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DISPOSABILITY CHARACTERISTICS OF MILITARY PACKAGING
MATERIALS

BOOZ-ALLEN AND HAMILTON, INCORPORATED

PREPARED FOR
ARMY NATICK LABORATORIES
FOSTER D. SNELL, INCORPORATED

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20. Abstract (continued)

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TECHNICAL REPORT
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DISPOSABILITY CHARACTERISTICS
OF MILITARY PACKAGING MATERIALS

by

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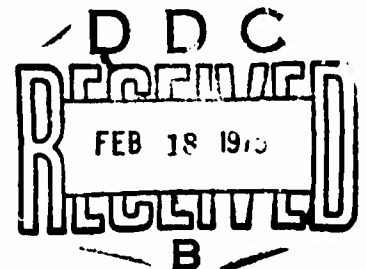
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FOREWORD

This report pertains to a study of the disposability characteristics of 104 military packaging materials. The work for this study was performed under Task 10, Project D552.

In the development of the recommended disposal technique for the military packaging materials, it was necessary to define their disposal characteristics, to review available disposal processes, and to develop and employ an analysis methodology that utilized a standard set of evaluation criteria. The results of the analysis were presented on standardized fact sheets.

During this study, a wide range of related literature was collected and reviewed. A complete list of this literature is included in the Selected Bibliography, Appendix E. Previous work that especially influenced the content of this report included the following:

- The Role of Packaging in Solid Waste Management, 1966 to 1976, Arsen Darney and William E. Franklin (of Midwest Research Institute), for the U.S. Department of Health, Education, and Welfare, Bureau of Solid Waste Management, Contract No. PH 88-67-114, Publication SW-5C, 1969.
- Solid Waste Management of Plastics, Arthur J. Warner, Charles H. Parker, and Bernard Baum (of Debelle & Richardson, Inc.) for the Manufacturing Chemists Association, Project 1440.2, December 1970.
- Handbook of Chemistry and Physics, Charles D. Hodgman, Chemical Rubber Publishing Company, Ohio, 35th Edition, 1954.

This project was carried out by Booz, Allen & Hamilton Inc. The principal investigators were Mr. Stephen J. Yurasits and Mr. Kunj Behari of Booz, Allen Applied Research in Bethesda, Maryland, and Mr. Duncan P. MacArthur of Foster D. Snell, Inc., in Cleveland. Project Officer for the U. S. Army Natick Laboratories was Mr. Jesse D. Hill, and the Alternate Project Officer was Mr. Raymond T. Mansur, both of the Packaging Division, General Equipment and Packaging Laboratory.

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ABSTRACT

Fact Sheets on the disposability characteristics of 104 commonly used military packaging materials are presented in this report together with the methodology used in their development.

The report is divided into two parts; the first part being a brief introduction to the Fact Sheets and the Fact Sheets themselves, and the second part containing a complete description of the analysis methodology.

The methodology is described in detail to show how packaging materials were selected for analysis; how the materials were categorized; the general disposability characteristics of each category; the applicable waste management methods; and the detailed sequence that was followed during the analysis to finally determine the disposability of each material by each applicable waste disposal process. The methodology therefore reveals an approach that can be used in the future as new packaging materials are introduced and require analysis.

I. INTRODUCTION

This study was conducted to determine the best disposal methods to be used for individual military packaging materials. The results of the detailed paper analysis were described on an individual summary Fact Sheet for each of the 104 military packaging materials considered. The Fact Sheets were prepared to be useful references for military installations and to offer guidance in the selection of environmentally and economically sound treatment and reclamation or disposal processes.

A detailed technical discussion of the overall approach that led to completion of the summary Fact Sheets was also prepared for use by Natick Laboratories as a reference for possible future analyses. This analysis approach employed the following basic steps:

- A list of 104 materials was prepared in close coordination with Natick Laboratories. The material categories included chemicals, * glasses, metals, papers, plastics, textiles, and woods.
- The disposability characteristics of packaging materials were defined for each available process.
- The alternative processes available for the disposal of packaging materials were reviewed. The possible disposal alternatives included reuse, recycling, pyrolysis, composting, baling, incineration, sanitary landfill, sea disposal, and subjecting to microbial treatment.
- A comprehensive review of current related literature was made and related manufacturers and trade associations were contacted to examine the present disposal technology

* The term "chemical" is being used throughout this report to denote liquid materials such as lubricants, cleaning fluids, and preservatives at the express request of Natick Laboratories.

and to identify related studies that have been conducted in the disposal of waste materials.

- . The alternative solid and chemical waste disposal processes were logically arranged to display the sequence in which they could be used.
- . The Summary Fact Sheet format for solid materials and for chemical materials was finalized to permit a standard presentation of the results of the disposability analysis.
- . Criteria were developed to standardize the analysis of each material. The three fundamental criteria classes were environmental, operational, and economic.
- . A methodology for employing the criteria was developed. Utilizing the methodology, an analysis was performed to determine the preferred disposal process.
- . The results of the analyses were entered on the Summary Fact Sheets for each individual material.

Although this study was not intended to quantify the amount of military waste materials, an indication of the magnitude of the overall waste generation problem at U. S. Army facilities is shown by the refuse data that is displayed in Table 1.

Table 1
Waste Generation at U.S. Army Facilities

REFUSE, CUBIC YARDS COLLECTED PER YEAR	TONS PER CALENDAR DAY*	NO. OF BASES (INDUSTRIAL)	NO. OF BASES (CONTRACTOR OPER)	NO. OF BASES (OTHER)	TOTAL BASES	% OF ALL BASES
1,000 - 50,000	.4 - 20.5	11	10	35	56	43
50,000 - 100,000	20.5 - 41.1	4	1	11	16	12
100,000 - 200,000	41.1 - 82.2	-	4	18	22	17
200,000 - 500,000	82.2 - 123.3	1	3	13	17	13
300,000 - 400,000	123.3 - 164.4	-	-	5	5	4
400,000 - 500,000	164.4 - 205.5	-	-	3	3	2
500,000 - 600,000	205.5 - 246.6	-	-	5	5	4
600,000 - 700,000	246.6 - 287.7	-	-	2	2	2
700,000 - 800,000	287.7 - 328.8	-	-	1	1	1
800,000 - 900,000	328.8 - 369.9	-	-	2	2	2
900,000 - 1,000,000	369.9 - 411.0	-	-	1	1	1
OVER 1,000,000	411.0 - 941.1	-	1	-	1	1
TOTAL		16	19	96	131	102**

*ASSUME 300 LB/CU YD (COMPACTED)

**TOTAL GREATER THAN 100% DUE TO ROUNDING.

DATA COMPILED FROM FACILITIES ENGINEERING, ANNUAL SUMMARY OF OPERATIONS, FISCAL YEAR 1971, OFFICE OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY

II. DESCRIPTION OF THE METHODOLOGY; DEVELOPMENT, AND APPLICATION

This chapter of the report is organized into four separate sections. These sections present:

- The manner in which the materials were selected and grouped in generic categories
- The general disposability characteristics for each material category
- A summary of waste management methods that are applicable to packaging waste
- A summary of the criteria developed and methodology utilized to determine the preferred disposal process.

1. SELECTION OF MILITARY PACKAGING MATERIALS TO BE INCLUDED IN THIS STUDY

The list of military packaging that was selected for analysis was developed in close coordination with officials of Natick Laboratories. The selected materials represent those that are most commonly used and are presented in Table 2.

Although the list of materials is not meant to be all inclusive, it does represent a broad overview of the common materials that are used for military packaging purposes.

Table 2 provides each of the following descriptions for the individual packaging materials.

- Material Number—A sequential numbering system has been employed so that one number is assigned to each specific military packaging material. This same number for each material is identified on its Summary Fact Sheet and on its Numerical Process Evaluation Matrix, which appear later in Chapter III and Appendix C, respectively, of this report.

