QUANTITY PRICE AND FREIGHT.

PAYMENT
1% DISCOUNT 10 DAYS, NET 30 DAYS. SERVICE CHARGE OF 1½% PER MONTH ON ALL ACCOUNTS OVER 30 DAYS.

CREDIT
OPEN ACCOUNT WITH: APPROVED 3 SUPPLIERS AND 1 BANK REFERENCE. OTHER: C.O.D. ON FIRST ORDER. NO ORDERS SHIPPED WHEN OUTSTANDING BILL OVER 45 DAYS.

RETURNS
NO GOODS MAY BE RETURNED WITHOUT WRITTEN AUTHORITY. ALL RETURNS MUST BE VIA AUTHORIZED CARRIER AND ARE SUBJECT TO A 20% RE-CERTIFICATION CHARGE.

DEFECTIVES
1 YEAR PERFORMANCE WARRANTY ON ALL PRODUCTS FROM DATE OF PURCHASE. REPORT TO HOME OFFICE OR LOCAL AERVOE REPRESENTATIVE FOR EXAMINATION.

FREIGHT TERMS*

F.O.B. GARDNERVILLE, NEVADA. INSPECT GOODS UPON RECEIPT FOR CORRECT COUNT AND/OR POSSIBLE DAMAGE; ALL CLAIMS MUST BE MADE WITH DELIVERING CARRIER.

NET-DOLLAR AMOUNT OF ORDER	FREIGHT CREDIT
LESS THAN $1000.00	NO FREIGHT ALLOWED. FREIGHT COLLECT.
$1000.01 AND OVER	FULL FREIGHT ALLOWED. FREIGHT PREPAID.

***SHIPPED TO NEAREST CONTINENTAL U.S. PORT. AERVOE RESERVES RIGHT TO SELECT CARRIER.**

Aervoe-Pacific Company, Inc. shall not be liable for failure to make delivery caused by circumstances beyond its control and may cancel orders due to said causes. Aervoe reserves the right at all times to choose and select its customers, to accept or refuse any order and to change product and price specifications without notice. Because the Seller cannot control the Buyers' handling or use of product, Seller makes no warranty expressed or implied when not used or stored in accordance with directions.

PRINTED IN U.S.A.

PAINTS AND COATINGS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
	DECORATOR WATER BASED ENAMELS **VOC Compliant**	16-OZ. AEROSOL	6	7 LBS.	$16.80	$2.80
1000 CRYSTAL CLEAR	1007 FLAT WHITE (1113)	1015 BANNER RED	1023 MANDARIN		1032 ROSE	
1002 GLOSS BLACK (1106)	1009 YELLOW (1102)	1016 RED (1101)	1025 DARK BROWN		1033 JADE GREEN	
1003 S.G. BLACK	1010 SUN YELLOW	1018 GREEN (1104)	1027 BEIGE		1034 ALMOND	
1004 FLAT BLACK (1112)	1012 HORIZON BLUE	1019 FOREST GREEN	1030 PEARL GRAY		1040 RED OXIDE PRIMER	
1005 ORANGE (1105)	1013 BLUE (1103)	1021 SMOKE GRAY	1031 PINK ICE		1049 METER GRAY	
1006 GLOSS WHITE (1107)						
	RUST PROOF ENAMELS **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$31.80	$2.65
		1 QUART	6	15 LBS.	39.78	6.63
		1 GALLON	4	45 LBS.	102.52	25.63
		*1 GALLON	4	45 LBS.	125.00	31.25
300 PURPLE	306 BLACK	312 F. BLACK	321 EQUIPMENT ORANGE*		380 FREIGHT CAR RED	
301 RED*	307 WHITE	313 F. WHITE	333 DARK GRAY (ASA-33)		381 OMAHA ORANGE*	
302 YELLOW*	308 BRITE RED*	314 BROWN	344 SATIN BLACK		384 BELL WHITE	
303 BLUE	309 ALUMINUM	317 TAN	347 COPPERTONE*		385 BELL GRAY/GREEN	
304 GREEN	310 SILVER (LACQUER)	319 ROYAL BLUE*	349 METER GRAY (ASA-49)			
305 ORANGE*	311 GOLD	320 FOREST GREEN*	361 LIGHT GRAY (ASA-61)			
	PREMIUM SPRAY PAINT **VOC Compliant**	20-OZ. AEROSOL	6	9 LBS.	$24.00	$4.00
	– ROYAL COAT –					
5001 ALUMINUM	5006 SAFETY GREEN	5010 SAFETY ORANGE	5014 SAND		5018 FLAT WHITE	
5002 SILVER	5007 HUNTER GREEN	5011 EQUIPMENT ORANGE	5015 BROWN		5019 WHITE	
5003 GOLD	5008 SAFETY YELLOW	5012 SAFETY RED	5016 FLAT BLACK		5020 LIGHT GRAY	
5004 SAFETY BLUE	5009 EQUIPMENT YELLOW	5013 CERISE	5017 BLACK		5021 DARK GRAY	
5005 SKY BLUE						
	STENCIL INKS **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$36.00	$3.00
	SPRAY INKS		**COVER-UP (Carton saver)**			
2801 RED	2805 ORANGE		2810 WHITE			
2802 YELLOW	2806 BLACK		2811 TAN			
2803 BLUE	2807 WHITE					
2804 GREEN						
	117 CLEAR ACRYLIC COATING **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$27.00	$2.25
		1 GALLON	4	42 LBS.	65.20	16.30
	PRIMERS **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$29.76	$2.48
		1 GALLON	4	45 LBS.	80.60	20.15
119 YELLOW	129 WHITE					
127 BLACK	132 GREEN					
128 GRAY	135 RED OXIDE					
	APPLIANCE EPOXY **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$37.80	$3.15
175 WHITE	176 ALMOND					
	FLUORESCENT GLO **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$36.96	$3.08
		1 QUART	6	15 LBS.	77.76	12.96
		1 GALLON	4	45 LBS.	176.20	44.05
180 RED	183 BLUE					
181 PINK	184 GREEN					
182 ORANGE	185 YELLOW					
	POLYURETHANE VARNISH **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$29.76	$2.48
		1 GALLON	4	45 LBS.	80.60	20.15
186 GLOSS	187 SATIN					
	HIGH HEAT PAINT **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$39.72	$3.31
		1 QUART	6	15 LBS.	82.50	13.75
		1 GALLON	4	47 LBS.	190.00	47.50
190 BLACK	193 WHITE					
192 ALUMINUM	195 BEIGE					
	ENGINE ENAMELS **VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$31.80	$2.65
		1 GALLON	4	45 LBS.	102.52	25.63
510 UNIVERSAL CLEAR	520 CHEVROLET ORANGE	560 FORD BLUE	570 UNIVERSAL SILVER			
511 UNIVERSAL WHITE	530 CADILLAC GOLD	561 CHEVROLET BLUE	575 DULL ALUMINUM			
512 FLAT BLACK	540 ALPINE GREEN	562 G.M. BLUE	580 CUMMINS BEIGE			
513 SATIN BLACK	550 FORD RED	566 FORD-MERC. BLUE	582 CAST IRON GRAY			
514 GLOSS BLACK	551 FORD GRAY	568 CHRYSLER BLUE	583 STEEL BLAST GRAY			

VOC COMPLIANT = MEETS CALIF. VOC STANDARDS FOR AEROSOL PAINT. FOR BULK PAINT, REFERENCE TECHNICAL DATA SHEETS AND LOCAL AIR QUALITY STANDARDS.

PAINTS AND COATINGS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
	FLEET & CUSTOM EQUIPMENT ENAMELS VOC Compliant	16-OZ. AEROSOL	12	14 LBS.	$45.60	$3.80
		1 GALLON	1	10 LBS.	35.63	35.63
150	JOHN DEERE GREEN					
151	ALLIS CHALMERS ORANGE					
152	HONDA RED					
153	INT'L HARVESTER RED					
154	COLA BLUE					
155	COLA RED					
161	WHITE (7331)					
162	WHITE (4775)					
163	WHITE (817)					
167	CAT. YELLOW (OLD)					
168	CAT. YELLOW (NEW)					
177	RYDER YELLOW					
178	SCHOOL BUS YELLOW					
	CATALYST 27-OX-1000	1 PINT	1	1 LB.	$6.56	$6.56
	NOTE: For best results bulk paint should be catalyzed at ratio of 1 pint to 1 gallon.	1 GALLON	1	10 LBS.	38.06	38.06
	MILITARY VEHICLE & RECREATION CAMOUFLAGE PAINT VOC Compliant	16-OZ. AEROSOL	6	7 LBS.	$17.46	$2.91
		1 GALLON	4	40 LBS.	119.64	29.91
951	LIGHT GREEN (34151)					
952	DARK GREEN (34102)					
957	EARTH YELLOW (30257)					
967	EARTH RED (30117)					
968	FIELD DRAB (30118)					
975	WHITE (37875)					
977	SAND (30277)					
979	FOREST GREEN (34079)					
987A	OLIVE DRAB (34087)					
987B	OLIVE DRAB (34088)					
988	BLACK (37038)					
992	MARINE CORPS GREEN (34052)					
997A	OLIVE DRAB SEMI GLOSS (24087)					
997B	OLIVE DRAB SEMI GLOSS (24084)					
999	EARTH BROWN (30099)					
	ART/CRAFT SEALERS VOC Compliant					
110	CLEAR GLOSS					
115	HIGH GLOSS	16-OZ. AEROSOL	12	13 LBS.	$27.00	$2.25
120	FLAT MATTE					
	COLD GALVANIZE COATINGS VOC Compliant					
141	ZINC RICH GALV	16-OZ. AEROSOL	12	16 LBS.	$47.28	$3.94
142	BRITE GALV	1 QUART	6	18 LBS.	75.78	12.63
		1 GALLON	1	14 LBS.	48.69	48.69
	POLYSHIELD™ PROTECTIVE COAT VOC Compliant					
405	YELLOW	16-OZ. AEROSOL	6	7 LBS.	$29.40	$4.90
406	RED	1 PINT	6	9 LBS.	33.36	5.56
407	ORANGE	1 GALLON	1	12 LBS.	47.38	47.38
408	BLUE					
409	BLACK					
410	WHITE					
411	CLEAR					
412	FL. ORANGE					
	INDUSTRIAL SEAL COATS					
	SHOP PRIMERS	5 GALLON	1	44 LBS.	$37.50	$37.50
1501	BLACK	50 GALLON	1	410 LBS.	358.33	358.33
1502	GRAY					
1510	RED OXIDE					

THINNERS AND SOLVENTS

See Product Data Sheets for thinning guide.

		ALL CODES
1 GALLON CAN	1 PACK CASE	$8.75
1 GALLON CAN	4 PACK CASE	32.50
5 GALLON PAIL	1 PACK	38.25
50 GALLON DRUM	1 PACK	366.25

DRUM CHARGE OF $25.00 ADDED TO ALL 55 GALLON ORDERS.

BULK PACKAGING - Products with pricing in gallon packaging are also available in 5 and 55 gallon containers. To determine the price per gallon, take the 1 gallon price (divide case packs) and deduct $.75 per gallon for 5s and $1.25 per gallon for 55s. Products with pricing in aerosol only are not available in bulk. Use aerosol order number with Q, G, F and D for Quarts, Gallon, Five Gallon, or 55 Gallon Drum when ordering in bulk.

MARKING AND STRIPING SYSTEMS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
CONSTRUCTION AND SURVEY MARKING PAINT	**VOC Compliant**					
REGULAR (Solvent-based)		20-OZ. AEROSOL	12	18 LBS.	$39.72	$3.31
200 CLEAR 203 BLUE 206 BLACK 213 BROWN		1 GALLON	4	43 LBS.	86.12	21.53
201 RED 204 GREEN 207 WHITE						
202 YELLOW 205 ORANGE 210 SILVER						
FLUORESCENT (Solvent-based)		20-OZ. AEROSOL	12	18 LBS.	$39.72	$3.31
220 RED 226 YELLOW 229 PINK		1 GALLON	4	43 LBS.	119.72	29.93
222 ORANGE 227 BLUE 230 RED ORANGE						
224 GREEN 228 MAGENTA						
SPRAY CHALK (Water-based)		20-OZ. AEROSOL	12	18 LBS.	$39.72	$3.31
214 BLUE 216 RED 218 YELLOW		1 GALLON	4	45 LBS.	86.12	21.53
215 WHITE 217 ORANGE 219 GREEN						
TURF MARKING PAINT	**VOC Compliant**					
REGULAR (Water-based)		20-OZ. AEROSOL	12	18 LBS.	$41.52	$3.46
251 BLACK 254 BLUE 256 RED 258 YELLOW		1 GALLON	4	47 LBS.	96.40	24.10
252 BROWN 255 WHITE 257 ORANGE 259 GREEN						
FLUORESCENT (Water-based)		20-OZ. AEROSOL	12	18 LBS.	$41.52	$3.46
246 RED 247 ORANGE 248 GREEN 249 PINK		1 GALLON	4	47 LBS.	126.64	31.66
INVERT-A-CAP® MARKING PAINT	**VOC Compliant**					
REGULAR (Solvent-based)		16-OZ. AEROSOL	12	14 LBS.	$28.68	$2.39
261S RED 264S GREEN 267S WHITE		1 GALLON	4	43 LBS.	86.12	21.53
262S YELLOW 265S ORANGE						
263S BLUE 266S BLACK						
FLUORESCENT (Solvent-based)						
270S RED 274S GREEN 279S PINK		1 GALLON	4	43 LBS.	$119.72	$29.93
272S ORANGE 275S RED-ORANGE						
PAINT HOLDERS AND APPLICATORS						
	242 CAN-HAND'LER	—	12	2 LBS.	$16.20	$1.35
	243 CAN HOLDER	—	1	1 LB.	7.06	7.06
	244 SPOT MARKER	11 INCH	1	1 LB.	10.13	10.13
	245 MARKING STICK	38 INCH	1	2 LBS.	19.94	19.94
STRIPING PAINT	**VOC Compliant**	20-OZ. AEROSOL	12	18 LBS.	$49.56	$4.13
		1 GALLON	4	50 LBS.	99.64	24.91
SOLVENT-BASED						
710 TRAFFIC WHITE 740 TRAFFIC ORANGE 770 ASPHALT BLACK				**WATER-BASED**	792 ATHLETIC BLUE	
720 TRAFFIC YELLOW 750 TRAFFIC BLUE 780 CONCRETE GRAY				790 ATHLETIC WHITE	793 ATHLETIC RED	
730 TRAFFIC RED 760 TRAFFIC GREEN 785 FLO. RED/ORANGE				791 ATHLETIC YELLOW	796 ATHLETIC FLO. ORANGE	
HIGH SOLIDS, SOLVENT-BASED						
701 TRAFFIC WHITE SUPREME 702 TRAFFIC YELLOW SUPREME		20-OZ. AEROSOL	12	18 LBS.	$56.28	$4.69
STRIPING PAINT APPLICATORS AND ACCESSORIES						
794 VERS-A-STRIPER® TURF WHEEL KIT		SET	1	10 LBS.	$32.43	$32.43
795 VERS-A-STRIPER® GLASS BEAD DISPENSER KIT		SET	1	7 LBS.	33.16	33.16
799 VERS-A-STRIPER® (for aerosol cans)		26" x 10"	1	16 LBS.	98.09	98.09
798 DEFLECTOR DISKS & BAR		6"	1-PAIR	1 LB.	2.88	2.88
800 VERS-A-STRIPER® ACCESSORY KIT		SET	1	5 LBS.	43.69	43.69
797 STENCIL KIT		17 PIECE	1	13 LBS.	33.13	33.13
810 FIELD STRIPER (for bulk paint)		28" x 32" x 44"	1	150 LBS. (+freight)	1,039.06	1,039.06
819 GLASS BEAD DISPENSER KIT		—	1	15 LBS.	49.91	49.91
820 REFLECTIVE GLASS BEADS		1 BAG	1	50 LBS.	81.44	81.44
821 REFLECTIVE GLASS BEADS		QUART	12	42 LBS.	88.11	88.11
TREE MARKING PAINT						
REGULAR		16-OZ. AEROSOL	12	14 LBS.	$29.76	$2.48
610 RED 640 GREEN 660 BLACK		1 QUART	12	30 LBS.	49.08	4.09
620 ORANGE 645 DARK GREEN 670 WHITE		1 GALLON	4	42 LBS.	61.84	15.46
630 YELLOW 650 BLUE 680 SILVER						
FLUORESCENT		16-OZ. AEROSOL	12	14 LBS.	$35.76	$2.98
690 RED 692 ORANGE		1 QUART	12	29 LBS.	96.00	8.00
691 PINK 693 YELLOW		1 GALLON	4	39 LBS.	111.40	27.85
WET COAT™ TREE MARKING PAINT		16-OZ. AEROSOL	12	14 LBS.	$37.92	$3.16
694 WHITE 695 BLUE 697 RED 698 ORANGE 699 YELLOW						

Note: Tracer regular paint available on special order basis for government agencies. Minimum 50-gallon yield production. (A) $27.90 (Q) $45.50 (G) $79.80

LUBRICANTS AND PRODUCTION SPECIALTY PRODUCTS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET PRICE CASE	NET PRICE EACH
TOOLMATES®						
400	CLEANER & DEGREASER (NF)	20-OZ. AEROSOL	12	16 LBS.	$48.00	$4.00
		1 GALLON	4	45 LBS.	80.00	20.00
404VG	CLEANER & DEGREASER	1 GALLON	1	4 LBS.	13.00	13.00
[illegible]5	MULTIPURPOSE SPRAY ADHESIVE	20-OZ. AEROSOL	12	18 LBS.	39.72	3.31
886	HIGH STRENGTH SPRAY ADHESIVE	20-OZ. AEROSOL	12	18 LBS.	42.00	3.50
887	ANTI SPATTER	16-OZ. AEROSOL	12	14 LBS.	29.76	2.48
		1 GALLON	4	41 LBS.	55.52	13.88
890	CUTTING OIL	16-OZ. AEROSOL	12	14 LBS.	24.96	2.08
		1 GALLON	4	41 LBS.	66.52	16.63
928	MOLY OPEN GEAR GREASE	16-OZ. AEROSOL	12	16 LBS.	61.80	5.15
929	MOLY OPEN GEAR OIL	16-OZ. AEROSOL	12	14 LBS.	57.72	4.81
		1 GALLON	1	10 LBS.	25.10	25.10
930	MOLY DRY FILM LUBE	16-OZ. AEROSOL	12	14 LBS.	57.72	4.81
932	FOOD GRADE LUBE OIL	16-OZ. AEROSOL	12	14 LBS.	48.00	4.00
		1 GALLON	4	32 LBS.	79.76	19.94
933	FOOD GRADE LUBE GREASE	16-OZ. AEROSOL	12	16 LBS.	42.00	3.50
		1 GALLON	1	10 LBS.	28.75	28.75
934	DRY FILM LUBE & RELEASE AGENT	16-OZ. AEROSOL	12	14 LBS.	57.72	4.81
		1 GALLON	1	8 LBS.	34.06	34.06
935	SILICONE PAINTABLE RELEASE AGENT	16-OZ. AEROSOL	12	14 LBS.	31.92	2.66
		1 GALLON	1	9 LBS.	28.19	28.19
936	SILICONE LUBE	16-OZ. AEROSOL	12	14 LBS.	30.96	2.58
		1 GALLON	4	25 LBS.	86.64	21.66
941	ANTI-SEIZE COMPOUND	16-OZ. AEROSOL	12	14 LBS.	73.80	6.15
942	ANTI-SEIZE COMPOUND	8-OZ. JAR	12	8 LBS.	87.00	7.25
947	H.D. WIRE ROPE & GEAR LUBE	16-OZ. AEROSOL	12	16 LBS.	57.72	4.81
		1 GALLON	1	10 LBS.	31.25	31.25
948	WHITE LITHIUM GREASE	16-OZ. AEROSOL	12	16 LBS.	48.00	4.00
949	PENETRATING FLUID	16-OZ. AEROSOL	12	14 LBS.	30.96	2.58
		1 GALLON	4	32 LBS.	80.52	20.13
ELECTRAMATES®						
	EPOXY INSULATING COATING	16-OZ. AEROSOL	12	14 LBS.	30.96	2.58
	401 RED 402 BLACK 403 CLEAR	1 GALLON	4	45 LBS.	95.56	23.89
414	ANTI STATIC SPRAY	16-OZ. AEROSOL	12	16 LBS.	48.72	4.06
		1 GALLON	4	36 LBS.	39.76	9.94
[illegible]5	CONTACT CLEANER (F)	20-OZ. AEROSOL	12	16 LBS.	49.56	4.13
		1 GALLON	4	36 LBS.	62.00	15.50
416	DEFLUXER	16-OZ. AEROSOL	12	14 LBS.	49.56	4.13
417	CONTACT CLEANER (NF)	20-OZ. AEROSOL	12	16 LBS.	103.56	8.63
419VG	CONTACT CLEANER	1 GALLON	1	9 LBS.	14.25	14.25
420	DUSTAIR™	12-OZ. AEROSOL	6	6 LBS.	51.00	8.50
421	DUSTAIR™	6-OZ. AEROSOL	6	3 LBS.	29.28	4.88
425	FREEZE ALL™	12-OZ. AEROSOL	6	6 LBS.	51.00	8.50
430	CABLE CLEANER	20-OZ. AEROSOL	12	14 LBS.	49.80	4.15
		1 GALLON	4	45 LBS.	51.24	12.81
434	ELECTRICAL LUBE	16-OZ. AEROSOL	12	9 LBS.	57.72	4.81
		1 GALLON	1	10 LBS.	44.88	44.88
435	SILICONE LUBE/CLEANER	16-OZ. AEROSOL	12	13 LBS.	37.56	3.13
AUTOMATES®						
590	CARBURETOR TREATMENT	16-OZ. AEROSOL	12	14 LBS.	24.48	2.04
		1 GALLON	4	35 LBS.	48.24	12.06
591	CORROSION PREVENTIVE COATING	16-OZ. AEROSOL	12	14 LBS.	28.92	2.41
		1 GALLON	4	32 LBS.	70.00	17.50
592	BRAKE CLEANER	20-OZ. AEROSOL	12	18 LBS.	30.72	2.56
		1 GALLON	4	45 LBS.	49.00	12.25
593	BELT DRESSING	16-OZ. AEROSOL	12	14 LBS.	25.80	2.15
594	BATTERY PROTECTOR	16-OZ. AEROSOL	12	14 LBS.	25.92	2.16
595	UNDERCOATING AND SOUND DEADENER	20-OZ. AEROSOL	12	21 LBS.	39.00	3.25
		1 GALLON	4	46 LBS.	96.24	24.06
597	GRAPHITE DRY LUBE	16-OZ. AEROSOL	12	14 LBS.	26.52	2.21
		1 GALLON	4	28 LBS.	73.16	18.29
SPECIALTY-LUBRICANTS AND PENETRANTS						
851	FORMULA 5	16-OZ. AEROSOL	12	14 LBS.	39.00	3.25
		1 GALLON	4	32 LBS.	82.52	20.63
931	LUBE EZE™*	16-OZ. AEROSOL	12	14 LBS.	27.96	2.33
		1 GALLON	4	32 LBS.	63.32	15.83
937	TEF-LUBE™	16-OZ. AEROSOL	12	14 LBS.	37.32	3.11
		1 GALLON	1	10 LBS.	33.25	33.25
[illegible]8	TEF-LUBE™	8-OZ. AEROSOL	12	8 LBS.	23.76	1.98
[illegible]9	TEF-LUBE™	2.5-OZ. AEROSOL	12	4 LBS.	21.00	1.75
940	TEF-LUBE™	2-OZ. BOTTLE	12	2 LBS.	17.76	1.48
950-A	RUST-SOLV®	16-OZ. AEROSOL	12	14 LBS.	33.72	2.81
950-B	RUST-SOLV®	6-OZ. AEROSOL	12	8 LBS.	22.56	1.88
950-P	RUST-SOLV®	1 PINT	12	14 LBS.	24.00	2.00
950-G	RUST-SOLV®	1 GALLON	4	32 LBS.	54.00	13.50

[illegible]AIR™ LUBE-EZE™, TEF-LUBE™, TOOLMATES™, ELECTRAMATES™, AUTOMATES™, FREEZE ALL™, and FORMULA 5® are T.M., Aervoe-Pacific Co., Inc. All Rights Reserved *24-pack Counter Displays (C.D.) available at twice the 12-pack case price. VG=Vari-Spray concentrate only

MAINTENANCE AND INSTITUTIONAL SPECIALTY PRODUCTS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
MAINTENANCE SPECIALTY						
860	GLASS CLEANER	20-OZ. AEROSOL	12	18 LBS.	$ 20.88	$1.74
		1 GALLON	4	34 LBS.	19.96	4.99
861	FOAM CLEAN™ (E.P.A. REGISTRATION)	20-OZ. AEROSOL	12	19 LBS.	24.96	2.08
862	HORNET & WASP SPRAY (E.P.A. REGISTRATION)	16-OZ. AEROSOL	12	13 LBS.	45.72	3.81
870	GRAFFITI REMOVER	20-OZ. AEROSOL	12	17 LBS.	31.56	2.63
		1 GALLON	4	40 LBS.	54.84	13.71
880	HAND CLEANER	12-OZ. LIQUID BOTTLE	12	11 LBS.	24.72	2.06
859VG	STATIC CLEAN	1 GALLON	1	8 LBS.	9.94	9.94
MOLD MATES™						
	AVAILABLE JULY 1, 1996 **A complete new line of mold release and maintenance products.**					
e-Z-est®						
SILVER & JEWELRY PROTECTION						
1949	SILVER POLISH	12-OZ. LIQUID BOTTLE	12	10 LBS.	$40.68	$3.39
		1 GAL. LIQUID BOTTLE	4	40 LBS.	86.12	21.53
1951	SPEEDIP™ CLEANER	8-OZ. LIQUID JAR	12	6 LBS.	22.56	1.88
		1 GAL. LIQUID BOTTLE	4	40 LBS.	73.16	18.29
1954	ROUGE CLOTHS	12 PK. CLOTH PACKET	12	1 LB.	36.12	3.01
1953	JEWELDIP™ CLEANER	5-OZ. LIQUID JAR	12	6 LBS.	22.80	1.90
		1 GAL. LIQUID BOTTLE	4	40 LBS.	86.12	21.53
POLISHES AND CLEANERS						
1958	MARBLE CLEANER & POLISH	12-OZ. LIQUID BOTTLE	12	10 LBS.	$39.96	$3.33
		1 GAL. LIQUID BOTTLE	4	44 LBS.	83.12	20.78
1962	METAL POLISH	12-OZ. LIQUID BOTTLE	12	11 LBS.	39.96	3.33
		1 GAL. LIQUID BOTTLE	4	48 LBS.	86.12	21.53
1979	TILE CLEANER	12-OZ. LIQUID BOTTLE	12	11 LBS.	25.32	2.11
		1 GAL. LIQUID BOTTLE	4	40 LBS.	79.80	19.95
1982	LEMON OIL WOOD POLISH	12-OZ. LIQUID BOTTLE	12	10 LBS.	34.08	2.84
		1 GAL. LIQUID BOTTLE	4	40 LBS.	54.00	13.50
1985	COIN CLEANER	5-OZ. LIQUID BOTTLE	12	6 LBS.	22.56	1.88
		1 GAL. LIQUID BOTTLE	4	46 LBS.	79.00	19.75
865	LEMON OIL POLISH & CLEANER	16-OZ. AEROSOL	12	14 LBS.	25.80	2.15
		1 GAL. LIQUID BOTTLE	4	40 LBS.	83.32	20.83
ATHENA						
PORTABLE GAS STOVES						
1S74 RED	TABLE TOP - 7400 BTU STOVE (BUTANE)	CARTON	6	43 LBS.	$261.48	$43.58
1U90 BEIGE	TABLE TOP (3 IN 1) - 9000 BTU STOVE (BUTANE)	CARTON	4	41 LBS.	281.64	70.41
1S25 RED	POCKETSTOVE - 7000 BTU STOVE (ISOBUTANE)	CARTON	4	7 LBS.	124.72	31.18
1225	POCKETSTOVE™ CLAMSHELL KIT (STOVE, 2 FUEL, CASE, SCREEN)	CARTON	4	9 LBS.	165.52	41.38
1235	POCKETSTOVE™ GIFT BOX KIT (STOVE, 2 FUEL, DELUXE CASE, SCREEN)	CARTON	6	12 LBS.	293.64	48.94
FUEL CANS						
1213	BUTANE APPLIANCE REFILL (w/special tip)	16-OZ. AEROSOL	12	11 LBS.	$41.28	$3.44
1215	BUTANE TABLE TOP FUEL SINGLE	16-OZ. AEROSOL	12	11 LBS.	28.80	2.40
0315	BUTANE TABLE TOP FUEL 4 (3 PACK DISPLAY)	16-OZ. AEROSOL	4	12 LBS.	30.84	7.71
1219	ISOBUTANE POCKETSTOVE REFILL	2-OZ. AEROSOL	12	4 LBS.	19.92	1.66
1220	ISOBUTANE POCKETSTOVE CAMP FUEL	6-OZ. AEROSOL	12	9 LBS.	30.00	2.50
ACCESSORIES						
1221	CONNECTOR HOSE FOR MODEL 1220/1S25	I EACH	1	3 LBS.	$13.69	$13.69
1250	MICRO TORCH & SOLDER KIT (BUTANE)	I EACH	4	4 LBS.	169.00	42.25
1297	POCKETSTOVE™ CAMP CASE	I EACH	1	1 LB.	12.23	12.23
1298	POCKESTOVE™ BELT CASE	I EACH	1	1 LB.	4.94	4.94
1299	TABLE TOP CARRYING CASE	I EACH	1	1 LB.	6.91	6.91
COMPACTION & RECYCLING HARDWARE (Net Prices)						
1099	AEROSOL CAN EVACUATOR - MANUAL	1 EACH (+ freight)	1	15 LBS.	$531.25	$531.25
1401	OIL FILTER/GAL. CAN COMPACTOR - HYDRAULIC	1 EACH (+ freight)	1	450 LBS.	2,937.50	2,937.50

VG = Vari-Spray concentrate only. **ATHENA®** is a registered trademark of Aervoe-Pacific Company. **E-Z-EST®** is a registered trademark of Aervoe-Pacific Company.
SPEEDIP™, JEWELDIP™, and POCKETSTOVE™, are Trademarks of Aervoe-Pacific Co., Inc. All Rights Reserved.

STATUS QUO MATERIAL:	So-Sure Lacquer Aerosol Gray 16307
Manufacturer:	LHB Industries
Building:	65
PROPOSED MATERIAL:	306 Gray 11A Rustproof Paint
Manufacturer:	Aervoe-Pacific Co., Inc.

MSDS

306 Gray 11A Rustproof Paint Page H15-1

Product Information

306 Gray 11A Rustproof Paint Page H15-3

Cost Data

306 Gray 11A Rustproof Paint Page H15-11

Material Safety Data Sheet

TO: MSDS USERS

Please find below the material safety data sheet as per your request.

The information presented in these forms is believed to be correct and sufficient to meet the requirements of OSHA Hazard Communication standard (29 CFR 1910.1200) concerning worker's right to know. In order for the information contained in the MSDS to be most helpful we recommend that these forms be made available to all those who handle or may otherwise be exposed to the product.

The following material safety data sheet covers the hazardous ingredients associated with more than one color aerosol spray paint.

As per 29 CFR 1900. 1200 paragraph (g); whenever the hazards associated with similar mixtures are the same, then one MSDS may be prepared to cover several products.

This MSDS covers the following Aervoe Pacific aerosol spray paints.