Table 2
Common Military Packaging Materials

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	USE	FED/MIL. SPECS.
	<u>CHEMICALS</u>			
1	ACETONE	ACETONE (LIQUID)	SOLVENT	O-A-51
2	BENZENE	BENZOL (LIQUID)	SOLVENT	VV-B-231
3	CARBON TETRA- CHLORIDE	CARBON TETRACHLORIDE (LIQUID)	SOLVENT	
4	CORROSION PREVENTIVE	CORROSION PREVENTIVE (FLUID)	PRESERVATIVE	MIL-C-8529 MIL-C-15074 MIL-C-16173 MIL-C-81304 MIL-C-11796
5	CORROSION PREVENTIVE	DESSICANT (POWDER)	DEHYDRATING AGENT	MIL-D-3464
6	CORROSION PREVENTIVE	OIL TYPE VOLATILE CORROSION INHIBITOR (FLUID)	PRESERVATIVE	MIL-I-23310
7	CORROSION PREVENTIVE	VCI (SOLID)	PRESERVATIVE	MIL-I-22110
8	DETERGENT	ALKALI CLEANING COMPOUND (LIQUID)	DETERGENT	P-C-436
9	DETERGENT	DETERGENT (LIQUID)	DETERGENT	MIL-D-16791
10	GREASE	GREASE (FLUID)	PRESERVATIVE	MIL-G-7711 MIL-G-23827 MIL-G-10924
11	LUBRICATING OIL	LUBRICATING OIL (LIQUID)	PRESERVATIVE	VV-L-800 MIL-L-3150
12	METHANOL	WOOD ALCOHOL (LIQUID)	SOLVENT	O-M-232
13	PETROLATUM	PETROLATUM (LIQUID)	PRESERVATIVE	MIL-C-10382
14	PETROLEUM CLEANING SOLVENT	STODDARD SOLVENT (LIQUID)	SOLVENT	P-D-680

Table 2 (Continued)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	USE	FED/MIL. SPECS.
15	PETROLEUM DISTILLATE	MINERAL SPIRITS (LIQUID)	SOLVENT	TT-T-291
16	TETRACHLORO-ETHYLENE	PERCHLORO-ETHYLENE (LIQUID)	SOLVENT	O-T-238
17	TRICHLORO-ETHYLENE	PERCHLORO-ETHYLENE (LIQUID)	SOLVENT	O-T-634
	<u>GLASSES</u>			
18	GLASS	FIBERGLASS (FIBER)	CUSHIONING	MIL-C-17435
19	GLASS/ PLASTIC	FIBERGLASS (SHEET)	CONTAINERS, TRAYS	
20	GLASS	GLASS (SOLID STOCK)	CONTAINERS	
21	MINERAL	VERMICULITE (FIBER)	CUSHIONING	MIL-V-21628 MIL-V-23776
	<u>METALS</u>			
22	ALUMINUM	ALUMINUM (FOIL)	TRAYS, WRAPPING	MIL-A-148
23	ALUMINUM	ALUMINUM (SHEET)	CANS, TUBES	QQ-A-250
24	LEAD	LEAD (SHEET)	TUBES	QQ-L-201
25	STEEL, IRON	METAL CYLINDERS (SOLID STOCK)	CYLINDERS, CAPS	
26	STEEL, IRON	METAL DRUMS (SHEET)	DRUMS	PPP-D-706 PPP-D-711
27	STEEL, IRON	METAL STRAPPING (STRAPS)	STRAPPING	QQ-S-781
28	TIN-PLATED STEEL	TIN CANS (SHEET)	CANS	PPP-C-98 PPP-C-29
29	TIN-PLATED STEEL/ ALUMINUM	BIMETALLICS (SHEET)	CANS	
30	VARIOUS METALS	AEROSOLS (SHEET)	PRESSURIZED CANS	PPP-C-98

Table 2 (Continued)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	USE	FED/MIL. SPECS.
	<u>PAPERS</u>			
31	FIBER-BOARD	COATED CORRUGATED CONTAINERBOARD (SHEET)	CONTAINERS	PPP-B-1608
32	FIBER-BOARD	CORRUGATED AND SOLID BOARD OR CONTAINER-BOARD (SHEET)	CONTAINERS	PPP-B-640 PPP-B-676 PPP-B-1364 PPP-B-836 PPP-F-320
33	FIBER-BOARD	WAX IMPREGNATED CORRUGATED BOARD (SHEET)	CONTAINERS	PPP-B-1163 MIL-C-3955
34	PAPER	BAG AND SACK (SHEET)	BAGS, SACKS	PPP-S-30 UU-B-36 UU-S-48
35	PAPER	COATED, IMPREGNATED (SHEET)	WRAPPING, BAGS	MIL-P-20293 UU-P-134
36	PAPER	CONVERTING, ENVELOPE (SHEET)	ENVELOPES, TAPES	PPP-T-45
37	PAPER	NEWSPRINT (SHEET, SHREDS)	WRAPPING, DUNNAGE	
38	PAPER	PULP (MOLDED)	TRAYS	
39	PAPER	TISSUE (SHEET)	WRAPPING	UU-P-553
40	PAPER	VCI TREATED PACKAGING MATERIALS (SHEET)	CONTAINERS	MIL-P-3420
41	PAPER	WAX PAPER (SHREDS)	WRAPPING DUNNAGE	
42	PAPER	WRAPPING (SHEET)	WRAPPING, BAGS	UU-P-268
43	PAPER-BOARD	CHIPBOARD, BOXBOARD (SHEET)	BOXES	UJ-C-282 PPP-B-566
44	PAPER-BOARD	SPIRALLY WOUND FIBER CAN (TUBE)	CAN	MIL-C-2439
45	PAPER/ FOIL LAMINATION	POLYOLEFIN - FOIL-PAPER (SHEET)	WRAPPING, BARRIER MATERIAL	MIL B-131

Table 2 (Continued)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	USE	FED/MIL. SPECS.
46	PAPER-BOARD/ METAL	METAL-EDGED PAPER-BOARD (SHEET)	BOXES	PPP-B-665
47	PAPER-BOARD/ METAL	METAL-EDGED PAPER-BOARD (SHEET)	DRUMS, TUBES	PPP-D-723
48	FIBER-BOARD/ WOOD	WOOD-CLEATED FIBER-BOARD (SHEET)	BOXES	PPP-B-591
	<u>PLASTICS</u>			
49	ACRYLONITRILE BUTADIENE STYRENE	ABS (SOLID STOCK, SHEET)	TRAYS, CONTAINERS	L-P-1183
50	CELLULOSICS	CELLOPHANE (FILM)	WRAPPING, BAGS	L-C-110 PPP-B-15
51	CELLULOSICS	CELLULOSE ACETATE (FOAM)	CUSHIONING	PPP-C-843
52	CELLULOSICS	CELLULOSE ACETATE (SHEET, FILM)	WRAPPING	L-P-504
53	CELLULOSICS	CELLULOSE ACETATE BUTYRATE (SOLID STOCK)	CONTAINERS	L-P-397 L-P-349
54	CELLULOSICS	STRIPPABLE PLASTIC COATING - COLD (FILM)	COATING	MIL-P-45021
55	CELLULOSICS	STRIPPABLE PLASTIC COATING - HOT (FILM)	COATING	MIL-P-149
56	EPOXY	EPOXY RESIN (FILM)	COATING	MIL-R-21931
57	IONOMER	SURLYN (FILM, SHEET)	WRAPPING, MOLDED PARTS	MIL-P-48124
58	IONOMER	SURLYN (FOAM)	CUSHIONING	
59	PHENOLICS	BAKELITE (SOLID STOCK)	TRAYS, CONTAINERS	MIL-R-3745 L-P-1125
60	PLASTIC/FOIL LAMINATION	POLYOLEFIN/ ALUMINUM/ POLYESTER, MARPLEX (SHEET)	WRAPPING, POUCHES	

Table 2 (Continued)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	USE	FED/MIL. SPEC.
61	POLYACRYLICS	LUCITE, PLEXIGLAS (SOLID STOCK, SHEET)	CONTAINERS	L-P-507 MIL-P-8184
62	POLYAMIDS	NYLON (CLOTH)	SACKS	MIL-C-81268
63	POLYAMIDS	NYLON (FIBER)	CORD	MIL-C-5040
64	POLYCARBONATE	POLYCARBONATE (SHEET)	WRAPPING	MIL-P-46144 MIL-P-83310
65	POLYCARBONATE	POLYCARBONATE (SOLID STOCK)	CONTAINERS	
66	POLYESTER	DACRON (FIBER)	STRAPS	
67	POLYESTER	MYLAR (FILM)	POUCHES	L-P-377
68	POLYOLEFIN	POLYETHYLENE (FILM)	WRAPPING, POUCHES	L-P-37B
69	POLYOLEFIN	POLYETHYLENE (SOLID STOCK)	CONTAINERS	MIL-C-40030
70	POLYOLEFIN	POLYPROPYLENE (FIBER)	CORD	MIL-R-24049
71	POLYOLEFIN	POLYPROPYLENE (FILM)	WRAPPING, POUCHES	L-P-37B
72	POLYOLEFIN	POLYPROPYLENE (FOAM)	CUSHIONING	MIL-C-B1822
73	POLYOLEFIN	POLYPROPYLENE (SOLID STOCK)	CONTAINERS	L-P-393 L-P-394
74	POLYSTYRENE	POLYSTYRENE (SHEET, FILM)	WRAPPING	L-P-506
75	POLYSTYRENE	POLYSTYRENE (SOLID)	CONTAINERS, MOLDED PARTS, SHEETING	L-P-396
76	POLYSTYRENE	STYROFOAM (FOAM)	CONTAINERS	
77	POLYSTYRENE	STYROFOAM (FOAM)	CUSHIONING	PPP-C-850

Table 2 (Continued)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	USE	FED/MIL. SPECS.
78	POLYSTYRENE	STYROFOAM (PELLETS)	DUNNAGE	MIL-P-18644
79	POLYSULPHONE	POLYSULPHONE (SOLID STOCK)	TRAYS, CONTAINERS	MIL-P-46120
80	POLYTETRAFLUOROETHYLENE	TEFLON (SHEET, FILM)	WRAPPING	MIL-P-22241
81	POLYTETRAFLUOROETHYLENE	TEFLON (SOLID STOCK)	CONTAINERS	L-P-403
82	POLYURETHANE	POLYURETHANE (FILM)	WRAPPING	MIL-P-43604
83	POLYURETHANE	POLYURETHANE (FOAM)	CUSHIONING	MIL-P-26514
84	POLYURETHANE	POLYURETHANE (SOLID STOCK)	CONTAINERS	MIL-M-24041 MIL-C-38226
85	POLYVINYL ALCOHOL	PVA (SHEET)	WRAPPING	
86	POLYVINYL ALCOHOL	PVAC (SHEET)	WRAPPING	L-P-536
87	POLYVINYL CHLORIDE	PVC (FILM)	WRAPPING, POUCHES, WATERPROOF COVERS	L-P-375
88	POLYVINYL CHLORIDE	PVC (SOLID STOCK)	CONTAINERS, BLISTER PACKAGES, LINERS	L-P-535
89	POLYVINYLIDENE CHLORIDE	SARAN, PVDC (FILM)	WRAPPING	L-P-370
90	RUBBER	LATEX (FOAM)	CUSHIONING	MIL-R-5001
	<u>TEXTILES</u>			
91	BOUND FIBER	RUBBERIZED HAIR (FIBER)	CUSHIONING	PPP-C-1120
92	CANVAS, RUBBERIZED	TARP (CLOTH)	TARPAULIN	

Table 2 (Continued)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	USE	FED/ANL. SPECS.
93	COTTON	COTTON (CLOTH)	CUSHIONING	
94	COTTON	COTTON (CLOTH)	RAGS	
96	COTTON	COTTON (CLOTH)	SACKS	PPP-B-1358 PPP-B-1087
96	FELT	FELT (SHEET)	CUSHIONING	C-F-202 C-F-208
97	JUTE	BURLAP (CLOTH)	SACKS	PPP-B-35 CCC-C-467
98	SCRIM/FOIL LAMINATION	POLYOLEFIN/ ALUMINUM/SCRIM (SHEET)	BARRIER MATERIAL	MIL-B-131
	WOODS			
99	WOOD	COOPERAGE (BOARD)	KEGS	NN-K-231 PPP-B-41
100	WOOD	EXCELSIOR (SHREDS)	DUNNAGE	PPP-E-911
101	WOOD	PLYWOOD (SHEET)	CRATES	NN-P-530
102	WOOD	VENEER (SHEET)	CRATES	PPP-V-205
103	WOOD	WOOD (BOARD)	CRATES PALLETS	PPP-B-621 MIL-P-3838
104	WOOD/ METAL	NAILED OR WIREBOUND (BOARD)	CRATES PALLETS	PPP-B-686 PPP-B-687

- Category—This is the fundamental class of the specific packaging materials. The different categories utilized are chemicals, glasses, metals, papers, plastics, textiles, and woods.
- Name— This is the common generic name of the material.
- Common Name (Form)— This is the common name of the material. In parentheses is the form in which the material is analyzed.
- Use— This is the common intended use of the material.
- Federal/Military Specs— This is the federal or military specification that defines the particular packaging material.

2. GENERAL DISPOSABILITY CHARACTERISTICS OF MATERIALS BY CATEGORY

Although packaging materials can be described by their physical and chemical characteristics, there are no universally accepted criteria for their disposability. Therefore, during this study disposability criteria for the evaluation of the selected materials were developed for each applicable disposal process. For example, these criteria readily permit an initial determination that a noncombustible material would be undesirable for disposal by an incineration process. Further application of the criteria may determine that this material is a good candidate for disposal by the sanitary landfill process.

This section briefly describes the disposability characteristics of each chemical and solid packaging material category. The Criteria Development Analysis, as described in Chapter II, Section 4, and in Appendix B of this report, contains a more comprehensive description of the disposability characteristics of packaging material.

(1) Chemicals

Chemical (liquid) preservative and packaging compounds, represented by 17 of the materials included in this study, are normally used in conjunction with other forms of packaging to protect a product from abrasion, wear, or chemical corrosion.

The chemicals investigated in this study include the corrosion preventives, oils, solvents, and detergents that are used by the Army in packaging or ancillary to packaging, such as corrosion removal.

In general, chemical packaging materials exhibit the following disposability characteristics:

- . High combustibility
- . Material density ranging from 53 to 72 lb/cu ft
- . High toxicity.

These disposal characteristics are generally applicable to the range of chemicals that was analyzed in this study. Therefore, separate sets of specific disposal characteristics for individual categories of chemicals were not developed.

The typical methods for disposal of chemical wastes by recovery and reuse are based upon small- and medium-quantity lots.

The chemicals included in this study (primarily solvents) are relatively inexpensive. Consequently, equipment and procedures for reclaiming the chemicals of small lots (less than 1 liter) would not be economical. However, carbon tetrachloride, tetrachloroethylene, trichloroethylene, Stoddard solvent, and benzene when used as dry cleaning fluids are exceptions, since most dry cleaning equipment includes a small recovery and cleaning still.

The Summary Fact Sheet for each type of liquid waste contains a ranking for each method of disposal applicable to the particular chemical involved. Recommended procedures for disposal of liquids by either recovery or final disposal are also briefly described in the Summary Fact Sheets. Procedures are indicated for disposal of small spills of liquids and for recovery or final disposal of large quantities of highly hazardous liquids.

Some liquid materials, such as pastes and hazardous liquids, require special handling for spills. Paste materials,

such as greases and petrolatum, are normally used as coatings for prevention of corrosion or as lubricants. These materials will remain relatively consistent if spilled and would therefore, not constitute a typical spill. Generally, small spills of these materials can be disposed, large spills can be recovered, and the uncontaminated portion of the material can be reused. However, after the paste materials have been used as lubricants or as coatings for prevention of corrosion, they are generally not reclaimable.

The special procedures for disposal of the paste materials also apply to hazardous chemicals. However, the following additional procedures must be used for the handling of a hazardous chemical spill.

- Prepare the chemical handling area for emergency conditions prior to handling the material. Emergency facilities should be constructed (for example, containment berms) with safety and emergency procedures in ready condition and close at hand. Spills should not be allowed to enter sewers or waterways.
- Evacuate the area of all personnel except those properly equipped, trained, and necessary for containment and collection of the material.
- Follow prescribed personnel safety procedures such as the wearing of respirators.
- Extinguish and remove all sources of ignition if the chemical is flammable.
- Contain the spill.
- Collect the chemical as soon as containment is complete. Necessary equipment should be stored in the area and easy access is imperative. Examples of equipment that may be needed include:
 - Scoops and pails
 - Absorbent materials
 - Covered containers
 - Cleaning compounds such as detergents

- Mops
 - Water vacuums
 - Storage drums.
- Collect as much of the chemical as possible in appropriate containers (some solvents will dissolve plastics).
 - Mark all containers with the name of the chemical, date of spill, description of accident (i. e., spilled into dirt, grass, etc.), and a responsible person to contact for information on the accident. A supplier may require additional information to simplify re-processing.
 - Wash the spill site.
 - Transport containers of the contaminant to storage, recovery, or disposal areas as determined by the cognizant facility disposal officer.

(2) Solids

Solid materials are used for a variety of military packaging including solid and flexible containers, wrappings, seals, partitions, strappings, bags, printed matter, and pallets. Of the 104 materials analyzed in this study, 87 were solids. The solids can be readily categorized as being either glass, metal, paper, textile, wood, or plastic. The relative dominance of the solids in the study and their ready ability to be categorized provided the basis for developing disposability characteristics for each solid material category. The more general characteristics of the liquids have prevented them from being separated into such distinct categories.

The general disposability characteristics of the solids' categories are presented in the following paragraphs.

1. Glass

Glass makes a strong container with high gloss and transparency. It is chemically inert and an absolute

barrier against all external influences except temperature and light. Based on total U.S. tonnage, glass represents approximately 18 percent of the total tonnage of packaging materials.