RUST PROOF PAINT

300	PURPLE	308	BRITE RED	319	ROYAL BLUE	361	LIGHT GRAY
301	RED	309	ALUMINUM	320	FOREST GREEN	380	FREIGHT CAR RED
302	YELLOW	310	SILVER	321	EQUIPMENT ORANGE	381	OMAHA ORANGE
303	BLUE	311	GOLD	333	MED. DARK GRAY	384	BELL WHITE
304	GREEN	312	FLAT BLACK	344	SATIN BLACK	385	BELL GRAY/GREEN
305	ORANGE	313	FLAT WHITE	347	COPPERTONE	115	HIGH GLOSS
306	BLACK	314	BROWN	349	MED. LIGHT GRAY		
307	WHITE	317	TAN				

PRODUCT NAME: (11A) RUSTPROOF-ALL COLORS **PRODUCT CODE:** 11 A **HMIS CODES:** H F R P
PRODUCT USE: AEROSOL PAINT 2 4 1

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: Aervoe-Pacific Company, Inc.
ADDRESS: 1198 Sawmill Rd., Gardnerville, NV 89410
EMERGENCY PHONE: 1-800-424-9300
DATE REVISED: 02-07-96
INFORMATION PHONE: (702) 782-0100
NAME OF PREPARER: Mike A. Traquina
REASON REVISED: Updated

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION
OCCUPATIONAL EXPOSURE LIMITS

HAZARDOUS COMPONENTS/WEIGHT PERCENT	OSHA PEL	ACGIH TLV	OTHER	LD50 SPECIES & ROUTE	LC50 SPECIES & ROUTE
SS 43 METHYL PROPYL KETONE (CAS 107 87 9) <5.0%	250 PPM	250 PPM		N/A	N/A
*SS 12 XYLENE (CAS 1330 20 7) 10	100 PPM	100 PPM		4300mg/kg RAT ORAL	6700 PPM; 4hr RAT INHA
*SS 41 ACETONE (CAS 67 64 1) 18	750 PPM	750 PPM		9750mg/kg RAT ORAL	N/A
PR 01A PROPANE (CAS 74 98 6) 15	1000 PPM	1000 PPM		N/A	N//A
PR 01B ISOBUTANE (CAS 75 28 5) <5.0%	800 PPM	800 PPM	<-ESTIMATE	N/A	520000 PPM;2hrMouse Exp
PR 01C NORMAL BUTANE (CAS 106 97 8) 5	600 PPM	600 PPM		N/A	658mg/L; 4hr RAT INHA

*Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

NOTE: N/A applies to not available or not applicable

PRODUCT CODE: 11 A

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: -10 DEG F **SPECIFIC GRAVITY (H20=1) :** 0.8 **COEFFICIENT OF WATER/OIL DIST:** N/A **ODOR THRESHOLD:** N/A

VAPOR DENSITY: HEAVIER THAN AIR **SOLUBILITY IN WATER:** NEGLIGIBLE

EVAPORATION RATE: FASTER THAN n-BUTYL ACETATE **APPEARANCE AND ODOR:** OPAQUE LIQUID / SOLVENT BASED ODOR

COATING V.O.C. :5.37 LBS/IMP GAL 4.47 LBS/US GAL 535 GMS/LTR **FREEZING POINT:** N/A **pH:** N/A

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: -28 DEG C **METHOD USED:** TCC **FLAMMABLE LIMITS IN AIR BY VOLUME - LOWER:** 1.0% **UPPER:** 12.8%

EXTINGUISHING MEDIA: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG.

SPECIAL FIREFIGHTING PROCEDURES - WATER SPRAY MAY BE INEFFECTIVE, BUT WATER SPRAY MAY BE USED TO COOL CONTAINERS EXPOSED TO HEAT OR FIRE TO PREVENT PRESSURE BUILD UP.

UNUSUAL FIRE AND EXPLOSION HAZARDS - CLOSED CONTAINERS MAY EXPLODE DUE TO BUILD UP OF PRESSURE FROM EXTREME HEAT OR FIRE. AEROSOL SPRAY IS EXTREMELY FLAMMABLE.

FLAMMABILITY - T.D.G.R. CLASS -CLASS ORM-D CONSUMER COMMODITY. (UN1950 CLASS 9)

SENSITIVITY TO IMPACT - DO NOT PUNCTURE **SENSITIVITY TO STATIC DISCHARGE** - PRIMARILY VAPORS.

SECTION V - REACTIVITY DATA

STABILITY: STABLE **CONDITION TO AVOID** - HIGH TEMPERATURES

INCOMPATIBILITY (MATERIALS TO AVOID) - STRONG OXIDIZING AGENTS

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS - CARBON MONOXIDE, CARBON DIOXIDE AND POSSIBLY ACROLEIN.

HAZARDOUS POLYMERIZATION - WILL NOT OCCUR - N/A

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE - MAY CAUSE NAUSEA OR DIZZINESS.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE - SKIN: MAY CAUSE IRRITATION OR BURNING SENSATION. EYES: PRIMARY IRRITATION.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE - N/A

HEALTH HAZARDS (ACUTE AND CHRONIC) - INHALATION: ANESTHETIC. IRRITATION OF THE RESPIRATORY TRACT, OR NERVOUS SYSTEM DEPRESSION-CHARACTERIZED BY HEADACHE, DIZZINESS, NAUSEA, OR POSSIBLE UNCONSCIOUSNESS. SKIN OR EYE CONTACT: PRIMARY IRRITATION. PROLONGED OR REPEATED CONTACT TO SKIN MAY CAUSE DERMITITUS - EXERCISE DUE CARE.

CARCINOGENICITY: NTP? NO **IARC MONOGRAPHS?** NO **OSHA REGULATED?** NO

THIS PRODUCT DOES NOT CONTAIN ANY RECOGNIZED CARCINOGEN

TETATOGENICITY - N/A **MUTAGENICITY** - N/A **TOXICOLOGICALLY SYNERGISTIC PRODUCT** - N/A

MEDICAL CONDITION GENERALLY AGGRAVATED BY EXPOSURE - NONE KNOWN

EMERGENCY AND FIRST AID PROCEDURES - VAPORS: REMOVE FROM EXPOSURE AND RESTORE BREATHING, SEEK MEDICAL ATTENTION.
SPLASH: (SKIN) WASH AFFECTED AREA, REMOVE CONTAMINATED CLOTHING, SEE PHYSICIAN IF ANY IRRITATION PERSISTS.
SPLASH: (EYES) FLUSH IMMEDIATELY WITH WATER FOR 15 MINUTES AND TAKE TO A PHYSICIAN.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - REMOVE ALL SOURCES OF IGNITION; FLAMES, SPARKS, STATIC ELECTRICITY & ELECTRICAL VENTILATE AREA AND SOAK UP WITH INERT ABSORBENT USING NON-SPARKING TYPE TOOLS.

WASTE DISPOSAL METHOD - DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. DO NOT INCINERATE CLOSED CONTAINERS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING - DO NOT STORE ABOVE 120 DEG. F. DO NOT STORE OR USE NEAR HEAT, SPARKS, OR FLAME.

OTHER PRECAUTIONS - DO NOT GET IN EYES. DO NOT BREATHE VAPORS AVOID SKIN CONTACT. DO NOT TAKE INTERNALLY. SMOKING WHILE USING THIS PRODUCT MUST BE STRICTLY PROHIBITED. IN ADDITION TO ALL OTHER HAZARDS AND PRECAUTIONS - DUST FROM SANDING THE DRY PAINT FILMS SHOULD BE TREATED AS A NUISANCE DUST WITH A TLV OF 10mg/CUBIC METER.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION - OUTDOORS: WE RECOMMEND AN APPROVED PARTICULATE FILTER TO REMOVE ANY AIRBORNE OVERSPRAY. IN RESTRICTED AREAS WITH POOR VENTILATION AND CLOSE TO THE T.L.V., A HIOSH APPROVED RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE IS RECOMMENDED.

VENTILATION - ALL APPLICATION AREAS SHOULD BE ADEQUATELY VENTILATED IN ORDER TO KEEP THE SECTION II INGREDIENTS BELOW THEIR EXPOSURE LIMITS.

PROTECTIVE GLOVES - IMPERVIOUS GLOVES ARE RECOMMENDED TO PREVENT SKIN CONTACT.

EYE PROTECTION - SAFETY GLASSES WITH SIDE SHIELDS IS RECOMMENDED TO PREVENT EYE CONTACT.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT - EYE WASH FOUNTAIN AND SAFETY SHOWER. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE RE-USE

WORK/HYGIENIC PRACTICES - AVOID PROLONGED OR REPEATED CONTACT. DO NOT BREATHE VAPORS.

SECTION IX - DISCLAIMER

DISCLAIMER - THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE SO.
NOTHING CONTAINED HEREIN CONSTITUTES A SPECIFICATION NOR IS IT INTENDED TO WARRANT SUITABILITY FOR THE INTENDED USE.

Product Data Sheet

No. 1301 - 5/96

RUST PROOF PAINT

Aerosol and Bulk Liquid
AEROSOL VOC <65% GLOSS, <60% FLAT, <80% METALLIC

PRODUCT NUMBERS:

300 Purple	307 White	314 Brown	347 Coppertone
301 Red	308 Brite Red	317 Tan	349 Meter Gray (ASA-49)
302 Yellow	309 Aluminum	319 Royal Blue	361 Light Gray (ASA-61)
303 Blue	310 Silver (Lacquer)	320 Forest Green	380 Freight Car Red
304 Green	311 Gold	321 Equipment Orange	381 Omaha Orange
305 Orange	312 F. Black	333 Dark Gray (ASA-33)	384 Bell White
306 Black	313 F. White	344 Satin Black	385 Bell Gray/Green

Product number plus letter designation is as follows:
Q = 6 one-quart cans; G = 4 one-gallon cans per case; F = 1 five-gallon pail; D = 1 fifty gallon drum.

I. GENERAL DESCRIPTION

Features: This high performance rust proof industrial coating is formulated for industrial and commercial applications. Good resistance to harsh environments including water, moisture, temperature, and abrasiveness beyond that expected of standard decorator colors. High gloss, high-hide coverage (with or without primer) provides corrosive protection especially on metal surfaces. Wide color selection provides commercial, O.S.H.A. safety, and selected factory equipment touch-up colors.

Benefits: Most colors will give full coverage in one coat. The finish dries to the touch in minutes and yields full cure benefits in 72 hours. This high-solids formula is USDA approved as a chemically acceptable coating for application to structural surfaces or surfaces where there is a possibility of incidental food contact in official establishments operating under the federal meat and poultry products inspection program.

Uses: Ideal for equipment maintenance as well as O.E.M. production. Exceeds many performance standards of nationally recognized home improvement brands. May be used on metal, wood, and other common surfaces including non-porous plaster.

Application: Can be applied over firmly rusted areas, however loose flakes or particles should be removed first with a wire brush or sandpaper. For maximum rust preventive protection on metal surfaces, prime first with Aervoe Primers 119, 127, 128, 129, 132, or 135. Product should be used at temperatures between 60° and 80°F (16° and 27°C) for best results. Shake can for at least 1 minute after agitator ball begins to rattle. Hold can 6 to 8 inches from surface. Press spray head firmly, and apply with steady, even strokes. Two light coats are better than one heavy one. Bulk product is ready for brush use or dipping as is. See bulk label for thinning instructions when using in an air applicator, airless, or hot spray.

Limitations: Please refer to the Material Safety Data Sheets for specific information on material hazards, etc. Please check your local air quality standards before using any bulk paint. Check all plastic surfaces for adhesion and compatibility before use.

Packaging:

Aerosol	Cans	12.5 oz. net wt.	(354 grams)	16.0 fl. oz.	(473 ml)
	12 cans/case	14 lbs.	(6.4 kg)	.47 CF	(.013 CM)
Liquid Bulk	1 case of 6 quarts	17 lbs.	(7.2 kg)	.88 CF	(.025 CM)
	1 case of 4 gallons	40 lbs.	(18.2 kg)	1.0 CF	(.028 CM)
	5-gallon pail	49 lbs.	(22.3 kg)	1.2 CF	(.034 CM)
	50-gallon drum	465 lbs.	(211.4 kg)	8.5 CF	(.241 CM)

AERVOE™ AERVOE-PACIFIC Company, Inc.
P.O. Box 485, Gardnerville, NV 89410 • Information 702-782-0100 • Order Desk 800-227-0196 • FAX 702-782-4027

II. CHARACTERISTICS AND PROPERTIES

Average for all colors

Specifications:

Safety colors formulated to meet OSHA Spec. 1910.144.

Compositionally equal to FED SPEC TT-E-489F Class A, TT-E-488B, and A-A-665A.

Appearance:	**Aerosol**	**Bulk**
Gloss at ∠60°	90	<5.0
Class	High Gloss	Flat
Coverage:	**Aerosol**	**Bulk**
Theoretical at 1 mil dry	23 sq. ft./can	651 sq. ft/gal.
Practical at ½ mil dry	46 sq. ft./can	1302 sq. ft/gal.
Drying Schedule: (At 77°F [25°C], 50% Humidity at 1 mil dry)		
To touch	15 min.	15 min.
To handle	30 min.	30 min.
Full cure	72 hrs.	72 hrs.
To recoat	Before 2 hrs. or after 72 hrs. to avoid lifting.	
Performance and Chemical Properties:		
Weight per gallon	6.3 lbs.	8.4 lbs.
Specific gravity	0.76 lbs.	1.01 lbs.
Viscosity	Not applicable	65 KU
Flammability: Label Marking	Extremely Flammable	Flammable
Flash Point	–15°F (–28°C)	<73°F (<23°C)
Operating temperature range	55° to 80°F (13° to 27°C)	55° to 80°F (13° to 27°C)
Percent solids by weight	See attached	See attached
Percent solids by volume	See attached	See attached
Percent pigment by volume	1.1%	4.0%
Volatile Organic Compound level	<65% (GL), <60% (FL), <80% (MT)	420 grams/liter
Interior durability	Excellent	Excellent
Exterior durability	Good	Good
Temperature resistance	Excellent to 200°F; 200° to 300°F (93° to 149°C) slightly darkening	
Color fastness	Good	Good
Adhesion	Excellent over properly prepared surface	
Salt spray corrosion	200 hrs.	200 hrs.
Paint thinner resistance	Good	Good
Gasoline resistance	Poor	Poor
Motor oil resistance	Good	Good
Pencil hardness	H	H
Food contact rating	USDA authorized	Not applicable
Base Materials:		
Resin system	Alkyd Copolymer	Alkyd Copolymer
Solvents (top two)	Ketone and Aromatic	Ketone and Aromatic
Propellant system	Hydrocarbon Propellant	Not applicable

III. SHIPPING STORAGE AND HEALTH

	Aerosol	**Bulk**
IMDG number	UN1950	UN1263
D.O.T. container spec.	2P	1A1, 1A2
D.O.T. shipping description	Consumer commodity	Paint Related Material
Warehouse storage level number	NFPA 30B Level 2	Flammable liquid Class I-C
Hazardous class (CFR-49)	ORM-D	Flammable liquid
Storage temperature	50° to 120°F (10° to 49°C)	40° to 120°F (4° to 49°C)
Shelf life	12–24 months	24–60 months
HMIS ratings		
Health	2	2
Fire	4	3
Reactivity	1	0

IV. MISCELLANEOUS

Contains no Ozone Depleting Substances (O.D.S.). This product meets V.O.C. requirements for the state of California.

V. WARRANTY

The statements made herein on labels, product bulletins, or by any of our employees or agents concerning this material are given for information only. Any liability whatsoever of Aervoe-Pacific of the user of the product is limited to replacement of the product or purchase price refunded.

AEROSOL PRODUCT DATA SHEET

Rust Proof Decorator Paints

PRODUCTS		% SOLIDS BY WEIGHT	% SOLIDS BY VOLUME
300	Purple	18.5	11.8
301	Red	17.2	11.6
302	Yellow	19.0	11.8
303	Blue	17.4	11.1
304	Green	18.0	10.9
305	Orange	19.0	12.4
306	Black	19.7	13.7
307	White	21.6	11.2
308	Brite Red	16.7	11.4
309	Aluminum	17.0	10.8
310	Silver	12.0	6.9
311	Gold	20.5	11.2
312	Flat Black	21.3	11.0
313	Flat White	21.7	9.7
314	Brown	17.3	11.0
317	Tan	19.6	10.9
319	Royal Blue	16.9	11.2
320	Forest Green	17.4	11.2
321	Equipment Orange	19.7	12.6
333	Dark Gray	20.1	11.7
344	Satin Black	20.2	12.0
347	Coppertone	19.7	11.0
349	Meter Gray	21.2	11.0
361	Light Gray	21.4	11.1
380	Freight Car Red	17.6	11.0
381	Omaha Orange	17.5	11.6
384	Bell White	20.9	11.0
385	Bell Gray/Green	20.8	13.0

AERVOE

COLOR GUIDE

Superior Paints & Coatings From AERVOE-PACIFIC

ENGINE PAINT

Specially formulated for refinishing engines and transmissions. Excellent adhesion prevents rust and pitting. Heat resistant to 300 F. No peeling or checking, this paint is matched to O.E.M. standards for non-blistering at engine operating temperatures.