Among packaging materials, glass can present an incineration problem regardless of the package size or shape in an incinerator. Glass may liquefy and then deposit on the incinerator walls or floor surfaces, forming a bond with the firebrick which is greater than the adhesion of the brick itself. When these surfaces are cleaned, the brick is unavoidably eroded.

Generally, glass exhibits the following disposability characteristics:

- Easily fragmented
- Easily compacted
- Separable by optical means
- Nontoxic
- Noncombustible
- Highly resistant to biological and chemical degradation
- Average material density of 156 lb/cu ft.

2. Metal

Metal, which accounts for approximately 16 percent of the total tonnage of packaging wastes, has one overriding advantage over any other kind of packaging material—its strength. Metal containers also generally protect their contents well from the effects of heat, cold, moisture, rough handling, and light.

Metal containers are noncombustible and are not reported to cause damage to incinerators unless they are overly massive. In fact, there is some indication

that the presence of metal containers can have a beneficial effect by creating hollows in the refuse, thus aiding air movements and combustion.

Generally, metal exhibits the following disposability characteristics:

- . Noncombustible
- . Nontoxic
- . Highly resistant to biological and chemical degradation
- . Separable by mechanical means (ferrous metals).

3. Paper

Paper and paperboard dominate the packaging materials field and represent about 50 percent of all packaging consumed. This dominance results from paper's ability to package almost any item, its relatively low cost and its ready ability to be printed and combined with other materials. Paper's wide use for packaging also results from its use as a secondary form of packaging contained within a primary container.

In 1969, of the 53 million tons of fibrous materials consumed in papermaking, 19 percent was due to recycled waste paper. Because of a number of contaminants, such as clay coating, asphalt, plastic coatings, adhesives, and laminations, the desirability of paper as a secondary (recyclable) material is reduced. Paperboard and construction grade paper are the principal paper stocks that are recycled.

The disposability characteristics of paper packaging materials are as follows:

- . High cellulose content
- . Easily fragmented and compacted

- **Highly combustible**
- **Nontoxic**
- **Susceptible to biological and chemical degradation**
- **Average material density ranging from 44 to 72 lb/cu ft**
- **Combustion at temperatures ranging from 200 to 500°F and heat of combustion of approximately 7500 Btu/lb.**

4. Textiles

Textiles account for about 0.5 percent of all packaging wastes. Most textile packaging is in the form of bags or sacks, which are made from either burlap or cotton. Only a small amount of synthetic fibers is used. Burlap bags are strong and have good tear and snag resistance characteristics. On the other hand, cotton sacks have a tighter weave than burlap bags and are usually used for products that might sift through the looser weave of burlap.

Textile bags are often collected, renovated, and directly reused. Burlap bags may be reused 10 to 12 times before disposal. Cotton sacks are usually put to a secondary use such as for yard goods for items such as rags and towels.

The general disposability characteristics of textiles are as follows:

- **High cellulose content**
- **Good to excellent fragmentability and compactibility**
- **Nontoxic**
- **Highly susceptible to chemical and biological degradation**

- Average material density of 95 lb/cu ft
- Combustion at approximately 500^oF and heat of combustion of 8000 Btu/lb.

5. Wood

Wood is a traditional packaging material but represents only a minor segment of all packaging materials. In terms of U. S. tonnage, wood packaging materials account for about 9 percent of all packaging materials consumed.

Wood containers are primarily used because of their relatively low cost and high strength. They often go through several cycles of use before they are discarded.

Wood is usually used in its natural state; it is seldom coated or chemically altered. Unlike paper, wood packaging materials are not usually recycled, but as stated above, are usually directly reused.

In general, the disposability characteristics of wood packaging materials are as follows:

- High cellulose content
- Nontoxic
- Susceptible to biological and chemical degradation
- Average material density of 27 lb/cu ft
- Combustion temperature of approximately 525^oF
- Heat of combustion of approximately 8500 to 9200 Btu/lb.

6. Plastic

Within the solid materials category, plastic represents a large and increasing percentage of the total amount of packaging materials. In addition, plastic packaging materials represent a wide range of chemical and physical characteristics. Minor changes in the chemical composition of some plastics may result in significant changes in their disposability.

For these reasons a set of general disposability characteristics applicable to all plastic materials could not be developed. Therefore, the disposability of the plastics has been specifically characterized for each of the applicable disposal processes including: reuse, recycle, pyrolysis, composting, incineration, and landfill. The disposability characteristics of plastics for each of these processes are as follows:

- Reuse — The reuse of plastic containers is presently limited by the following factors:
 - The present nonreturnable plastic containers used by the Army will require extensive redesigning in order to increase their durability, strength, and capability to pass through a decontamination process for reuse.
 - Additional decontamination facilities will be required at all bases where this process is performed.
- Recycle — A key factor influencing the recycling of plastics is the availability of a market for the waste packaging material once it has been collected and segregated. Plastics used as packaging materials (e.g., in fabrication of bottles, films, and coatings) have tightly controlled specifications, but molded and extruded products such as hardwares and pipes require raw materials of wider specification range. Thus, scrap from monoplastics (e.g., PVA, polyolatin, and

polyethylene) can be used for pipes, pallets, and a variety of structural products. Such recycling will require an extensive sorting of packaging waste into the different types of plastic. Mechanical means to separate plastic scrap are not currently available, and therefore, unless manual separation is utilized, the use of the packaging material wastes would be limited to construction and building materials; for example, plastics may be mixed with traditional construction materials in walls, roofs, floors, ceilings, and roads. Reprocessing of a mixture of different plastics normally produces products with poor physical properties.

Pyrolysis—Pyrolysis of a comparatively homogeneous material containing a high percentage of organic polymer was recently investigated by the U. S. Bureau of Mines. That study demonstrated the technical feasibility of destructive distillation as a means for obtaining potentially valuable products from the polymer waste. Pyrolysis of thermoplastic polymer solid waste might be a very attractive reclamation method if it could be made to yield essentially only a single product (the monomer) in high yield. However, numerous past studies have shown that only a few polymers (e. g., polymethyl, methacrylate and polytetrafluorethylene) can be made to undergo such a reversible thermal depolymerization. The vast majority of polymers, including all the high tonnage thermoplastics, exhibit complex decomposition leading to a wide spectrum of products. The expense of separating even one or two pure components from such a complex nature is likely to be too high to make the process competitive as a source of chemicals. At present, the pyrolysis process for waste reclamation may be regarded more realistically as a potential source of higher grade fuel than the original waste.

- Composting—Although plastics are not compostible because they are not susceptible to rapid biodegradation, they do not cause significant problems if the refuse is shredded. Fine plastic particles behave as any other inert material such as small stones or slate; therefore, they would not be expected to have any detrimental effects on the root development and growth processes of plants.
- Incineration—Plastics do not ignite or burn readily in many types of conventional incinerators; but they do melt. As such, they deposit as smoldering molten puddles on the grate and may burn erratically or even explosively. Since they have very high heating values (15,000 to 20,000 Btu/lb), the resulting high temperatures require special furnace designs. In addition, the chlorinated plastics such as PVC liberate toxic and corrosive HCL as a combustion product.
- Landfill—The following characteristics of the plastic materials should be considered before selecting landfill as the preferred means of disposal:
 - Plastic materials generally do not decay or rot even after prolonged soil burial, and therefore represent some of the most persistent components in the fill. On the other hand, plastics can be considered the equivalent of an inert material such as broken concrete, and thus provide immediate stability to the landfill.
 - Plastics in certain physical forms may introduce special problems in landfills because they are difficult to compact efficiently with ordinary compacting equipment (tractors, draglines, or steel-wheeled compactors). For example, plastic bottles are not easily compacted

and only those in the lower strata of refuse become compressed by the overlying weight. Those with less covering weight are likely to remain intact and contribute to the springiness of the fill. The plastic films cause a problem because they tend to become entangled in the tread wheels and the radiators of spreading and compacting equipment.

3. SUMMARY OF APPLICABLE WASTE MANAGEMENT METHODS

This section presents a summary of waste management methods that are applicable to solid packaging waste. It is included because the solids represent nearly 90 percent of the individual materials analyzed in this study. They also comprise a much larger quantity of packaging wastes than the chemicals. A more complete description of these waste management methods is contained in Appendix A.

A general flow diagram for management of solid packaging waste is shown in Figure 1. The following discussion describes each block, i. e., process, shown on the flow diagram.