510 Universal Clear

511 Universal White

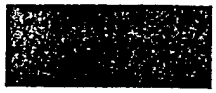
512 Flat Black

513 Satin Black

514 Gloss Black

520 Chevrolet Orange

530 Cadillac Gold


540 Alpine Green

550 Ford Red

551 Ford Gray

560 Ford Blue

561 Chevrolet Blue

562 General Motors Blue

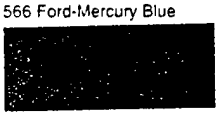
566 Ford-Mercury Blue

568 Chrysler Blue

570 Universal Silver

575 Dull Aluminum

580 Cummins Beige

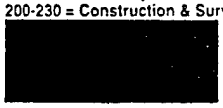

582 Cast Iron Gray

583 Steel Blast Gray

MARKING PAINT

Use these inverted marking paints to deliver professional applications in construction, survey, athletic fields, and location identification. Specially formulated to identify and code such surfaces as asphalt, concrete, wood, dirt. Safe on turf grass and fields of play.
200-230 = Construction & Survey / 246-259 = Water-based Turf / ***261S-279S = INVERT-A-CAP®***

200 Clear


201 / 256 / ***261S*** Red

202 / 258 / ***262S*** Yellow

203 / 254 / ***263S*** Blue

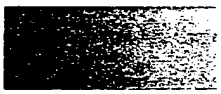
204 / 259 / ***264S*** Green

205 / 257 / ***265S*** Orange

206 / 251 / ***266S*** Black

207 / 255 / ***267S*** White

210 / Silver


213 / 252 Brown

220 / 246 / ***270S*** Fl. Red

222 / 247 / ***272S*** Fl. Orange

224 / 248 / ***274S*** Fl. Green

226 Fl. Yellow

227 Fl. Blue

228 Fl. Magenta

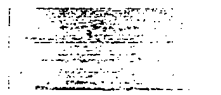
229 / 249 / ***279S*** Fl. Pink

230 / ***275S*** Fl. Red-Orange

STRIPING PAINT

Available in both solvent and water-based formulations. Provides high-hide and durability in a true VOC compliant product.
701-702 = Supreme / 710-785 = Solvent-based / ***790-795 = Water-based***

701 / 710 / ***790*** Traffic White


702 / 720 / ***791*** Traffic Yellow

730 / ***793*** Traffic Red

740 Traffic Orange

750 / ***792*** Traffic Blue

760 Traffic Green

770 Asphalt Black

780 Concrete Gray

785 Fl. Red-Orange

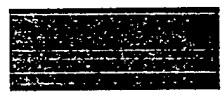
796 Athletic Fl. Orange

CAMOUFLAGE PAINT

Matches U.S. Federal Color Code 595-A or B. Fights corrosion and salt spray. Not shown: Black, White.

951 Light Green (34151)

952 Dark Green (34102)


957 Earth Yellow (30257)

967 Earth Red (30117)

968 Field Drab (30118)

977 Sand (30277)

979 Forest Green (34079)

987A Olive Drab (34087)

987B Olive Drab (34088)

992 Marine Corps Green (34052)

997A Olive Drab Semigloss (24087)

997B Olive Drab Semigloss (24084)

999 Earth Brown (30099)

APPLIANCE EPOXY

Spray touch-up for cosmetic nicks and chips on appliances to provide a hard and durable finish.

175 White

176 Almond

AERVOE — Your Symbol of Quality in Paints for Home and Industry

DECORATOR WATER-BASED PAINT

An interior/exterior mildew-fighting formula. Won't harm plastics or Styrofoam. Reduced VOCs for Low Odor and Ozone Depleting Substance Free!

1000 Clear
1002 Black
1003 Semigloss Black
1004 Flat Black
1005 Orange (see #305)
1006 White
1007 Flat White
1009 Yellow
1010 Sun Yellow
1012 Horizon Blue
1013 Blue
1015 Banner Red
1016 Red
1018 Green
1019 Forest Green
1021 Smoke Gray
1023 Mandarin
1025 Dark Brown
1027 Beige
1030 Pearl Gray
1031 Pink Ice
1032 Rose
1033 Jade Green
1034 Almond
1040 Red Oxide Primer
1049 Meter Gray (see #349)

RUST-PROOF PAINT / STENCIL INKS / *POLYSHIELD®*

301-384 = Rust-Proof 2801-2811 = Stencil Inks / ***405-412*** = *PolyShield®*

Interior/exterior gloss colors low in VOCs for Low Odor and Ozone Depleting Substance Free. For finishing machinery and equipment. PolyShield® is a rubberized coating, matte finish.

300 Purple
301 / 2801 / *406* Red
302 / 2802 / *405* Yellow
303 / 2803 / *408* Blue
304 / 2804 Green
305 / 2805 / *407* Orange
308 Bright Red
309 Aluminum
310 Silver (Lacquer)
311 Gold
314 Brown
317 / 2811 Tan
319 Royal Blue
320 Forest Green
321 Equipment Orange
344 Satin Black
347 Coppertone
333 Dark Gray (ASA-33)
349 Meter Gray (ASA-49)
361 Light Gray (ASA-61)
380 Freight Car Red
381 Omaha Orange
384 Bell White
385 Bell Gray/Green

Not Shown:
306 / *409* Black
307 / 2807 / *410* White
312 / 2806 Flat Black
313 / 2810 Flat White

FLO GLO™

Highly vibrant colors made to stand out brightly. Use on signs or where you desire blacklight reactions in advertising or decorating.

180 Red
181 Pink
182 Orange
183 Blue
184 Green
185 Yellow

HIGH HEAT

To 1,000°F temperature resistant to cracking, peeling and flaking.

190 Black
192 Aluminum
193 White
195 Beige

FLEET & CUSTOM EQUIPMENT PAINT

Our highest quality industrial finish with fastest air-dry time. Outstanding hardness and durability.

150 John Deere Green
151 Allis Chalmers Orange
152 Honda Red
153 Int'l Harvester Red
154 Cola Blue
155 Cola Red
161 White (7331)
162 White (4775)
163 White (817)
167 Caterpillar Yellow (Old)
168 Caterpillar Yellow (New)
177 Ryder Yellow
178 School Bus Yellow

ROYAL COAT PAINT

This superior enamel coating provides the utmost in rust protection, corrosion resistance and quality finish on metal, wood, and other surfaces. Specially formulated for industrial, commercial or institutional applications.

5001 Aluminum

5002 Silver

5003 Gold

5004 Safety Blue

5005 Sky Blue

5006 Safety Green

5007 Hunter Green

5008 Safety Yellow

5009 Equipment Yellow

5010 Safety Orange

5011 Equipment Orange

5012 Safety Red

5013 Cerise

5014 Sand

5015 Brown

5016 Flat Black

5017 Black

5018 Flat White

5019 White

5020 Light Gray

5021 Dark Gray

NOT SHOWN:

PRIMERS

119 Yellow
127 Black
128 Gray
129 White
132 Green
135 Red Oxide

TREE MARKING PAINT

610 Red
620 Orange
630 Yellow
640 Green
645 Dark Green
650 Blue
660 Black
670 White
680 Silver
690 Fl. Red
691 Fl. Pink
692 Fl. Orange
693 Fl. Yellow

WET COAT

694 White
695 Blue
698 Orange
699 Yellow

The Aervoe Advantage©

Aervoe-Pacific Paints & Coatings

The Aervoe Advantage©: This Color Guide displays most of Aervoe-Pacific's stock-paint items in aerosol and bulk packaging. Each product is formulated to deliver superior levels of performance. Each represents the cost-effectiveness of large production volume in aerosol or bulk giving you the best purchase value—*The Aervoe Advantage©*

Aervoe-Pacific Company, Inc., offers ***Custom Colormatch Service*** in both aerosol and bulk industrial coatings. This special capability allows you to customize orders to any specific need. Aervoe also manufactures a full line of top-quality maintenance and specialty products available in aerosol and bulk. Ask your Aervoe Distributor for the complete Aervoe-Pacific product catalog, or call **800-227-0196.**

Other Products in ***The Aervoe Advantage©***

- Art/Craft Sealers
- Cold Galvanize Coatings
- Undercoating & Sound Deadener
- Polyurethane Varnish
- Industrial Seal Coats
- Epoxy Insulating Coating
- Spot Cleaner and Degreaser
- Anti-Static Spray
- Contact Cleaner
- Defluxer
- Dustair™
- Freeze-All™
- Cable Cleaner
- Electrical Lube
- Silicone Lube/Cleaner
- Carburetor Treatment
- Cosmoline Protective Coating
- Brake Cleaner
- Belt Dressing
- Battery Protector
- Graphite Dry Lube
- Multipurpose Spray Adhesive
- High Strength Spray Adhesive
- Anti-Spatter
- Cutting Oil
- Moly Open Gear Grease
- Moly Open Gear Oil
- Moly Dry Film Lube
- Lube-Eze™
- Food Grade Lube Oil
- Food Grade Lube Grease
- Dry Film Lube & Release Agent
- Tef-Lube™
- Silicone Lube
- Silicone Paintable Release Agent
- H.D. Wire Rope & Gear Lube
- White Lithium Grease
- Penetrating Fluid
- Rust Solv®
- Portable Gas Stoves
- Butane & Isobutane Fuel
- Gas Stove Accessories
- Silver & Jewelry Protection
- Metal, Copper & Brass Polishes
- Coin Cleaner
- Lemon Oil Wood Polish
- Marble Cleaner & Polish
- Tile Cleaner
- Glass Cleaner
- Hornet & Wasp Spray
- Graffiti Remover

AERVOE-PACIFIC Company, Inc.
Gardnerville, Nevada 89410 • 702-782-0100 • 800-227-0196

Distributed by:

Aervoe-Pacific products are made in the U.S.A. Copyright 1996 Aervoe-Pacific Company, Inc. All Rights Reserved.
Colors shown on this color guide are as close as possible to the actual colors.

DIN: 14-2-5/#03
31 December 1996

NATIONAL INDUSTRIAL / INSTITUTIONAL I-1 PRICE LIST

Effective February 1, 1996

Aervoe-Pacific Company, Inc.

For over 25 Years — The Professionals' Choice

P.O. Box 485
Gardnerville, NV 89410
(702) 782-0100 Office (800) 227-0196 Order Desk
Fax (702) 782-4027

Prices, terms and conditions of sale subject to change without notice.

Your first source

— ALL PRODUCTS ARE FREE OF OZONE DEPLETING SUBSTANCES, LEAD, TOLUENE, AND CHLORINATED SOLVENTS —

SALES TERMS

MINIMUM ORDER—$50.00 (NO EXCEPTIONS)
ONLY FULL CASES SHIPPED. ALL PRODUCTS AND CASES MAY BE ASSORTED FOR QUANTITY PRICE AND FREIGHT.

PAYMENT
1% DISCOUNT 10 DAYS, NET 30 DAYS. SERVICE CHARGE OF 1½% PER MONTH ON ALL ACCOUNTS OVER 30 DAYS.

CREDIT
OPEN ACCOUNT WITH: APPROVED 3 SUPPLIERS AND 1 BANK REFERENCE. OTHER: C.O.D. ON FIRST ORDER. NO ORDERS SHIPPED WHEN OUTSTANDING BILL OVER 45 DAYS.

RETURNS
NO GOODS MAY BE RETURNED WITHOUT WRITTEN AUTHORITY. ALL RETURNS MUST BE VIA AUTHORIZED CARRIER AND ARE SUBJECT TO A 20% RE-CERTIFICATION CHARGE.

DEFECTIVES
1 YEAR PERFORMANCE WARRANTY ON ALL PRODUCTS FROM DATE OF PURCHASE. REPORT TO HOME OFFICE OR LOCAL AERVOE REPRESENTATIVE FOR EXAMINATION.

FREIGHT TERMS*

F.O.B. GARDNERVILLE, NEVADA. INSPECT GOODS UPON RECEIPT FOR CORRECT COUNT AND/OR POSSIBLE DAMAGE; ALL CLAIMS MUST BE MADE WITH DELIVERING CARRIER.

NET-DOLLAR AMOUNT OF ORDER	FREIGHT CREDIT
LESS THAN $1000.00	NO FREIGHT ALLOWED. FREIGHT COLLECT.
$1000.01 AND OVER	FULL FREIGHT ALLOWED. FREIGHT PREPAID.

***SHIPPED TO NEAREST CONTINENTAL U.S. PORT. AERVOE RESERVES RIGHT TO SELECT CARRIER.**

Aervoe-Pacific Company, Inc. shall not be liable for failure to make delivery caused by circumstances beyond its control and may cancel orders due to said causes. Aervoe reserves the right at all times to choose and select its customers, to accept or refuse any order and to change product and price specifications without notice. Because the Seller cannot control the Buyers' handling or use of product, Seller makes no warranty expressed or implied when not used or stored in accordance with directions.

PRINTED IN U.S.A.

PAINTS AND COATINGS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
DECORATOR WATER BASED ENAMELS	**VOC Compliant**	16-OZ. AEROSOL	6	7 LBS.	$16.80	$2.80
1000 CRYSTAL CLEAR	1007 FLAT WHITE (1113)	1015 BANNER RED	1023 MANDARIN		1032 ROSE	
1002 GLOSS BLACK (1106)	1009 YELLOW (1102)	1016 RED (1101)	1025 DARK BROWN		1033 JADE GREEN	
1003 S.G. BLACK	1010 SUN YELLOW	1018 GREEN (1104)	1027 BEIGE		1034 ALMOND	
1004 FLAT BLACK (1112)	1012 HORIZON BLUE	1019 FOREST GREEN	1030 PEARL GRAY		1040 RED OXIDE PRIMER	
1005 ORANGE (1105)	1013 BLUE (1103)	1021 SMOKE GRAY	1031 PINK ICE		1049 METER GRAY	
1006 GLOSS WHITE (1107)						
RUST PROOF ENAMELS	**VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$31.80	$2.65
		1 QUART	6	15 LBS.	39.78	6.63
		1 GALLON	4	45 LBS.	102.52	25.63
		*1 GALLON	4	45 LBS.	125.00	31.25
300 PURPLE	306 BLACK	312 F. BLACK	321 EQUIPMENT ORANGE*		380 FREIGHT CAR RED	
301 RED*	307 WHITE	313 F. WHITE	333 DARK GRAY (ASA-33)		381 OMAHA ORANGE*	
302 YELLOW*	308 BRITE RED*	314 BROWN	344 SATIN BLACK		384 BELL WHITE	
303 BLUE	309 ALUMINUM	317 TAN	347 COPPERTONE*		385 BELL GRAY/GREEN	
304 GREEN	310 SILVER (LACQUER)	319 ROYAL BLUE*	349 METER GRAY (ASA-49)			
305 ORANGE*	311 GOLD	320 FOREST GREEN*	361 LIGHT GRAY (ASA-61)			
PREMIUM SPRAY PAINT	**VOC Compliant**	20-OZ. AEROSOL	6	9 LBS.	$24.00	$4.00
– ROYAL COAT –						
5001 ALUMINUM	5006 SAFETY GREEN	5010 SAFETY ORANGE	5014 SAND		5018 FLAT WHITE	
5002 SILVER	5007 HUNTER GREEN	5011 EQUIPMENT ORANGE	5015 BROWN		5019 WHITE	
5003 GOLD	5008 SAFETY YELLOW	5012 SAFETY RED	5016 FLAT BLACK		5020 LIGHT GRAY	
5004 SAFETY BLUE	5009 EQUIPMENT YELLOW	5013 CERISE	5017 BLACK		5021 DARK GRAY	
5005 SKY BLUE						
STENCIL INKS	**VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$36.00	$3.00
SPRAY INKS			**COVER-UP (Carton saver)**			
2801 RED	2805 ORANGE		2810 WHITE			
2802 YELLOW	2806 BLACK		2811 TAN			
2803 BLUE	2807 WHITE					
2804 GREEN						
117 CLEAR ACRYLIC COATING	**VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$27.00	$2.25
		1 GALLON	4	42 LBS.	65.20	16.30
PRIMERS	**VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$29.76	$2.48
		1 GALLON	4	45 LBS.	80.60	20.15
119 YELLOW	129 WHITE					
127 BLACK	132 GREEN					
128 GRAY	135 RED OXIDE					
APPLIANCE EPOXY	**VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$37.80	$3.15
175 WHITE	176 ALMOND					
FLUORESCENT GLO	**VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$36.96	$3.08
		1 QUART	6	15 LBS.	77.76	12.96
		1 GALLON	4	45 LBS.	176.20	44.05
180 RED	183 BLUE					
181 PINK	184 GREEN					
182 ORANGE	185 YELLOW					
POLYURETHANE VARNISH	**VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$29.76	$2.48
		1 GALLON	4	45 LBS.	80.60	20.15
186 GLOSS	187 SATIN					
HIGH HEAT PAINT	**VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$39.72	$3.31
		1 QUART	6	15 LBS.	82.50	13.75
		1 GALLON	4	47 LBS.	190.00	47.50
190 BLACK	193 WHITE					
192 ALUMINUM	195 BEIGE					
ENGINE ENAMELS	**VOC Compliant**	16-OZ. AEROSOL	12	14 LBS.	$31.80	$2.65
		1 GALLON	4	45 LBS.	102.52	25.63
510 UNIVERSAL CLEAR	520 CHEVROLET ORANGE	560 FORD BLUE	570 UNIVERSAL SILVER			
511 UNIVERSAL WHITE	530 CADILLAC GOLD	561 CHEVROLET BLUE	575 DULL ALUMINUM			
512 FLAT BLACK	540 ALPINE GREEN	562 G.M. BLUE	580 CUMMINS BEIGE			
513 SATIN BLACK	550 FORD RED	566 FORD-MERC. BLUE	582 CAST IRON GRAY			
514 GLOSS BLACK	551 FORD GRAY	568 CHRYSLER BLUE	583 STEEL BLAST GRAY			

VOC COMPLIANT = MEETS CALIF. VOC STANDARDS FOR AEROSOL PAINT. FOR BULK PAINT, REFERENCE TECHNICAL DATA SHEETS AND LOCAL AIR QUALITY STANDARDS.

PAINTS AND COATINGS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
	FLEET & CUSTOM EQUIPMENT ENAMELS VOC Compliant	16-OZ. AEROSOL	12	14 LBS.	$45.60	$3.80
		1 GALLON	1	10 LBS.	35.63	35.63
150	JOHN DEERE GREEN					
151	ALLIS CHALMERS ORANGE					
152	HONDA RED					
153	INT'L HARVESTER RED					
154	COLA BLUE					
155	COLA RED					
161	WHITE (7331)					
162	WHITE (4775)					
163	WHITE (817)					
167	CAT. YELLOW (OLD)					
168	CAT. YELLOW (NEW)					
177	RYDER YELLOW					
178	SCHOOL BUS YELLOW					
	CATALYST 27-OX-1000	1 PINT	1	1 LB.	$6.56	$6.56
	NOTE: For best results bulk paint should be catalyzed at ratio of 1 pint to 1 gallon.	1 GALLON	1	10 LBS.	38.06	38.06
	MILITARY VEHICLE & RECREATION CAMOUFLAGE PAINT VOC Compliant	16-OZ. AEROSOL	6	7 LBS.	$17.46	$2.91
		1 GALLON	4	40 LBS.	119.64	29.91
951	LIGHT GREEN (34151)					
952	DARK GREEN (34102)					
957	EARTH YELLOW (30257)					
967	EARTH RED (30117)					
968	FIELD DRAB (30118)					
975	WHITE (37875)					
977	SAND (30277)					
979	FOREST GREEN (34079)					
987A	OLIVE DRAB (34087)					
987B	OLIVE DRAB (34088)					
988	BLACK (37038)					
992	MARINE CORPS GREEN (34052)					
997A	OLIVE DRAB SEMI GLOSS (24087)					
997B	OLIVE DRAB SEMI GLOSS (24084)					
999	EARTH BROWN (30099)					
	ART/CRAFT SEALERS VOC Compliant					
110	CLEAR GLOSS					
115	HIGH GLOSS	16-OZ. AEROSOL	12	13 LBS.	$27.00	$2.25
120	FLAT MATTE					
	COLD GALVANIZE COATINGS VOC Compliant					
141	ZINC RICH GALV	16-OZ. AEROSOL	12	16 LBS.	$47.28	$3.94
142	BRITE GALV	1 QUART	6	18 LBS.	75.78	12.63
		1 GALLON	1	14 LBS.	48.69	48.69
	POLYSHIELD™ PROTECTIVE COAT VOC Compliant					
405	YELLOW	16-OZ. AEROSOL	6	7 LBS.	$29.40	$4.90
406	RED	1 PINT	6	9 LBS.	33.36	5.56
407	ORANGE	1 GALLON	1	12 LBS.	47.38	47.38
408	BLUE					
409	BLACK					
410	WHITE					
411	CLEAR					
412	FL. ORANGE					
	INDUSTRIAL SEAL COATS					
	SHOP PRIMERS	5 GALLON	1	44 LBS.	$37.50	$37.50
1501	BLACK	50 GALLON	1	410 LBS.	358.33	358.33
1502	GRAY					
1510	RED OXIDE					

THINNERS AND SOLVENTS

See Product Data Sheets for thinning guide.

		ALL CODES
1 GALLON CAN	1 PACK CASE	$8.75
1 GALLON CAN	4 PACK CASE	32.50
5 GALLON PAIL	1 PACK	38.25
50 GALLON DRUM	1 PACK	366.25

DRUM CHARGE OF $25.00 ADDED TO ALL 55 GALLON ORDERS.

BULK PACKAGING - Products with pricing in gallon packaging are also available in 5 and 55 gallon containers. To determine the price per gallon, take the 1 gallon price (divide case packs) and deduct $.75 per gallon for 5s and $1.25 per gallon for 55s. Products with pricing in aerosol only are not available in bulk. Use aerosol order number with Q, G, F and D for Quarts, Gallon, Five Gallon, or 55 Gallon Drum when ordering in bulk.

MARKING AND STRIPING SYSTEMS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
CONSTRUCTION AND SURVEY MARKING PAINT	**VOC Compliant**					
REGULAR (Solvent-based)		20-OZ. AEROSOL	12	18 LBS.	$39.72	$3.31
200 CLEAR 203 BLUE 206 BLACK 213 BROWN		1 GALLON	4	43 LBS.	86.12	21.53
201 RED 204 GREEN 207 WHITE						
202 YELLOW 205 ORANGE 210 SILVER						
FLUORESCENT (Solvent-based)		20-OZ. AEROSOL	12	18 LBS.	$39.72	$3.31
220 RED 226 YELLOW 229 PINK		1 GALLON	4	43 LBS.	119.72	29.93
222 ORANGE 227 BLUE 230 RED ORANGE						
224 GREEN 228 MAGENTA						
SPRAY CHALK (Water-based)		20-OZ. AEROSOL	12	18 LBS.	$39.72	$3.31
214 BLUE 216 RED 218 YELLOW		1 GALLON	4	45 LBS.	86.12	21.53
215 WHITE 217 ORANGE 219 GREEN						
TURF MARKING PAINT	**VOC Compliant**					
REGULAR (Water-based)						
251 BLACK 254 BLUE 256 RED 258 YELLOW		20-OZ. AEROSOL	12	18 LBS.	$41.52	$3.46
252 BROWN 255 WHITE 257 ORANGE 259 GREEN		1 GALLON	4	47 LBS.	96.40	24.10
FLUORESCENT (Water-based)						
246 RED 247 ORANGE 248 GREEN 249 PINK		20-OZ. AEROSOL	12	18 LBS.	$41.52	$3.46
		1 GALLON	4	47 LBS.	126.64	31.66
INVERT-A-CAP® MARKING PAINT	**VOC Compliant**					
REGULAR (Solvent-based)						
261S RED 264S GREEN 267S WHITE		16-OZ. AEROSOL	12	14 LBS.	$28.68	$2.39
262S YELLOW 265S ORANGE		1 GALLON	4	43 LBS.	86.12	21.53
263S BLUE 266S BLACK						
FLUORESCENT (Solvent-based)						
270S RED 274S GREEN 279S PINK		1 GALLON	4	43 LBS.	$119.72	$29.93
272S ORANGE 275S RED-ORANGE						
PAINT HOLDERS AND APPLICATORS						
	242 CAN-HAND'LER	—	12	2 LBS.	$16.20	$1.35
	243 CAN HOLDER	—	1	1 LB.	7.06	7.06
	244 SPOT MARKER	11 INCH	1	1 LB.	10.13	10.13
	245 MARKING STICK	38 INCH	1	2 LBS.	19.94	19.94
STRIPING PAINT	**VOC Compliant**	20-OZ. AEROSOL	12	18 LBS.	$49.56	$4.13
		1 GALLON	4	50 LBS.	99.64	24.91
SOLVENT-BASED						
710 TRAFFIC WHITE	740 TRAFFIC ORANGE	770 ASPHALT BLACK	**WATER-BASED**		792 ATHLETIC BLUE	
720 TRAFFIC YELLOW	750 TRAFFIC BLUE	780 CONCRETE GRAY	790 ATHLETIC WHITE		793 ATHLETIC RED	
730 TRAFFIC RED	760 TRAFFIC GREEN	785 FLO. RED/ORANGE	791 ATHLETIC YELLOW		796 ATHLETIC FLO. ORANGE	
HIGH SOLIDS, SOLVENT-BASED						
701 TRAFFIC WHITE SUPREME	702 TRAFFIC YELLOW SUPREME	20-OZ. AEROSOL	12	18 LBS.	$56.28	$4.69
STRIPING PAINT APPLICATORS AND ACCESSORIES						
794 VERS-A-STRIPER® TURF WHEEL KIT		SET	1	10 LBS.	$32.43	$32.43
795 VERS-A-STRIPER® GLASS BEAD DISPENSER KIT		SET	1	7 LBS.	33.16	33.16
799 VERS-A-STRIPER® (for aerosol cans)		26" x 10"	1	16 LBS.	98.09	98.09
798 DEFLECTOR DISKS & BAR		6"	1-PAIR	1 LB.	2.88	2.88
800 VERS-A-STRIPER® ACCESSORY KIT		SET	1	5 LBS.	43.69	43.69
797 STENCIL KIT		17 PIECE	1	13 LBS.	33.13	33.13
810 FIELD STRIPER (for bulk paint)		28" x 32" x 44"	1	150 LBS. (+freight)	1,039.06	1,039.06
819 GLASS BEAD DISPENSER KIT		—	1	15 LBS.	49.91	49.91
820 REFLECTIVE GLASS BEADS		1 BAG	1	50 LBS.	81.44	81.44
821 REFLECTIVE GLASS BEADS		QUART	12	42 LBS.	88.11	88.11
TREE MARKING PAINT						
REGULAR		16-OZ. AEROSOL	12	14 LBS.	$29.76	$2.48
610 RED 640 GREEN 660 BLACK		1 QUART	12	30 LBS.	49.08	4.09
620 ORANGE 645 DARK GREEN 670 WHITE		1 GALLON	4	42 LBS.	61.84	15.46
630 YELLOW 650 BLUE 680 SILVER						
FLUORESCENT		16-OZ. AEROSOL	12	14 LBS.	$35.76	$2.98
690 RED 692 ORANGE		1 QUART	12	29 LBS.	96.00	8.00
691 PINK 693 YELLOW		1 GALLON	4	39 LBS.	111.40	27.85
WET COAT® TREE MARKING PAINT		16-OZ. AEROSOL	12	14 LBS.	$37.92	$3.16
694 WHITE 695 BLUE 697 RED 698 ORANGE 699 YELLOW						

Note: Tracer regular paint available on special order basis for government agencies. Minimum 50-gallon yield production. (A) $27.90 (Q) $45.50 (G) $79.80

LUBRICANTS AND PRODUCTION SPECIALTY PRODUCTS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET PRICE CASE	NET PRICE EACH
TOOLMATES®						
400	CLEANER & DEGREASER (NF)	20-OZ. AEROSOL	12	16 LBS.	$48.00	$4.00
		1 GALLON	4	45 LBS.	80.00	20.00
404VG	CLEANER & DEGREASER	1 GALLON	1	4 LBS.	13.00	13.00
[illegible]5	MULTIPURPOSE SPRAY ADHESIVE	20-OZ. AEROSOL	12	18 LBS.	39.72	3.31
[illegible]6	HIGH STRENGTH SPRAY ADHESIVE	20-OZ. AEROSOL	12	18 LBS.	42.00	3.50
887	ANTI SPATTER	16-OZ. AEROSOL	12	14 LBS.	29.76	2.48
		1 GALLON	4	41 LBS.	55.52	13.88
890	CUTTING OIL	16-OZ. AEROSOL	12	14 LBS.	24.96	2.08
		1 GALLON	4	41 LBS.	66.52	16.63
928	MOLY OPEN GEAR GREASE	16-OZ. AEROSOL	12	16 LBS.	61.80	5.15
929	MOLY OPEN GEAR OIL	16-OZ. AEROSOL	12	14 LBS.	57.72	4.81
		1 GALLON	1	10 LBS.	25.10	25.10
930	MOLY DRY FILM LUBE	16-OZ. AEROSOL	12	14 LBS.	57.72	4.81
932	FOOD GRADE LUBE OIL	16-OZ. AEROSOL	12	14 LBS.	48.00	4.00
		1 GALLON	4	32 LBS.	79.76	19.94
933	FOOD GRADE LUBE GREASE	16-OZ. AEROSOL	12	16 LBS.	42.00	3.50
		1 GALLON	1	10 LBS.	28.75	28.75
934	DRY FILM LUBE & RELEASE AGENT	16-OZ. AEROSOL	12	14 LBS.	57.72	4.81
		1 GALLON	1	8 LBS.	34.06	34.06
935	SILICONE PAINTABLE RELEASE AGENT	16-OZ. AEROSOL	12	14 LBS.	31.92	2.66
		1 GALLON	1	9 LBS.	28.19	28.19
936	SILICONE LUBE	16-OZ. AEROSOL	12	14 LBS.	30.96	2.58
		1 GALLON	4	25 LBS.	86.64	21.66
941	ANTI-SEIZE COMPOUND	16-OZ. AEROSOL	12	14 LBS.	73.80	6.15
942	ANTI-SEIZE COMPOUND	8-OZ. JAR	12	8 LBS.	87.00	7.25
947	H.D. WIRE ROPE & GEAR LUBE	16-OZ. AEROSOL	12	16 LBS.	57.72	4.81
		1 GALLON	1	10 LBS.	31.25	31.25
948	WHITE LITHIUM GREASE	16-OZ. AEROSOL	12	16 LBS.	48.00	4.00
949	PENETRATING FLUID	16-OZ. AEROSOL	12	14 LBS.	30.96	2.58
		1 GALLON	4	32 LBS.	80.52	20.13
ELECTRAMATES®						
	EPOXY INSULATING COATING	16-OZ. AEROSOL	12	14 LBS.	30.96	2.58
	401 RED 402 BLACK 403 CLEAR	1 GALLON	4	45 LBS.	95.56	23.89
414	ANTI STATIC SPRAY	16-OZ. AEROSOL	12	16 LBS.	48.72	4.06
		1 GALLON	4	36 LBS.	39.76	9.94
[illegible]5	CONTACT CLEANER (F)	20-OZ. AEROSOL	12	16 LBS.	49.56	4.13
		1 GALLON	4	36 LBS.	62.00	15.50
416	DEFLUXER	16-OZ. AEROSOL	12	14 LBS.	49.56	4.13
417	CONTACT CLEANER (NF)	20-OZ. AEROSOL	12	16 LBS.	103.56	8.63
419VG	CONTACT CLEANER	1 GALLON	1	9 LBS.	14.25	14.25
420	DUSTAIR™	12-OZ. AEROSOL	6	6 LBS.	51.00	8.50
421	DUSTAIR™	6-OZ. AEROSOL	6	3 LBS.	29.28	4.88
425	FREEZE ALL™	12-OZ. AEROSOL	6	6 LBS.	51.00	8.50
430	CABLE CLEANER	20-OZ. AEROSOL	12	14 LBS.	49.80	4.15
		1 GALLON	4	45 LBS.	51.24	12.81
434	ELECTRICAL LUBE	16-OZ. AEROSOL	12	9 LBS.	57.72	4.81
		1 GALLON	1	10 LBS.	44.88	44.88
435	SILICONE LUBE/CLEANER	16-OZ. AEROSOL	12	13 LBS.	37.56	3.13
AUTOMATES®						
590	CARBURETOR TREATMENT	16-OZ. AEROSOL	12	14 LBS.	24.48	2.04
		1 GALLON	4	35 LBS.	48.24	12.06
591	CORROSION PREVENTIVE COATING	16-OZ. AEROSOL	12	14 LBS.	28.92	2.41
		1 GALLON	4	32 LBS.	70.00	17.50
592	BRAKE CLEANER	20-OZ. AEROSOL	12	18 LBS.	30.72	2.56
		1 GALLON	4	45 LBS.	49.00	12.25
593	BELT DRESSING	16-OZ. AEROSOL	12	14 LBS.	25.80	2.15
594	BATTERY PROTECTOR	16-OZ. AEROSOL	12	14 LBS.	25.92	2.16
595	UNDERCOATING AND SOUND DEADENER	20-OZ. AEROSOL	12	21 LBS.	39.00	3.25
		1 GALLON	4	46 LBS.	96.24	24.06
597	GRAPHITE DRY LUBE	16-OZ. AEROSOL	12	14 LBS.	26.52	2.21
		1 GALLON	4	28 LBS.	73.16	18.29
SPECIALTY-LUBRICANTS AND PENETRANTS						
851	FORMULA 5	16-OZ. AEROSOL	12	14 LBS.	39.00	3.25
		1 GALLON	4	32 LBS.	82.52	20.63
931	LUBE EZE™*	16-OZ. AEROSOL	12	14 LBS.	27.96	2.33
		1 GALLON	4	32 LBS.	63.32	15.83
937	TEF-LUBE™	16-OZ. AEROSOL	12	14 LBS.	37.32	3.11
		1 GALLON	1	10 LBS.	33.25	33.25
[illegible]8	TEF-LUBE™	8-OZ. AEROSOL	12	8 LBS.	23.76	1.98
[illegible]9	TEF-LUBE™	2.5-OZ. AEROSOL	12	4 LBS.	21.00	1.75
940	TEF-LUBE™	2-OZ. BOTTLE	12	2 LBS.	17.76	1.48
950-A	RUST-SOLV®	16-OZ. AEROSOL	12	14 LBS.	33.72	2.81
950-B	RUST-SOLV®	6-OZ. AEROSOL	12	8 LBS.	22.56	1.88
950-P	RUST-SOLV®	1 PINT	12	14 LBS.	24.00	2.00
950-G	RUST-SOLV®	1 GALLON	4	32 LBS.	54.00	13.50