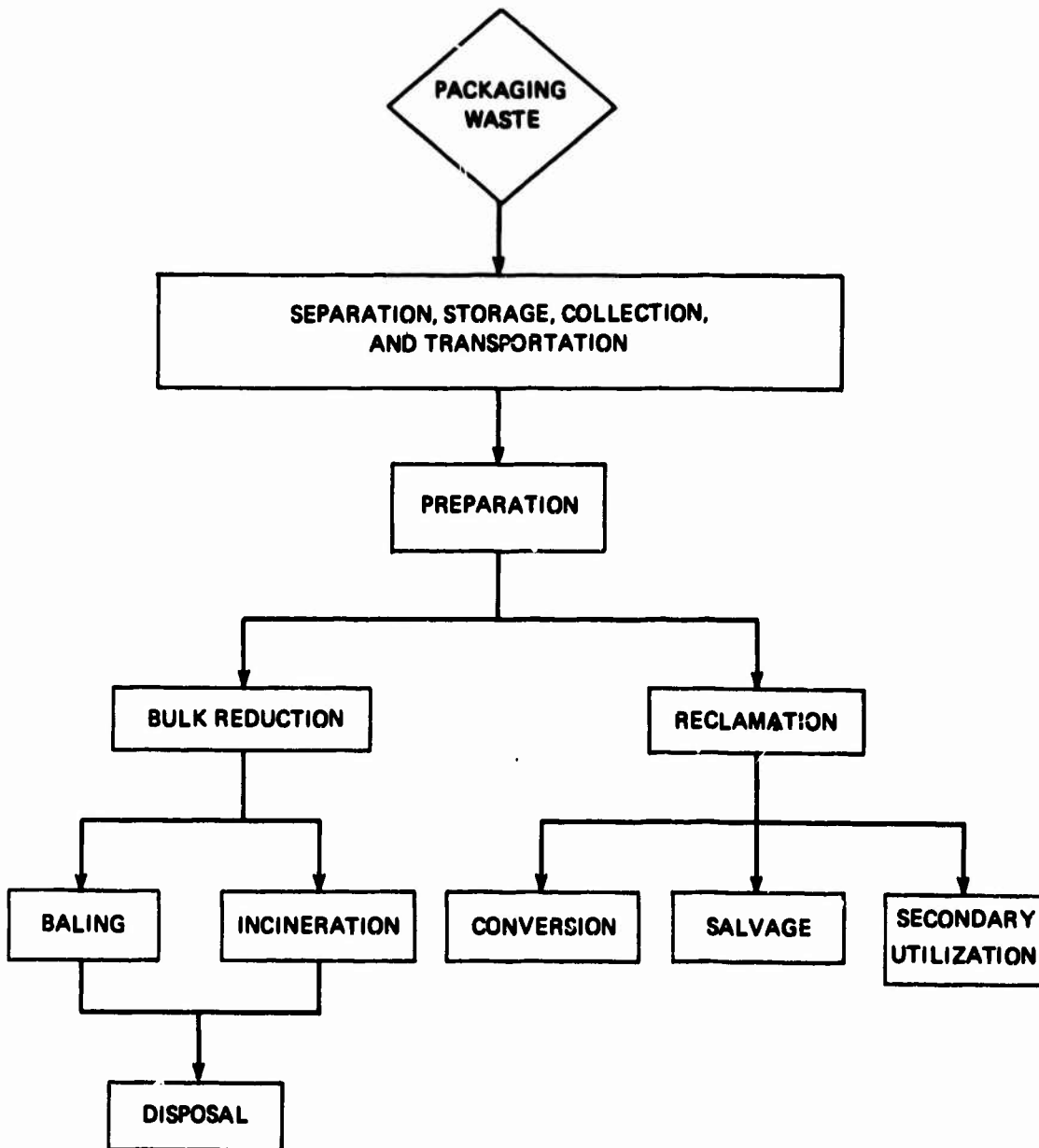
(1) Separation, Storage, Collection, and Transportation

The method of storage and handling of each type of packaging waste is properly determined by its eventual disposition. The discussion here covers source separation, storage, collection, and transportation.

The waste source is the point at which a packaging material becomes a packaging waste, typically upon opening a package and removing its contents. Source separation refers to the separate storage of waste materials when their mixing would interfere with their subsequent disposition.

In a warehouse or similar facility that handles large amounts of packaging materials, the wastes are typically stored in large metal bins that are mated to collection trucks to facilitate removal. Paper stock and certain other materials slated for reclamation can be bundled for shipping.

FIGURE 1
Flow Diagram for Management
of Solid Packaging Waste



Compaction devices designed to reduce storage space requirements are available in various shapes and sizes from at least 20 manufacturers. These devices pack waste materials into large bags or metal containers.

Collection vehicles serving commercial establishments or military bases are designed to cope with large containers and are generally operated by a single operator. They fall into four categories:

- Semiautomatic rear loaders, similar to the household refuse collection vehicles but equipped with a power device for lifting and tipping the containers
- Automatic front loaders that lift the container over the cab and dump its contents into the packer body behind
- Piggyback platforms that lift or pull the full container onto their chassis
- Small train-tractor, power vehicles that hook up a string of wheeled containers.

Long-distance hauling of solid wastes is effected with the aid of transfer stations that transfer the waste from collection vehicles onto trailer vans, railroad cars, or barges. Modern stations are normally equipped with a stationary compacting mechanism and may contain fragmentation devices. The number of such transfer stations is expected to grow rapidly as landfills move farther away from populated areas and more favorable cost factors improve their economic feasibility.

(2) Preparation

Preparation of packaging waste for subsequent processing may take the form of fragmentation and/or sorting. These steps are useful prior to a number of subsequent operations such as baling, incineration, pyrolysis, reclamation, and landfill and are conducted typically at a central processing facility. The requirement for preparatory steps is indicated on each material Summary Fact Sheet in Chapter III.

Reduction in the average size of the refuse fragment, known as fragmentation, comminution, or presizing, enhances the homogeneity, packing, and handling quality of refuse. The most common fragmentation equipment includes hammer mills, shredders, shears, and wet pulpers. Other devices with essentially similar functions are variously known as ball mills, cage disintegrators, chippers, crushers, cutters, disk mills, drum pulverizers, grinders, hoggers, and rasp mills.

Sorting of packaging waste into its constituent materials, also known as separation or segregation, is essential in recovery operations, but it is also very useful in other processing steps where it permits the optional adjustment of operating conditions to each category of refuse.

Sorting techniques may be categorized loosely as:

- . Manual
- . Dimensional
- . Dynamic
- . Optical
- . Electrical and magnetic.

In spite of the rising costs of labor, manual sorting from conveyors is still the most common method. It is employed at nearly all composting plants and some incinerators. Development of mechanical methods has been rather recent and consists largely of adaptation of proven techniques from the mineral processing industry. The alternative processes following preparation would be either bulk reduction or reclamation. Bulk reduction and its two subprocesses, as well as final disposal, are discussed immediately below. The discussion of reclamation and its three subprocesses begins under heading (7) on Page 30.

(3) Bulk Reduction

Reduction of the bulk or volume of packaging waste serves to decrease the handling, transportation, and disposal costs.

(4) Baling

Compression of packaging waste is the most direct method of bulk reduction. Its extent is governed not only by the applied pressure but also by the manner of application and the composition of waste. In the ideal configuration, all voids are eliminated, and the close contact between waste particles promotes adhesion and physical interlocking to form a cohesive, stable structure with a density approaching that of the solid material.

Large-scale, high-pressure compaction and baling of municipal waste was popularized with the announcement of a process for compressing refuse into sterile bales that could be clad in asphalt or concrete and used as building blocks. Since then, well over 50 United States' firms have entered the refuse baling field with equipment or management services.

In the narrow bulk reduction role, high-pressure baling offers a number of advantages over conventional incineration.

- It accepts all types of waste including noncombustibles and plastics.
- It yields greater volume reduction on the basis of all municipal wastes (80 to 90 percent versus 65 to 75 percent).
- Its capital and operating costs are, respectively, one-tenth and between one-third and one-half of corresponding incineration costs.
- It requires less maintenance and operating skill.
- It generates no significant air or water pollution.
- It produces a residue that is easier to handle, transport, and landfill.
- It affords nearly full future recovery of waste materials.

High-pressure baling ceases to be superior to incineration when the incinerator process is extended to allow recovery of waste heat.

(5) Incineration

Conventional incineration of packaging and other solid wastes has been gradually replacing open burning as a common approach to bulk reduction. Nevertheless, burning in the open air still remains the cheapest, most widely used, as well as least desirable method. The smoke and stench contribute appreciably to the local air pollution problem, while incompletely burned organic waste putrefies and attracts rats and flies.

A modern incinerator consists of a combustion chamber where the refuse burns on moving grates at 760 to 982°C (1400 to 1800°F), a secondary combustion zone for burning off combustible gases, and flues to convey the exhaust gases to the stack and then to the atmosphere. The flues of modern incinerators are equipped with pollution control devices to minimize the amount of pollutants discharged into the atmosphere. After incineration, about 10 to 35 percent of the original volume of refuse consisting of sterile incombustible residue and fly ash remains for final disposal.