[illegible]AIR™ LUBE-EZE™, TEF-LUBE™, TOOLMATES™, ELECTRAMATES™, AUTOMATES™, FREEZE ALL™, and FORMULA 5® are T.M., Aervoe-Pacific Co., Inc. All Rights Reserved *24-pack Counter Displays (C.D.) available at twice the 12-pack case price. VG=Varn-Spray concentrate only

MAINTENANCE AND INSTITUTIONAL SPECIALTY PRODUCTS

ORDER NUMBER	DESCRIPTION	CAN SIZE AND CONTAINER	CASE PACK	CASE WEIGHT	NET COST CASE	NET COST EACH
MAINTENANCE SPECIALTY						
860	GLASS CLEANER	20-OZ. AEROSOL	12	18 LBS.	$ 20.88	$1.74
		1 GALLON	4	34 LBS.	19.96	4.99
861	FOAM CLEAN™ (E.P.A. REGISTRATION)	20-OZ. AEROSOL	12	19 LBS.	24.96	2.08
862	HORNET & WASP SPRAY (E.P.A. REGISTRATION)	16-OZ. AEROSOL	12	13 LBS.	45.72	3.81
870	GRAFFITI REMOVER	20-OZ. AEROSOL	12	17 LBS.	31.56	2.63
		1 GALLON	4	40 LBS.	54.84	13.71
880	HAND CLEANER	12-OZ. LIQUID BOTTLE	12	11 LBS.	24.72	2.06
859VG	STATIC CLEAN	1 GALLON	1	8 LBS.	9.94	9.94
MOLD MATES™						
	AVAILABLE JULY 1, 1996 **A complete new line of mold release and maintenance products.**					
e-Z-est®						
SILVER & JEWELRY PROTECTION						
1949	SILVER POLISH	12-OZ. LIQUID BOTTLE	12	10 LBS.	$40.68	$3.39
		1 GAL. LIQUID BOTTLE	4	40 LBS.	86.12	21.53
1951	SPEEDIP™ CLEANER	8-OZ. LIQUID JAR	12	6 LBS.	22.56	1.88
		1 GAL. LIQUID BOTTLE	4	40 LBS.	73.16	18.29
1954	ROUGE CLOTHS	12 PK. CLOTH PACKET	12	1 LB.	36.12	3.01
1953	JEWELDIP™ CLEANER	5-OZ. LIQUID JAR	12	6 LBS.	22.80	1.90
		1 GAL. LIQUID BOTTLE	4	40 LBS.	86.12	21.53
POLISHES AND CLEANERS						
1958	MARBLE CLEANER & POLISH	12-OZ. LIQUID BOTTLE	12	10 LBS.	$39.96	$3.33
		1 GAL. LIQUID BOTTLE	4	44 LBS.	83.12	20.78
1962	METAL POLISH	12-OZ. LIQUID BOTTLE	12	11 LBS.	39.96	3.33
		1 GAL. LIQUID BOTTLE	4	48 LBS.	86.12	21.53
1979	TILE CLEANER	12-OZ. LIQUID BOTTLE	12	11 LBS.	25.32	2.11
		1 GAL. LIQUID BOTTLE	4	40 LBS.	79.80	19.95
1982	LEMON OIL WOOD POLISH	12-OZ. LIQUID BOTTLE	12	10 LBS.	34.08	2.84
		1 GAL. LIQUID BOTTLE	4	40 LBS.	54.00	13.50
1985	COIN CLEANER	5-OZ. LIQUID BOTTLE	12	6 LBS.	22.56	1.88
		1 GAL. LIQUID BOTTLE	4	46 LBS.	79.00	19.75
865	LEMON OIL POLISH & CLEANER	16-OZ. AEROSOL	12	14 LBS.	25.80	2.15
		1 GAL. LIQUID BOTTLE	4	40 LBS.	83.32	20.83
ATHENA						
PORTABLE GAS STOVES						
1S74 RED	TABLE TOP - 7400 BTU STOVE (BUTANE)	CARTON	6	43 LBS.	$261.48	$43.58
1U90 BEIGE	TABLE TOP (3 IN 1) - 9000 BTU STOVE (BUTANE)	CARTON	4	41 LBS.	281.64	70.41
1S25 RED	POCKETSTOVE - 7000 BTU STOVE (ISOBUTANE)	CARTON	4	7 LBS.	124.72	31.18
1225	POCKETSTOVE™ CLAMSHELL KIT (STOVE, 2 FUEL, CASE, SCREEN)	CARTON	4	9 LBS.	165.52	41.38
1235	POCKETSTOVE™ GIFT BOX KIT (STOVE, 2 FUEL, DELUXE CASE, SCREEN)	CARTON	6	12 LBS.	293.64	48.94
FUEL CANS						
1213	BUTANE APPLIANCE REFILL (w/special tip)	16-OZ. AEROSOL	12	11 LBS.	$41.28	$3.44
1215	BUTANE TABLE TOP FUEL SINGLE	16-OZ. AEROSOL	12	11 LBS.	28.80	2.40
0315	BUTANE TABLE TOP FUEL 4 (3 PACK DISPLAY)	16-OZ. AEROSOL	4	12 LBS.	30.84	7.71
1219	ISOBUTANE POCKETSTOVE REFILL	2-OZ. AEROSOL	12	4 LBS.	19.92	1.66
1220	ISOBUTANE POCKETSTOVE CAMP FUEL	6-OZ. AEROSOL	12	9 LBS.	30.00	2.50
ACCESSORIES						
1221	CONNECTOR HOSE FOR MODEL 1220/1S25	I EACH	1	3 LBS.	$13.69	$13.69
1250	MICRO TORCH & SOLDER KIT (BUTANE)	I EACH	4	4 LBS.	169.00	42.25
1297	POCKETSTOVE™ CAMP CASE	I EACH	1	1 LB.	12.23	12.23
1298	POCKESTOVE™ BELT CASE	I EACH	1	1 LB.	4.94	4.94
1299	TABLE TOP CARRYING CASE	I EACH	1	1 LB.	6.91	6.91
COMPACTION & RECYCLING HARDWARE (Net Prices)						
1099	AEROSOL CAN EVACUATOR - MANUAL	1 EACH (+ freight)	1	15 LBS.	$531.25	$531.25
1401	OIL FILTER/GAL. CAN COMPACTOR - HYDRAULIC	1 EACH (+ freight)	1	450 LBS.	2,937.50	2,937.50

VG = Vari-Spray concentrate only. **ATHENA®** is a registered trademark of Aervoe-Pacific Company. **E-Z-EST®** is a registered trademark of Aervoe-Pacific Company. SPEEDIP™, JEWELDIP™, and POCKETSTOVE™, are Trademarks of Aervoe-Pacific Co., Inc. All Rights Reserved.

STATUS QUO MATERIAL:	Enamel Alkyd Low VOC Orange 12246
Manufacturer:	Pratt and Lambert
Building:	158
PROPOSED MATERIAL:	Enamel Orange 12246 TT-E-2784
Manufacturer:	Del Paint Corp.

MSDS

Enamel Orange 12246 TT-E-2784	Page H16-1

Product Information

Enamel Orange 12246 TT-E-2784	Page 978 - GSA Spring 1996 Supply Catalog

Cost Data

Enamel Orange 12246 TT-E-2784	Page 978 - GSA Spring 1996 Supply Catalog

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF April 1996

Proprietary Version - For U.S. Government Use Only

FSC: 8010
NIIN: 013338912
Manufacturer's CAGE: 39934
Part No. Indicator: A
Part Number/Trade Name: ENAMEL ORANGE 12246 TT-E-2784

Nuclear Water Data

This is not a Nuclear Water Chemical NIIN.

Standard PMS Identification Number Data

This is not a Standard PMS Identification Number NIIN.

General Information

Item Name: ENAMEL ORANGE 12246
Company's Name: DEL PAINT CORP
Company's Street: 3105 EAST RENO
Company's P. O. Box: N/K
Company's City: OKLAHOMA CITY
Company's State: OK
Company's Country: US
Company's Zip Code: 73117
Company's Emerg Ph #: 800-424-9300 CHEMTREC
Company's Info Ph #: 405-672-1431
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:
Safety Focal Point: G
Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 001
Status: SH
Date MSDS Prepared: 10FEB93
Safety Data Review Date: 19NOV93
Supply Item Manager: GSA
MSDS Preparer's Name: ONEY FLEMING
Preparer's Company: DEL PAINT CORP
Preparer's St Or P. O. Box: 3105 EAST RENO
Preparer's City: OKLAHOMA CITY
Preparer's State: OK
Preparer's Zip Code: 73117
Other MSDS Number:
□
Report for NIIN: 013338912

MSDS Serial Number: ſBSSFD
Specification Number: TT-E-2784
Spec Type, Grade, Class: TYPE 1
Hazard Characteristic Code: N/
Unit Of Issue: GL
Unit Of Issue Container Qty: 1 GL CN
Type Of Container: METAL
Net Unit Weight: N/K
NRC/State License Number: N/K
Net Explosive Weight: N/K
Net Propellant Weight-Ammo: N/K
Coast Guard Ammunition Code: N/K
==========
====

Ingredients/Identity Information

==========
====
Proprietary: NO
Ingredient: EKTASOLVE EEH SOLVENT
Ingredient Sequence Number: 01
Percent: 3.32
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: KK9625000
CAS Number: 1559-35-9
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: BENZYL ALCOHOL
Ingredient Sequence Number: 02
Percent: 3.32
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: DN3150000

CAS Number: 100-51-6
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: DIMETHYLAMINOETHANOL LOW VOE
Ingredient Sequence Number: 03
Percent: 0.38
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: KK6125000
CAS Number: 108-01-0
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: VOC: 0.827 LBS/GAL; 99.24 G/L
□
Report for NIIN: 013338912

Ingredient Sequence Number: 04
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 9999999VO
CAS Number:
OSHA PEL: N/K
ACGIH TLV: N/K
Other Recommended Limit: NONE SPECIFIED
==========
==========

Physical/Chemical Characteristics

==========
==========
Appearance And Odor: ORANGE LIQUID WITH SLIGHT ODOR
Boiling Point: 212 TO 644F
Melting Point: 32.0F,0.0C
Vapor Pressure (MM Hg/70 F): NONE
Vapor Density (Air=1): > AIR
Specific Gravity: 1.01 (WATER=1)
Decomposition Temperature: 350F,177C
Evaporation Rate And Ref: SLOWER THAN ETHER
Solubility In Water: SLIGHT
Percent Volatiles By Volume: 60.9
Viscosity: 77 TO 95 KU
pH: 9 MAX
Radioactivity: N/K
Form (Radioactive Matl):
Magnetism (Milligauss): N/P

Corrosion Rate (IPY): N/A
Autoignition Temperature: 216 F

Fire and Explosion Hazard Data

Flash Point: NO FLASH
Flash Point Method: SCC
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS (PRESSURE DEMAND MSHA/NIOSH APPROVED OR EQUIVALENT) AND FULL PROTECTIVE GEAR.
Unusual Fire And Expl Hazrds: MATERIAL CAN SPLATTER ABOVE 100C/212F. POLYMER FILM CAN BURN.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NONE
Materials To Avoid: THERE ARE NO KNOWN MATERIALS WHICH ARE INCOMPATIBLE WITH THIS PRODUCT.
Hazardous Decomp Products: THERMAL DECOMPOSITION MAY YIELD ACRYLIC MONOMERS.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NONE
□
Report for NIIN: 013338912

Health Hazard Data

LD50-LC50 Mixture: N/K
Route Of Entry - Inhalation: N/P
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: CAN CAUSE IRRITATION OF RESPIRATORY PASSAGES.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: INHALATION OF VAPOR OR MIST CAN CAUSE HEADACHES, NAUSEA, IRRITATION OF NOSE, THROAT & LUNGS. EYE CONTACT: SLI GHT

IRRITATION. SKIN CONTACT PROLONGED OR REPEATED CAN CAUSE SLIGHT IRRITAT
ION.
Med Cond Aggravated By Exp: PRE-EXISTING LUNG DISEASE MAY BE AGGRAVATED
BY
EXPOSURE.
Emergency/First Aid Proc: INHALATION: MOVE SUBJECT TO FRESH AIR. EYE
CONTACT: FLUSH WITH LARGE AMOUNTS OF WATER FOR 15 MINUTES, CONSULT
PHYSICIAN IF IRRITATION PERSISTS. SKIN CONTACT: WASH AFFECTED AREA
THOROUGHLY WITH SOAP & WATER. INGESTION: IF SWALLOWED, GIVE 2 GLASSES O
F
WATER TO DRINK, CONSULT PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: KEEP SPECTATORS AWAY. FLOOR MAY BE SLIPPE
RY,
USE CARE TO AVOID FALLING. CONTAIN SPILLS WITH INERT MATERIAL (SAND, EA
RTH)
. TRANSFER LIQUID AND SOLID DIKING MATERIAL TO SEPARATE SUITABLE CONTAI
NERS
FOR RECOVERY/DISPOSAL.
Neutralizing Agent: NONE
Waste Disposal Method: KEEP SPILLS AND CLEANING RUN OFF OUT OF MUNICIPA
L
SEWERS AND BODIES OF WATER. CONSULT FEDERAL, STATE OR LOCAL AUTHORITIES
FOR
PROPER DISPOSAL PROCEDURES CONCERNING HEALTH AND ENVIRONMENT.
Precautions-Handling/Storing: KEEP FROM FREEZING.
Other Precautions: DO NOT TAKE INTERNALLY. KEEP AWAY FROM CHILDREN.

Control Measures

Respiratory Protection: APPROVED MECHANICAL FILTER RESPIRATOR TO REMOVE
SOLID AIRBORNE PARTICLES OF OVER SPRAY DURING SPRAY APPLICATION.
Ventilation: NORMAL, SUCH AS A FAN
Protective Gloves: RUBBER
Eye Protection: SAFETY GLASSES OR GOGGLES
Other Protective Equipment: EYE WASH STATION
Work Hygienic Practices: N/K
Suppl. Safety & Health Data: N/K

Transportation Data

Transportation Action Code:
Transportation Focal Point: G

Trans Data Review Date: 93323
□
Report for NIIN: 013338912

DOT PSN Code: ZZZ
DOT Symbol: N/R
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
DOT Class: N/R
DOT ID Number: N/R
DOT Pack Group: N/R
DOT Label: N/R
DOT/DoD Exemption Number: N/K
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IMO Regulations Page Number: N/R
IMO UN Number: N/R
IMO UN Class: N/R
IMO Subsidiary Risk Label: N/R
IATA PSN Code: ZZZ
IATA UN ID Number: N/R
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
IATA UN Class: N/R
IATA Subsidiary Risk Class: N/R
IATA Label: N/R
AFI PSN Code: ZZZ
AFI Symbols:
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI Class: N/R
AFI ID Number: N/R
AFI Pack Group: N/R
AFI Label: N/R
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code: NK
N.O.S. Shipping Name: N/K
Additional Trans Data: N/K

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:

1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
□
Report for NIIN: 013338912

3rd EPA Acute Hazard New:
==========
====

Label Data

==========
====
Label Required: YES
Technical Review Date:
Label Date:
MFR Label Number:
Label Status: G
Common Name: ENAMEL ORANGE 12246 TT-E-2784
Chronic Hazard: N/P
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: CAN CAUSE IRRITATION OF RESPIRATORY PASSAGE
S.
INHALATION OF VAPOR OR MIST CAN CAUSE HEADACHES, NAUSEA, IRRITATION OF
NOSE, THROAT & LUNGS. EYE CONTACT: SLIGHT IRRITATION. SKIN CONTACT
PROLONGED OR REPEATED CAN CAUSE SLIGHT IRRITATION.
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: DEL PAINT CORP
Label Street: 3105 EAST RENO

Label P.O. Box: N/K
Label City: OKLAHOMA CITY
Label State: OK
Label Zip Code: 73117
Label Country: US
Label Emergency Number: 800-424-9300 CHEMTREC
Year Procured:
☐

STATUS QUO MATERIAL:	Enamel Alkyd Air Drying Yellow 13538
Manufacturer:	Pratt and Lambert
Building:	158
PROPOSED MATERIAL:	TT-E-2784 Ultra Deep Tint Yellow 13538
Manufacturer:	Davlin Paint Co.