The major drawbacks of incineration still remain unresolved. These include the high cost of construction, maintenance, and pollution control; frequent downtime to replace refractory lining; grate elements damaged by excessive temperatures and corrosive gases, and incomplete combustion caused by heterogeneity of the waste charge. The principal development efforts designed to correct some of the problems have focused on incineration of bulky waste, suspension of the waste charge, improved emission control, high-temperature incineration, and waste heat recovery.

The recovery of waste heat generated in the incineration of solid wastes, although practiced extensively in Western Europe, has only recently received well deserved attention in the United States, as part of the overall concern with air pollution control and the impending energy crisis. The two most common designs of waste heat recovery installations involve steam generation by a boiler located immediately after the conventional refractory furnace, or by water-bearing pipes imbedded in the furnace walls. The steam can then be used for space heating, for driving a steam turbine that could drive an electric generator, or for other applications.

High-temperature incinerators, also known as slagging incinerators, operate at 1500° to 1700°C (2732° to 3092°F), which is above the melting point of most common substances, whereas in conventional incinerators the temperature must be maintained below 1000°C (1832°F) to prevent damage to refractory lining and grate materials. The principal advantages of high-temperature incinerators are:

- Acceptance of practically all types of municipal waste
- Outstanding bulk reduction of up to 97 percent
- Complete combustion of all combustible materials
- Potential utilization of solid residue
- Generally reduced air pollutant emissions.

The disadvantages include:

- Need for auxiliary fuel and fluxing agent
- More rapid deterioration of refractory material
- High emission of NO_x.

High-temperature incineration technology has been largely borrowed from the steel industry, and the several existing designs are still in the development or demonstration stages.

(6) Disposal

The ultimate disposal of packaging and other solid wastes generally takes place on land, since dumping in the waterways has been banned and disposal at sea is restricted. The preferred form of land disposal is sanitary landfill, though other more innovative approaches have been tried as well.

Sanitary landfill is gradually replacing the open dump as the preferred method of land disposal and currently accounts for nearly 10 percent of waste disposal. Under this approach, the waste is discharged into a trench, compacted by bulldozers,

and covered with about 1/2 to 2 ft of compacted soil as a sanitary precaution.

The amount of wastes discharged at sea grew rapidly after World War II reaching 48.2 million tons (wet tonnage) in 1968, but it is now on the decline as a result of federal and state legislation.

In theory the oceans, which cover 71 percent of the earth's surface, offer a nearly unlimited capacity for assimilation of most wastes. This does not work out in practice primarily because of United States failure to control, treat, and distribute the wastes properly and because of the concentration of toxic substances in the food chain. Substantial pollution of the oceans is unacceptable not only on aesthetic grounds but also because of the need to preserve the photo-plankton that is largely responsible for generating the world's oxygen supply.

(7) Reclamation

Reclamation of useful components from the solid waste stream can take the form of conversion, salvage, or secondary utilization. The latter involves the use of an unaltered waste material in a new role and is illustrated by the employment of municipal refuse in altering topographic features for recreational purposes, the incorporation of glass cullet and fly ash in construction materials, or the underwater emplacement of discarded tires as fish habitats. Salvage entails the removal of a component from the waste stream and physical reprocessing into a form suitable for reuse. The most typical applications are the salvage of paper, glass, and metal scrap. Finally, conversion is defined as the chemical or biochemical transformation of a waste material into a useful product. The more promising chemical conversion processes include pyrolysis, hydrogenation, wet oxidation, and hydrolysis; the biochemical processes take in composting, anaerobic digestion, and biological fractionation. Waste heat recovery, a special form of conversion, was reviewed earlier under (5), Incineration.

(8) Conversion

Pyrolysis or destructive distillation is a time-tested process for breaking down organic substances into a carbonaceous char; an oil fraction containing acetic acid, acetone, and methanol; and a gas fraction consisting primarily of carbon monoxide, hydrogen, methane, and carbon dioxide. This is done by heating the materials at 600 to 1000°C (1112 to 1832°F) in the absence of oxygen. These products can then be separated and sold individually or used as fuel.

During the past decade, a number of successful developmental efforts have been undertaken by the Bureau of Mines Energy Research Center in Pittsburgh and other research institutions to adapt pyrolysis to the treatment of packaging and other municipal wastes. In light of the favorable technical and economic outlook indicated by pilot plant results and limited commercial experience, as well as freedom from the major problems plaguing municipal incinerators, a number of commercial enterprises have attempted to market their own pyrolysis systems. Thus far, no major municipal facilities have been built but several are under serious consideration.

Composting or aerobic digestion is a controlled process in which aerobic bacteria convert cellulose waste into a relatively inert humus-like material. The procedure generally requires shredding of the waste materials, removal of the 25 percent noncompostable fraction (metals, glass, plastics, and rubber), addition of water or sewage sludge, digestion for 4 to 6 days at 50 to 75°C (122 to 167°F), and curing to reduce the moisture content. The microbiological activity, and consequently the duration of the digestion phase, is a function of the particle size, moisture, oxygen access, temperature, pH, and carbon/nitrogen ratio of the waste material. Bulk reduction is between 30 and 50 percent, and the product is suitable for use as a soil conditioner, a base for fertilizer, or even in the manufacture of wallboard.

A number of other chemical and biochemical conversion processes for cellulosic waste have been investigated in the laboratory and pilot plant. Those showing most promise thus far are:

- . Hydrogenation
- . Wet oxidation
- . Hydrolysis
- . Anaerobic digestion
- . Biological fractionization.

(9) Salvage

For the purpose of this study, salvage is defined as the processing of waste materials to restore their original utility and could take the form of direct reuse, recycling, or reprocessing. Direct reuse is best illustrated by returnable containers or pallets; recycling refers to the reuse of process waste at the manufacturing plant; reprocessing involves the cleaning and processing of the consumer or secondary waste for recycling by the manufacturer.

Several major solid waste salvage systems have been proposed during the past few years. They use different combinations of fragmenting, sorting, conversion, and reclamation techniques, and are currently in various stages of design, development, construction, and actual operation.

(10) Secondary Utilization

Secondary utilization, as previously mentioned, involves the use of an unaltered waste material in a new role and is illustrated by the employment of municipal refuse in altering topographic features for recreational purposes, the incorporation of glass cullet and fly ash in construction materials, or the underwater emplacement of discarded tires as fish habitats.

4. METHODOLOGY EMPLOYED IN THE DISPOSABILITY ANALYSIS

This section describes the methodology that was employed for analyzing the disposability of the solid and chemical packaging materials. This methodology can also be applied in the future to analyze new materials when they are considered for use by the military for packaging. The three distinct steps of the methodology that were followed during the analysis are illustrated by the waste disposal

logic diagrams that depict the physical process alternatives, the Summary Fact Sheet format that portrays a standard presentation of the disposability characteristics, and a summary of the criteria and analytical measures that determine the preferred disposal process. Each of these steps is separately discussed below.

(1) Waste Disposal Logic Diagrams

The waste disposal logic diagrams were prepared for repetitive reference during the analysis of each solid and chemical waste material. These diagrams illustrate the logic of the methodology followed in the study.

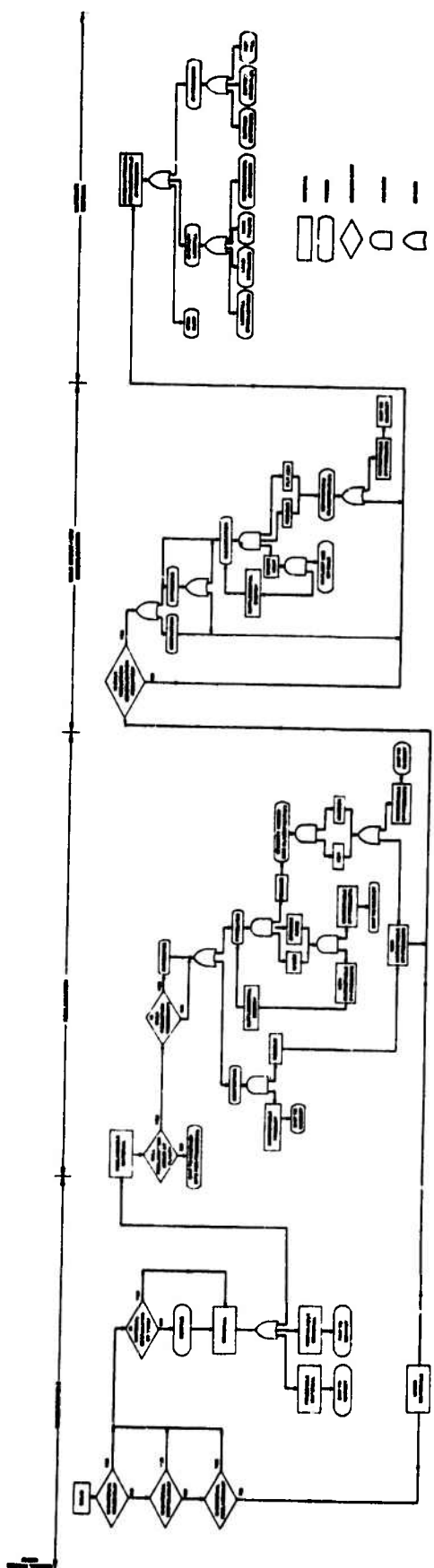
1. Solid Waste

The solid waste disposal logic diagram presented in Figure 2 depicts the physical process alternatives and their sequence for the disposal of solid waste packaging materials.