MSDS

TT-E-2784 Ultra Deep Tint Yellow 13538	Page H17-1

Product Information

TT-E-2784 Ultra Deep Tint Yellow 13538	Page 979 - GSA Spring 1996 Supply Catalog

Cost Data

TT-E-2784 Ultra Deep Tint Yellow 13538	Page 979 - GSA Spring 1996 Supply Catalog

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF April 1996

Proprietary Version - For U.S. Government Use Only

FSC: 8010
NIIN: 013337763
Manufacturer's CAGE: 3Z268
Part No. Indicator: A
Part Number/Trade Name: TT-E-2784 ULTRA DEEP TINT BASE PC B2784UDTB

Nuclear Water Data

This is not a Nuclear Water Chemical NIIN.

Standard PMS Identification Number Data

This is not a Standard PMS Identification Number NIIN.

General Information

Item Name: ENAMEL YELLOW 23538
Company's Name: DAVLIN PAINT COMPANY
Company's Street: N/K
Company's P. O. Box: 2308
Company's City: BERKELEY
Company's State: CA
Company's Country: US
Company's Zip Code: 94702
Company's Emerg Ph #: 800-424-9300 CHEMTREC
Company's Info Ph #: 510-848-2863
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:
Safety Focal Point: G
Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 004
Status: SM
Date MSDS Prepared: 20MAR92
Safety Data Review Date: 21JAN93
Supply Item Manager: GSA
MSDS Preparer's Name: PATRICIA SHAW
Preparer's Company: DAVLIN PAINT COMPANY
Preparer's St Or P. O. Box: PO BOX 2308
Preparer's City: BERKELEY
Preparer's State: CA
Preparer's Zip Code: 94702
Other MSDS Number:
□
Report for NIIN: 013337763

MSDS Serial Number: BQDTM
Specification Number: TT-E-2784
Spec Type, Grade, Class: TYPE 2
Hazard Characteristic Code: N/
Unit Of Issue: GL
Unit Of Issue Container Qty: 1 GL CN
Type Of Container: METAL
Net Unit Weight: N/K
NRC/State License Number: N/K
Net Explosive Weight: N/K
Net Propellant Weight-Ammo: N/K
Coast Guard Ammunition Code: N/K
==========
====

Ingredients/Identity Information

==========
====
Proprietary: NO
Ingredient: PROPYLENE GLYCOL (VAPOR PRESSURE 0.2 MM HG @ 68F)
Ingredient Sequence Number: 01
Percent: 5
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: TY2000000
CAS Number: 57-55-6
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: 2,2,4 TRIMETHYLPENTANEDIOL- 1,3-MONOISOBUTYRATE (VAPOR PRESSURE 1.0 MM HG @ 189F)
Ingredient Sequence Number: 02
Percent: <5.0
Ingredient Action Code:
Ingredient Focal Point: G

NIOSH (RTECS) Number: UF6000000
CAS Number: 25265-77-4
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: PIGMENTED LIQUID
Boiling Point: 212 TO 471F
Melting Point: N/K
Vapor Pressure (MM Hg/70 F): N/K
Vapor Density (Air=1): < AIR
Specific Gravity: 1.1
Decomposition Temperature: N/K
Evaporation Rate And Ref: SLOWER THAN ETHER
Solubility In Water: DILUTABLE
Percent Volatiles By Volume: N/K
Viscosity: N/K
□
Report for NIIN: 013337763

pH: N/K
Radioactivity: N/K
Form (Radioactive Matl):
Magnetism (Milligauss): N/P
Corrosion Rate (IPY): N/K
Autoignition Temperature: N/K

Fire and Explosion Hazard Data

Flash Point: 241F,116C
Flash Point Method: TCC
Lower Explosive Limit: 0.6
Upper Explosive Limit: 12.5
Extinguishing Media: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL
Special Fire Fighting Proc: NONE ARE EXPECTED TO BE REQUIRED. IF THIS MATERIAL IS INVOLVED IN A FIRE, NIOSH APPROVED SELF-CONTAINED RESPIRATORY EQUIPMENT SHOULD BE WORN.
Unusual Fire And Expl Hazrds: NON-FLAMM, BUT VAPOR CAN COLLECT ABOVE LIQ IN CLOSED CNTNR WHICH MAY FLASH IF EXPOSED TO IGNITION SOURCE. MAT'L CAN SPLTTER ABOVE 100F. DRIED MAT'L CAN BURN.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): N/K
Materials To Avoid: N/K
Hazardous Decomp Products: UNDER SEVERE THERMAL DEGRADATION, LOW MOLECULAR
WEIGHT HYDROCARBONS MAY BE FORMED.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): N/K

Health Hazard Data

LD50-LC50 Mixture: N/K
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: INHALATION: IRRITATION OF EYES, NOSE & THROAT. EYE: IRRITANT. SKIN: IRRITATION, RASH UPON PROLONGED OR REPEATED
CONTACT. INGESTION: GASTROINTESTINAL IRRITATION, VOMITING, NAUSEA, DIARRHEA. CHRONIC; OVEREXPOSURE TO THIS MATERIAL MAY LEAD TO SKIN DRYING,
RASHES. OVEREXPOSURE: NOSE, THROAT & LUNG IRRITATION.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: N/K
Signs/Symptoms Of Overexp: N/K
Med Cond Aggravated By Exp: DERMATITIS, RESPIRATORY TRACT IRRITATION.
Emergency/First Aid Proc: INHALATION: MOVE PERSON TO FRESH AIR. IF SYMPTOMS PERSIST CONSULT A PHYSICIAN. EYE CONTACT: FLUSH WITH LARGE QUANTITIES OF CLEAN WATER FOR 15 MINUTES & CALL A PHYSICIAN. SKIN CONTACT:
WASH THOROUGHLY WITH SOAP AND WATER. INGESTION: DRINK 1 OR 2 GLASSES OF WATER TO DILUTE. DO NOT INDUCE VOMITING. CONSULT A PHYSICIAN OR POISON
□
Report for NIIN: 013337763

CONTROL CENTER IMMEDIATELY. TREAT SYMPTOMATICALLY.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: KEEP SPECTATORS AWAY. FLOOR MAY BE SLIPPERY,
USE CARE TO AVOID FALLING. DIKE AND CONTAIN SPILL WITH INERT MATERIAL.

TRANSFER LIQUID AND DIKING MATERIAL TO CONTAINERS FOR RECOVERY & DISPOS
AL.
KEEP SPILLS OUT OF SEWERS AND OPEN WATER.
Neutralizing Agent: N/K
Waste Disposal Method: KEEP OUT OF DRAINS, SEWERS, AND WATERWAYS. LAND
FILL OR INCINERATE ACCORDING TO LOCAL, STATE AND FEDERAL REGULATIONS.
Precautions-Handling/Storing: DO NOT STORE ABOVE 100F. KEEP FROM FREEZI
NG.
DO NOT TAKE INTERNALLY. KEEP CONTAINERS CLOSED WHEN NOT IN USE.
Other Precautions: N/K

Control Measures

Respiratory Protection: WEAR APPROPRIATE PROPERLY FITTED RESPIRATOR
(NIOSH/MSHA APPROVED) DURING AND AFTER APPLICATION UNLESS AIR MONITORIN
G
DEMONSTRATES VAPOR/MIST LEVELS ARE BELOW APPLICABLE LIMITS. FOLLOW
RESPIRATOR MANUFACTURER'S DIRECTIONS FOR RESPIRATOR USE.
Ventilation: PROVIDE SUFFICIENT VENTILATION TO CONTROL EXPOSURE LEVELS
BELOW AIRBORN EXPOSURE LIMITS.
Protective Gloves: PROTECTIVE GLOVES (CONSULT GLOVE MFR)
Eye Protection: USE CHEMICAL SAFETY GLASSES/GOGGLES.
Other Protective Equipment: WEAR PROTECTIVE CLOTHING WHENEVER POSSIBLE
TO
PREVENT REPEATED OR EXTENDED EXPOSURE OF SKIN.
Work Hygienic Practices: WASH HANDS AFTER USING. REMOVE WET PAINT FROM
SKIN WITH WATER BEFORE IT DRIES.
Suppl. Safety & Health Data: N/K

Transportation Data

Transportation Action Code:
Transportation Focal Point: G
Trans Data Review Date: 93021
DOT PSN Code: ZZZ
DOT Symbol:
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
DOT Class: N/R
DOT ID Number: N/R
DOT Pack Group:
DOT Label: N/R
DOT/DoD Exemption Number: N/K
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IMO Regulations Page Number: N/R
IMO UN Number: N/R
IMO UN Class: N/R

IMO Subsidiary Risk Label: N/R
IATA PSN Code: ZZZ
IATA UN ID Number: N/R
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
□
Report for NIIN: 013337763

IATA UN Class: N/R
IATA Subsidiary Risk Class: N/R
IATA Label: N/R
AFI PSN Code: ZZZ
AFI Symbols:
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI Class: N/R
AFI ID Number: N/R
AFI Pack Group:
AFI Label: N/R
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code: NK
N.O.S. Shipping Name: N/K
Additional Trans Data: N/K

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

Label Data

Label Required: YES
Technical Review Date:
Label Date:
MFR Label Number:
Label Status: G
Common Name: TT-E-2784 ULTRA DEEP TINT BASE PC B2784UDTB
Chronic Hazard: N/P
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
□
Report for NIIN: 013337763

Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: INHALATION: IRRITATION OF EYES, NOSE & THRO
AT.
EYE: IRRITANT. SKIN: IRRITATION, RASH UPON PROLONGED OR REPEATED CONTAC
T.
INGESTION: GASTROINTESTINAL IRRITATION, VOMITING, NAUSEA, DIARRHEA.
CHRONIC; OVEREXPOSURE TO THIS MATERIAL MAY LEAD TO SKIN DRYING, RASHES.
OVEREXPOSURE: NOSE, THROAT & LUNG IRRITATION. N/K
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: DAVLIN PAINT COMPANY
Label Street: N/K
Label P.O. Box: 2308
Label City: BERKELEY
Label State: CA
Label Zip Code: 94702
Label Country: US
Label Emergency Number: 800-424-9300 CHEMTREC
Year Procured:
□

STATUS QUO MATERIAL:	Enamel Deck Interior Gray 26231
Manufacturer:	Pratt and Lambert Industrial
Building:	158
PROPOSED MATERIAL:	97-482 Silicone Alkyd
Manufacturer:	PPG Industries

MSDS

97-482 Silicone Alkyd	Page H18-1

Product Information

97-482 Silicone Alkyd	Page H18-5

Cost Data

97-482 Silicone Alkyd	Obtained over the phone

MATERIAL SAFETY DATA SHEET
COATINGS AND RESINS GROUP
PPG Industries, Inc.

SECTION 1 - CHEMICAL, PRODUCT, AND COMPANY INFORMATION

PRODUCT CODE/IDENTITY:	97-480
REVISION DATE:	02/22/96
CUSTOMER PART #/NAME:	
PRODUCT TRADE NAME:	PORCELAIN WHITE SILICONE
CHEMICAL FAMILY:	Alkyd
EMERGENCY MEDICAL/SPILL INFO:	(304) 843-1300 (U.S.) 91-800-00-214 (MEXICO)
TECHNICAL INFORMATION:	(404) 761-7771
PRODUCT SAFETY/MSDS INFORMATION:	4325 ROSANNA DRIVE, P.O. BOX 9 ALLISON PARK, PA 15101 (412) 492-5555
DATE OF MSDS PREPARATION:	06/06/96

PRIMARY HAZARD WARNING

Combustible. Keep away from heat, sparks, flames, and other sources of ignition. Do not smoke. Harmful if swallowed. May cause moderate skin irritation. Causes eye irritation. Vapor and/or spray mist may be harmful if inhaled. Vapor irritates eyes, nose, and throat.

THIS MATERIAL SAFETY DATA SHEET HAS BEEN PREPARED IN ACCORDANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200), THE SUPPLIER NOTIFICATION REQUIREMENTS OF SARA TITLE III, SECTION 313, AND OTHER APPLICABLE RIGHT-TO-KNOW REGULATIONS.

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

REF	HAZARDOUS INGREDIENTS	PERCENT	CAS NUMBER	CARCINOGEN*
01	ALUMINUM SILICATE	1 - <5	1332-58-7	
02	TITANIUM DIOXIDE	20- <30	13463-67-7	
03	PETROLEUM DISTILLATES	20- <30	64741-41-9	
04	NAPHTHA	10- <20	8052-41-3	
05	METHYL ETHYL KETOXIME	0.1- <1	96-29-7	
06	ALKYD RESIN	30- <40	NOT ESTAB.	

* Carcinogens: O = OSHA; A = ACGIH; N = NTP; I = IARC

SARA TITLE III & CERCLA CLASSIFICATIONS

REF	SARA 102 RQ (LBS)	SARA 302 TPQ (LBS)	SARA 313	SARA 311/312 AC	CH	FL	PR	RE
01	NOT ESTAB	NOT ESTAB	N	N	N	N	N	N
02	NOT ESTAB	NOT ESTAB	N	N	N	N	N	N
03	NOT ESTAB	NOT ESTAB	N	Y	N	Y	N	N
04	NOT ESTAB	NOT ESTAB	N	Y	N	Y	N	N
05	NOT ESTAB	NOT ESTAB	N	Y	Y	Y	N	N
06	NOT ESTAB	NOT ESTAB	N	N	N	N	N	N

SARA 311/312 CATEGORIES FOR THIS PRODUCT: ACUTE = Y, CHRONIC = Y, FLAMMABILITY = Y, PRESSURE = N, REACTIVITY = N

OCCUPATIONAL EXPOSURE LIMITS HAVE BEEN ESTABLISHED FOR THE FOLLOWING MATERIALS:

REF	ACGIH TLV-TWA	ACGIH TLV-STEL	U.S. OSHA PEL-TWA	U.S. OSHA PEL-STEL
01	10 mg/m3	NOT ESTAB.	R- 5 mg/m3	NOT ESTAB.
02	10 mg/m3	NOT ESTAB.	10 mg/m3	NOT ESTAB.
03	NOT ESTAB.	NOT ESTAB.	NOT ESTAB.	NOT ESTAB.
04	100 ppm	NOT ESTAB.	100 ppm	NOT ESTAB.
05	NOT ESTAB.	NOT ESTAB.	NOT ESTAB.	NOT ESTAB.
06	NOT ESTAB.	NOT ESTAB.	NOT ESTAB.	NOT ESTAB.

[C- Ceiling Limit; S- Potential Skin Absorption; R- Respirable Dust] [NOT ESTAB. = NOT ESTABLISHED = NOT APPLICABLE]

PRODUCT STATUS RELATIVE TO THE U.S. EPA TOXIC SUBSTANCES CONTROL ACT

All chemical substances in this product are listed on the U. S. TSCA inventory or are otherwise approved for unrestricted commercial use under TSCA.

SECTION 3 - HAZARDS IDENTIFICATION

EFFECTS OF OVEREXPOSURE FROM:

▸INGESTION: Harmful if swallowed.

▸EYE CONTACT: Causes eye irritation.

▸SKIN CONTACT: May cause moderate skin irritation.

▸INHALATION: Vapor and/or spray mist may be harmful if inhaled. Vapor irritates eyes, nose, and throat. Repeated exposure to high vapor concentrations may cause irritation of the respiratory system and permanent brain and nervous system damage.

▸CHRONIC OVEREXPOSURE: Avoid long-term and repeated contact. This product contains titanium dioxide. Animals inhaling massive quantities of titanium dioxide dust in a long-term study developed lung tumors. Studies with humans involved in manufacture of this pigment indicate no increased risk of cancer from exposure. Potential for inhalation of titanium dioxide dusts from coatings is very limited. Since overexposures are not expected, there is no significant hazard for man. This product contains methyl ethyl ketoxime (MEKO). Studies in animals indicate that overexposure can cause adverse effects in spleen and kidney, anemia, liver cancer and cataracts.

SIGNS AND SYMPTOMS OF OVEREXPOSURE: Eye watering, headaches, nausea, dizziness, and loss of coordination are indications that solvent levels are too high. Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Not applicable.

SECTION 4 - FIRST AID MEASURES

Continued on Page 3

▸INGESTION: If swallowed, do not induce vomiting. Gently wipe out inside mouth to remove any residual material.

▸EYE CONTACT: In case of eye contact, remove contact lenses and flush eyes immediately with a gentle stream of luke warm water for at least 15 minutes.

▸SKIN CONTACT: In case of skin contact, flush immediately with plenty of water for at least 15 minutes followed by washing with soap and water.

▸INHALATION: If affected by inhalation of vapor or spray mist, remove to fresh air. Apply artificial respiration and other support measures as required.

▸OTHER: If ingestion, any type of overexposure or symptoms of overexposure occur during or following the use of this product, contact a poison control center, emergency room or physician immediately; have Material Safety Data Sheet information available.

SECTION 5 - FIRE FIGHTING MEASURES

▸**FLASHPOINT:** 107 Degrees F (41 Degrees C) (PENSKY-MARTENS CLOSED CUP)

▸FLAMMABLE LIMITS: Lower explosion limit (LEL): 1.0

▸Upper explosion limit (UEL): Not available

▸EXTINGUISHING MEDIA: Use National Fire Protection Association (NFPA) Class B extinguishers (carbon dioxide, dry chemical, or universal aqueous film forming foam) designed to extinguish NFPA Class II combustible liquid fires.

▸UNUSUAL FIRE AND EXPLOSION HAZARDS: When this product is used, the overspray and other combustible materials such as paint booth filters, rags, masking materials, etc., contaminated by coating material are subject to spontaneous combustion. Wetting the contaminated materials and not packing them tightly together in refuse containers will minimize the potential for this to occur. Keep this product away from heat, sparks, flame, and other sources of ignition (i.e., pilot lights, electric motors, static electricity). Invisible vapors can travel to a source of ignition and flash back. Do not smoke while using this product. Keep containers tightly closed when not in use. Closed containers may explode when overheated. Do not apply to hot surfaces. Toxic gases may form when this product comes in contact with extreme heat.

▸SPECIAL FIRE FIGHTING PROCEDURES: Water spray may be ineffective. Water spray may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable. Fire-fighters should wear self-contained breathing apparatus and full protective clothing.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

▸STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Provide maximum ventilation. Only personnel equipped with proper respiratory, skin, and eye protection should be permitted in the area. Remove all sources of ignition. Take up spilled material with sand, vermiculite, or other noncombustible absorbent material and place in clean, empty containers for disposal. Only the spilled material and the absorbant should be placed in this container.

▸WASTE DISPOSAL METHOD: Waste material must be disposed of in accordance with federal, state, provincial, and local environmental control regulations. Empty containers should be recycled or disposed of through an approved waste management facility.

SECTION 7 - HANDLING AND STORAGE

▸HANDLING AND STORAGE PRECAUTIONS: Do not store above 120 degrees F.(48 degrees C.). Store large quantities in buildings designed and protected for storage of NFPA Class II combustible liquids.

▸OTHER PRECAUTIONS: Vapors may collect in low areas. If this material is part of a multiple component system, read the Material Safety Data Sheet(s) for the other component or components before blending as the resulting mixture may have the hazards of all of its parts. Containers should be grounded when pouring. Avoid free fall of liquids in excess of a few inches.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT FOR:

▸EYE PROTECTION: Wear chemical-type splash goggles or full face shield when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapors.

▸SKIN PROTECTION: Wear protective clothing to prevent skin contact. Apron and gloves should be constructed of: neoprene rubber or nitrile rubber. No specific permeation/degradation testing have been done on protective clothing for this product. Recommendations for skin protection are based on infrequent contact with this product. For frequent contact or total immersion, contact a manufacturer of protective clothing for appropriate chemical impervious equipment.

▸RESPIRATORY PROTECTION: Overexposure to vapors may be prevented by ensuring ventilation controls, vapor exhaust or fresh air entry. NIOSH/MSHA-approved (TC-23C-) air purifying or air supplied (TC-19C-) respirators may also reduce exposure. Read respirator manufacturer's instructions and literature carefully to determine the type of airborne contaminants against which the respirator is effective and how it is to be properly fitted.

▸OTHER EQUIPMENT: Clean contaminated clothing and shoes.

VENTILATION REQUIREMENTS: Provide general dilution or local exhaust ventilation in volume and pattern to keep the concentration of ingredients listed in Section 2 below the lowest suggested exposure limits, the LEL below the stated limit, and to remove decomposition products during welding or flame cutting.

Continued on Page 4

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

[FORMULA VALUES, NOT SALES SPECIFICATIONS]

BOILING RANGE: 280- 468Degrees F
VAPOR PRESSURE: 2.0 mmHg
VAPOR DENSITY: Heavier than air
% VOLATILE/VOLUME: 53.140
SPECIFIC GRAVITY: 1.192
SOLUBILITY IN WATER: .0 %
WEIGHT/GALLON (LBS): 9.93 (U.S.)
pH: Not applicable
% SOLIDS BY WEIGHT: 65.21
EVAPORATION RATE(BuOAc=100): 18
ODOR/APPEARANCE: Viscous liquid with an odor characteristic of the solvents listed in Section 2.

SECTION 10 STABILITY AND REACTIVITY

▸This product is normally stable and will not undergo hazardous reactions.

▸INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID): Avoid contact with strong alkalies, strong mineral acids, or strong oxidizing agents.

▸HAZARDOUS DECOMPOSITION PRODUCTS: May produce the following hazardous decomposition products when exposed to extreme heat: oxides of aluminum ; carbon monoxide ; carbon dioxide ; lower molecular weight polymer fractions; . . . Extreme heat includes, but is not limited to, flame cutting, brazing, and welding.

PPG Safety and Health In-Plant Index System (SHIS): HEALTH= 4*, FLAMMABILITY= 2, REACTIVITY= 0
Acute Hazard Rating System:0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe. Chronic Hazard Rating System: 3* or 4*
SHIS ratings are assigned to identify the relative magnitude of potential hazards. Safe handling of this product requires that all of the information on the MSDS be evaluated for specific work environments.

THIS IS THE END OF THE MSDS FOR: 97-480 (00029322.00697-480)

PITTSBURGH PAINTS

TECHNICAL DATA BULLETIN

Silicone Alkyd Finish Coatings

PRODUCT DESCRIPTION

PRODUCTS	***Pittsburgh*© Paints Silicone Alkyd Finish Coatings** 97-480 Porcelain White *Auto-Mix Genie*™ Silicone Alkyd 97-500 Color Group A with MPD Tint 97-501 Color Group A with Alkyd Tint 97-502 Color Group B with Alkyd Tint 97-503 Color Group B with MPD Tint *Genie Express*™ Systems 97-5000 Silicone Alkyd
TYPE	Silicone Alkyd Copolymer
RECOMMENDED USE	Recommended for use over properly prepared and primed metal and masonry, exterior or interior surfaces in normal atmospheric or industrial environments. Not suitable for use on wood or other dimensionally unstable substrates. These coatings are intended for use in the same areas as alkyd enamels, but where superior color and gloss retention are important considerations. Power plants, buildings, tank farms, electrical transformers, bridges and ship superstructures are only a few of the applications for these outstanding products.
COLORS	97-480, Porcelain White, is the only color currently stocked. However, other colors in small quantities can be supplied through the *Auto Mix Genie* Small Batch Tinting System. Refer to the PPG High Performance Coatings Color Card #621 for a selection.
TINTING	**Small Batch Tinting Service:** As little as 4 U.S. gallons (15.1 L), in the color of your choice, can be shipped promptly after receipt of your order. Shipment usually will be within 10 working days (5 working days on repeat orders). These materials exhibit the same excellent properties as the Ready-Mixed colors of the same type. The 97-501 and 97-502 products are available only from our East Point Factory. They offer increased hiding in difficult colors and better drying than *Auto Mix Genie* and *Genie Express* products. It is possible that the volume solids in the *Auto Mix Genie* materials will vary somewhat (more or less) from the amount of *Pittsburgh* Paints standard stock products. If this is important, check with your PPGAF Sales Representative or Distributor of *Pittsburgh* Paints. **Colors made as a Special Small Batch Factory Order must be used "as supplied". It is NOT possible to deepen or lighten any of the materials through use of PPG Custom Colorants. They are not compatible.**
SHEEN	97-480 Porcelain White 75 to 100 (60° Gloss Meter)
PERCENT SOLIDS BY WEIGHT	97-480 Porcelain White 65.2% ± 2.0%
PERCENT SOLIDS BY VOLUME	97-480 Porcelain White 46.9% ± 2.0%
FEDERAL ACCEPTANCES	97-480, Porcelain White, has been approved by the United States Department of Agriculture (USDA) for use on **structural non-food contact or incidental food contact** surfaces in establishments operating under their Meat and Poultry Inspection Program.
ENVIRONMENTAL STATEMENT	These coatings are not formulated with any lead containing ingredients. These products comply with the Consumer Protection Safety Commission "Ban of Lead Containing Paint" (16CFR1303). The Volatile Organic Content (V.O.C.) of 97-480, Porcelain White, does not exceed 420 g/l (3.5 lbs/gal). The V.O.C. for 97-500, 97-501, 97-502, 97-503 and 97-5000 exceed 420 g/L (3.5 lbs/gal) and are not suitable for use where 420 g/l (3.5 lbs/gal) V.O.C. restrictions are in place.

PERFORMANCE FEATURES

FEDERAL SPECIFICATIONS	These products meet performance standards of Federal Specification TT-E-1593B: Enamel, silicone alkyd copolymer, gloss (for interior and exterior use).
DURABILITY	These products have exceptional durability on exterior exposure. They provide excellent gloss retention and fade resistance.

APPLICATION DATA

PPG COATING SYSTEMS	For details of coating systems involving these products, see PPG High Performance Coatings three-ring Binder. Systems number 34-HD, 207-HD and 208-HD are applicable.
SURFACE PREPARATION	Surface preparation methods will depend on the type of primer used and the degree of corrosion resistance required or desired. In any case, SSPC-SP-3 Power Tool Cleaning is the minimum surface preparation. To take full advantage of the durability of silicone alkyd coatings, the best surface preparation methods and best quality primers should be used. When applied, surface must be clean, dry and prepared as recommended.
PRIMERS	*Pittsburgh* Paints Silicone Alkyd Finish Coatings may be applied over a wide variety of PPGAF primers, depending on the substrate being coated. Consult your PPGAF Sales Representative for specific recommendations. The following zinc-rich primers may be used; however, **a barrier coat of *Aquapon* Polyamide-Epoxy Coating** is required between the zinc-rich primer and the silicone alkyd. 97-670 *Aquapon* Zinc Rich Primer 97-676 Gray of 97-677 Green *Metalhide*® ONE PAC Solvent Base Zinc Rich Primer 97-673/674 Red or 97-673/675 Green *Metalhide* 1001 (Inorganic—Solvent Base) Primer
MIXING DIRECTIONS	Stir thoroughly before and during use.
APPLICATION METHODS	These materials may be applied by conventional or airless spray, brush or roller.
APPLICATION EQUIPMENT	**Airless Spray:** Use 0.013" (0.330 mm) to 0.015" (0.381 mm) tip and 1500-3000 psi pressure at the tip. Adjust to job conditions. **Conventional Spray:** DeVilbiss MBC or JGA gun, E or FF tip and needle and 704 or 765 air cap; or, Binks model 18 gun, No. 63 PB air nozzle and No. 66 material nozzle or equal. A pressure pot, fluid and air lines capable of handling up to 75 pounds atomizing air at the tip and regulated to provide 15-20 pounds fluid pressure at the tip, should be used. **Brush:** A *Gold Stripe*® Polyester-nylon Mark V Brush is recommended. **Roller:** A *Gold Stripe* Mark V woven roller cover with 3/8" nap is recommended.
THINNING	97-480 should not be thinned in V.O.C. regulated areas under normal environmental and application conditions. When thinning is necessary and is allowed: Conventional Spray: Up to 8:1 with PPG 97-726 Thinner. Airless Spray: Use as supplied or reduce slightly with PPG 97-726 Thinner. Brush or Roller: Not normally required. May be thinned up to 8:1 with PPG 97-726.
DRYING TIME	77°F (25°C) and 50% relative humidity To Touch: 2 to 4 hours To Handle: 6 to 8 hours* To Recoat: Overnight Note: The 97-500 or 97-503 will lift itself on overnight recoat. Recoat before 4 hours or after 48 hours. The 97-501 and 97-502 products do not exhibit this recoat window. ***This condition does not mean that the paint film has reached full cure. It is a stage where handling can be achieved without loosening, wrinkling or otherwise marring the film under minimal pressure from fingers or hands. Drying time listed may vary, depending upon color selection, temperature, humidity and degree of air movement.**
RECOMMENDED WET FILM PER COAT	97-480 Porcelain White 3.5 to 4.6 mils unreduced
RECOMMENDED DRY FILM PER COAT	97-480 Porcelain White 1.5 to 2.0 mils recommended. Do not exceed 3.0 mils per coat.
RECOMMENDED SPREADING RATE	97-480 Porcelain White—Theoretical: 376-502 sq. ft. (34.9-46.6 m^2) per U.S. gallon (3.78 L) at 1.5-2.0 mils dry. Coverage figures do not include losses due to mixing, transfer or application of coating, nor losses due to surface irregularities or porosity.
CLEAN-UP	PPG 97-726 Thinner or any other high quality paint thinner.
APPLICATION PRECAUTIONS	Apply only when air, product and surface temperatures are above 40°F (5°C) and surface temperature is at least 5°F (3°C) above the dew point.

LIMITATIONS

IN SERVICE TEMPERATURE LIMITATIONS

Dry Heat: 350°F (177°C) maximum.
Immersion: Not recommended

Depending on color selection, significant color changes can occur at temperatures significantly less than 350°F (176°C).

APPLICATION LIMITATIONS

Silicone alkyd coatings are not suitable for use on wood or other dimensionally unstable substrates.

Silicone alkyd products may be used on interior surfaces. However, use on interiors usually cannot be justified economically.

Do not apply silicone alkyd coatings over soft, slow dry primers. Do not apply directly over zinc rich primers; a barrier coat must be applied first. See "**Primers**".

The statements and methods presented in this bulletin are based upon the best available data and practices known to PPG Architectural Finishes, Inc. at the present time. They are not representations or warranties of performance, results or comprehensiveness of such data. Since PPG Architectural Finishes, Inc. is constantly improving its coatings and paint formulas, future technical data may vary somewhat from what was available when this bulletin was printed. Contact your Sales Representative, Distributor of *Pittsburgh* Paints or the PPGAF Customer Communications Center for the most up-to-date information.

PACKAGING, SAFETY PRECAUTIONS

WEIGHT PER U.S. GALLON

97-480 Porcelain White 9.9 lbs. (4.49 kg) ± 0.2 lb. (91 g)

PACKAGING

U. S. Measure: Available in 1-gallon (3.78 L) and 5-gallon (18.9 L) pails.

FLASH POINT

97-480 107°F (41°C) Pensky-Martens
97-500 81°F (28°C) Pensky-Martens
97-5000 81°F (28°C) Pensky-Martens
97-501 107°F (41°C) Pensky-Martens

AVAILABILITY

Porcelain White, 97-480 is available from stock at factories and selected Distribution Centers. Orders may be placed at PPG Distribution Centers by contacting your PPGAF Sales Representative or through any Distributor of *Pittsburgh* Paints.

International Sales representation through PPG Industries, Inc. Pittsburgh, PA International Sales Department: 412/434-2049, TLX-199107 PPG, PGH.

TECHNICAL SERVICE

Technical services are available through the nearest PPGAF Sales Representative, Distributor of *Pittsburgh* Paints or call **toll free:** 1-800-441-9695. Refer also to the yellow pages of your telephone book.

SAFETY

This material is designed for application only by professional, trained personnel using proper equipment under controlled conditions and is not intended for sale to the general public.

Safe application of paints and coatings requires knowledge of the equipment and materials in addition to individual training. Directions and precautionary information on both equipment and products should be carefully read and strictly observed for personal safety and property protection. Consideration must be given to eliminate conditions which may generate hazardous atmospheres during spray application, or subject operators or bystanders to injury or illness. Special precautions must be taken when utilizing spray equipment, particularly airless equipment. High pressure injection of coatings into the skin by airless equipment may cause serious injury, requiring immediate medical attention at a hospital. Treatment advice may be obtained from Poison Centers. Air quality should be maintained with adequate ventilation; applicators can achieve additional protection by wearing respirators and other protective garments such as gloves and overalls. In all cases, wear protective eye equipment.

During the application of all coating materials, all ignition sources such as flames, sparks, pilot lights, etc., welding and smoking must be prohibited.

Explosion-proof equipment must be used when coating with these materials in confined areas. Keep container closed and away from heat, sparks, and flame when not in use.

PRECAUTIONARY INFORMATION

Before using this product, carefully read the the product label and follow directions for its use. Please read and observe all the warnings and precautionary information on the product label.

97-480 Porcelain White

WARNING! HARMFUL OR FATAL IF SWALLOWED. MAY CAUSE MODERATE SKIN IRRITATION AND EYE IRRITATION. VAPOR AND SPRAY MIST MAY BE HARMFUL IF INHALED. VAPOR IRRITATES EYES, NOSE AND THROAT. COMBUSTIBLE.

Keep away from heat, sparks and flame. Combustible material contaminated with overspray or liquid residue of air dry alkyd coating may undergo spontaneous combustion.

CONTAINS: INORGANIC PIGMENTS, RESINS PETROLEUM DISTILLATES.

97-5000 Porcelain White