It cites the four general process modes or general means of disposal that may be utilized, namely, reuse or recycle, reclamation, bulk reduction or consolidation, and ultimate disposal. Under each process alternative the decision logic and the physical processes that may be employed to dispose of the solid waste are flow-charted. To assist the reader in obtaining familiarity with the diagram, the following guidance is provided.

Starting with a particular solid waste, first determine if the material is reusable, recyclable, or reclaimable. If the material is categorized as any of these, it must then be determined whether the waste is segregated from the solid waste stream. If it is not segregated, some means of sorting (i. e. , manual or mechanical) must be employed. At this point, the material is classified (denoted by the "OR GATE") as either a reusable material, a recyclable material, or a reclaimable material. The reusable and recyclable materials are shipped to the marketplace, but the reclaimable material is sent through the reclamation logic.

FIGURE 2
Solid Waste Disposal Logic Diagram



At this point it must be decided where the reclamation will occur. If the material is to be reclaimed at the base, the need for bulk reduction should be examined. If required, the material will be sent to a shredder followed by composting or pyrolysis. The nonmarketable by-products enter the solid waste stream with the mixed materials (i. e., the materials that were determined not to be reusable, recyclable, or reclaimable).

The next decision is whether or not bulk reduction or consolidation is required. If the answer is yes, three alternative processes may be employed, namely, compaction for bulk consolidation, or shredding or incineration for bulk reduction.

Following these processes there will be mixed materials and/or nonmarketable by-products. For the ultimate disposal, three alternatives are evident. The wastes may be deposited in an open dump, in a sanitary landfill, or in the sea. Sanitary landfill and sea disposal each have associated with them several different types of disposal which may be employed.

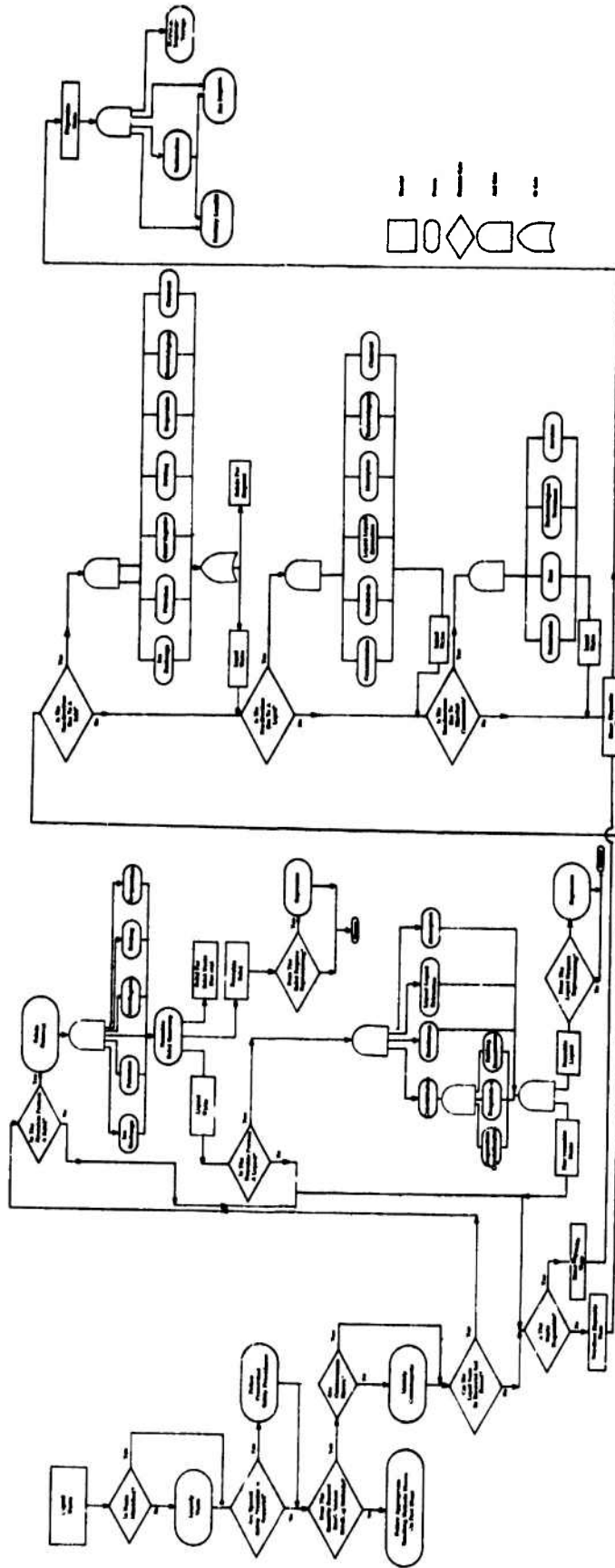
2. Liquid Waste

For the purposes of this study, liquid waste is defined as a liquid material that is no longer suitable for its original intended use without reprocessing or is only suitable for ultimate disposal. The liquid waste disposal logic diagram presented in Figure 3 illustrates the physical process alternatives and their sequence for the disposal of waste liquid preservative and packaging materials. The process alternatives, which are similar to those used in the disposal of solid wastes, permit the partial recovery and reclamation of portions of liquid waste materials.

To assist the reader in obtaining familiarity with Figure 3, the following guidance is provided.

Given a liquid waste, the first step is to determine the identification of the waste, the applicable safety procedures, and the contaminants.

FIGURE 3
Liquid Waste Disposal Logic Diagram



With the contaminants and the liquid identified, the next step is to determine whether the liquid waste is to be recovered and reused. If a portion of the liquid is recoverable and reusable, the reclamation methods are selected from the recovery process alternatives shown in the logic diagram.

Once the recoverable and reusable portions of the waste have been identified, the disposability of the non-reusable waste must be determined. This may be subject to local regulations and standards, which should be identified. In general, however, it requires removal of toxic components of the waste. As in the removal of reusable portions of the waste, the toxic components are removed by one or more of the nondirect waste disposal process alternatives shown on the disposal logic chart. For example, carbon tetrachloride in most cases cannot be directly landfilled since local regulations prohibit the open release of carbon tetrachloride vapors. In this case, the waste will have to be processed. In contrast, a liquid waste containing carbon tetrachloride can be incinerated (with certain precautions to prevent hydrochloric acid formation) without processing to remove the carbon tetrachloride.

(2) Fact Sheet Format

The primary product of this study is the Summary Fact Sheet, one for each material, which:

- . Describes the nature of the material including its chemical and physical parameters that influence its disposal
- . Recommends a preferred method of disposal
- . Contains personalized data supplied by the cognizant officer at each Army base.

Since the physical and chemical properties and the alternative methods of disposal are very different between the solid and chemical (liquid) packaging wastes, it was necessary to

compose a separate Summary Fact Sheet that delineates these unique properties and disposal methods for each material form.

1. Solid Waste Summary Fact Sheet Format

The first five blocks of the Solid Waste Summary Fact Sheet format (Figure 4) are devoted to the general descriptive information about the material as follows:

- Material Description—This block of the Fact Sheet provides a concise description of the material being considered. It first states the general category (e. g., paper, wood, plastic); the specific material's name, common name, and form; and the material's use, specification number, and composition.
- Chemical Properties and Characteristics—This block lists those properties that significantly influence the method of disposal.
- Disposal Rating Summary—This block outlines any preprocessing steps that should be taken prior to the disposal; the operational, environmental, and total disposal rating; and the disposal and economic ranking. (The actual numerical calculations performed and entered in this block are presented in the next section entitled Criteria Development and Methodology.) Owing to the specific localized nature of the data, the economic ranking is to be entered by the base cognizant officer of each Army installation. The methodology to be employed is described in the economic section of this report, Appendix D.
- The "Total Disposal Ranking" indicates the sequence in which different processes should be used; that is, a ranking of 1 is the "best" process, 2 the "next best," and so on.

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE		
							MATERIAL NO.	REFERENCE NO.	OTHER
1 MATERIAL DESCRIPTION				2 CHEMICAL PROPERTIES					
CATEGORY				MELTING TEMPERATURE		°F			
NAME				COMBUSTION TEMPERATURE		°F			
COMMON NAME (FORM)				HEAT OF COMBUSTION		BTU/LB			
USES				MATERIAL DENSITY		LB/CU.FT.			
FEDERAL/MILITARY SPECIFICATION NUMBER				BULK DENSITY		LB/CU.FT.			
COMPOSITION				3 CHARACTERISTICS					
				FRAGMENTABILITY					
4 DISPOSAL RATING SUMMARY				SEPARABILITY					
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING *			
REUSE						COMPACTION			
RECYCLE						COMBUSTIBILITY			
PYROLYSIS						TOXICITY			
COMPOSTING						BIOLOGICAL DEGRADABILITY			
BALING						CHEMICAL DEGRADABILITY			
INCINERATION						REUSABILITY			
SANITARY LANDFILL						5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
SEA DISPOSAL									
PRE-PROCESSES:		A - SEPARATION B - COMPACTION C - SHREDDING							
6° HANDLING DATA			8° OFF-BASE DISPOSAL/ PROCESSING DATA			10° NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION		DISPOSAL/PROCESSING METHOD							
		SECONDARY MATERIAL HANDLER							
7° ON-BASE DISPOSAL/ RECLAMATION DATA			8° OFF-BASE DISPOSAL/ RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD						
			SECONDARY MATERIAL HANDLER						
						*TO BE COMPLETED BY THE COGNIZANT OFFICER			

FIGURE 4
Solid Waste Summary Fact Sheet Format

Because of the specific nature of the data, the next set of blocks are to be completed by the cognizant officer at each Army installation.

- Handling Data—As enumerated in the block, the cognizant disposal officer should fill in the specific manner in which the material is handled prior to disposal. Other notations may be the location and bin number of the solid waste.
- Onbase Disposal/Reclamation Data—In this block the cognizant officer should, if applicable, state the actual method of reclamation (pyrolysis or composting) which is used at the base.
- Off-Base Disposal/Processing Data and Off-Base Disposal/Recycling Data—In these blocks the cognizant officer should, if applicable, state the nature of the disposal, reclamation, or recycling method used, and the name and address of the secondary material handler.
- Notes and Comments—This final block of the Fact Sheet is reserved for the cognizant officer's comments relating to qualitative assessments, geographical or climatological limitations, the amount of the waste material handled on a per-day basis, etc.

2. Liquid Waste Summary Fact Sheet Format

In concept, the Liquid Waste Summary Fact Sheet format, as shown in Figure 5, is the same as the Solid Fact Sheet format; in content, the main difference between the two is the type of data or procedures shown on the Fact Sheets. For example, in the second block, which enumerates the chemical properties, there is greater detail in the Liquid Fact Sheet owing to the inherent characteristics of the chemical packaging materials. Likewise, some characteristics of solid packaging materials, such as fragmentability, may not apply to the chemical wastes and therefore is not cited.

SUMMARY FACT SHEET LIQUID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE NO.	OTHER	
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY						HEALTH	TOXIC HAZARD RATING CODE		
NAME						FIRE	TOXIC HAZARD RATING CODE		
COMMON NAME (FORM)						REACTIVITY	TOXIC HAZARD RATING CODE		
USES						FLASH POINT	°F		
FED/MIL SPECIFICATION NUMBER						IGNITION TEMPERATURE	°F		
COMPOSITION	CONSTITUENTS		% BY WEIGHT			BOILING POINT	°F		
						MELTING TEMPERATURE	°F		
3	DISPOSAL RATING SUMMARY					SPECIFIC GRAVITY			
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING	EXPLOSIVE LIMITS		
RECOVERY/REUSE	NOTES						HEAT OF COMBUSTION	BTU/LB.	
SANITARY LANDFILL							VAPOR DENSITY (AIR = 1)		
INCINERATION							SOLUBILITY IN WATER		
SEA DISPOSAL							4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
MICROBIAL TREATMENT									
NOTES:									
5	WASTE DISPOSAL METHOD FOR SMALL FILL								
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES								
7*	NOTES AND COMMENTS								
*TO BE COMPLETED BY THE COGNIZANT OFFICER									

FIGURE 5
Liquid Waste Summary Fact Sheet Format

The blocks that have not been described previously in the Solid Waste Summary Fact Sheet format are presented below.

- Waste Disposal Method for Small Spill—This block describes the method to be used in disposing of a small quantity (generally 1 liter or less) of liquid wastes which occurs because of a spill.
- Recovery/Disposal of Highly Hazardous Liquids in Large Quantities—This block enumerates the recovery or disposal method to be used in the recovery or disposal of a large quantity of highly hazardous liquids which occurs because of either a large quantity spill or contamination.

(3) Summary of Criteria Development and Methodology

Described below is a summary of:

- The criteria developed in order to quantify the disposability characteristics
- The methodology employed by using a numerical procedure to determine total disposal rating and ranking that are entered in the Disposal Rating Summary section of the Summary Fact Sheets.

The criteria and methodology are illustrated in Tables 3 through 6. A comprehensive description appears in Appendix B, entitled "Specific Criteria Development and Methodology."

It is important to note that although the disposal processes and, hence, the criteria are different for the analysis of the solid and of the chemical waste packaging materials, the rationale behind each is the same.

Table 3
Relative Importance of Operational Disposability Characteristics

Characteristics	Direct Reuse	Recycle	Pyrolysis	Compost	Baling	Incineration	Sanitary Landfill	Sea Disposal
Fragmentability	--	--	0.2	0.2	--	0.2	0.1	--
Separability	0.5	0.4	0.2	0.2	--	0.1	--	--
Material Density	--	--	--	--	--	--	0.2	0.2
Compactibility	--	--	--	--	0.4	--	0.4	0.3
Baleability	--	--	--	--	0.6	--	--	--
Combustibility	--	--	--	--	--	0.5	--	--
Chemical and/or Biological Degradability	--	--	0.4	0.4	--	--	0.3	0.3
Market for Commodity	0.5	--	--	--	--	--	--	--
Potential Damage to Equipment	--	--	--	--	--	0.2	--	--
Regulatory or Technical Operating Restrictions	--	0.6	0.2	0.2	--	--	--	0.2
Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Table 4
Relative Importance of Environmental Impact

Environmental Impact	Direct Reuse	Recycle	Pyrolysis	Compost	Baling	Incineration	Sanitary Landfill	Sea Disposal
Air Pollution Potential	- -	- -	0.2	0.2	0.2	0.2	0.2	0.2
Water Pollution Potential	- -	- -	0.2	0.2	0.2	0.2	0.2	0.2
Land Pollution Potential	- -	- -	0.2	0.2	0.2	0.2	0.2	0.2
Resource Depletion Potential	1.0	1.0	0.4	0.4	0.4	0.4	0.4	0.4
Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Table 5
Operational Rating Definitions of Incineration

Rating	Rating Code	Fragmentability	Separability	Burning Rate (Combustibility)	Potential Damage to Equipment From Materials
Excellent	9-10	Material needs no process for reduction	Sorting is possible by mechanical means	Very high	None
Good	7-8	Material needs very light equipment or manual shredding for reduction	Mechanical sorting is possible but must be supplemented by manual sorting	High	None when incinerator is operated properly
Fair	5-6	Material may be reduced by light equipment	Mechanical sorting is impracticable; can be easily sorted by manual means	Low	Can sometimes disturb system operations
Poor	3-4	Material requires heavy equipment for reduction	Mechanical sorting is impracticable; cannot be easily sorted by manual means	Self-extinguishing	Seriously disturbs systems operations
Unsatisfactory	0-2	Material requires specialized equipment for reduction	Mechanical and manual sorting is impracticable	Nil	Damage is catastrophic and causes plant shutdown.

Table 6
Environmental Rating Definitions of Air Pollution Potential

Rating	Rating Code	Harmful Gases	Particulate Emissions	Offensive Odors
Excellent	9-10	No harmful constituents.	No particulate emissions	No offensive odors
Good	7-8	Prevailing emissions well below applicable standards	Prevailing particulate emissions well below applicable standards	A minuscule amount of offensive odors
Fair	5-6	Prevailing emissions below applicable standards	Prevailing particulate emissions within applicable standards	An amount of offensive odors such that aesthetic enjoyment is dampened
Poor	3-4	Prevailing emissions above applicable standards	Prevailing particulate emissions just above applicable standards	An amount of offensive odors such that aesthetic enjoyment is hampered
Unsatisfactory	0-2	Prevailing emissions in excess of applicable standards	Prevailing particulate emissions well in excess of applicable standards	An amount of offensive odors such that aesthetic enjoyment is totally deprived

1. Criteria Development

In this analysis it was necessary to construct:

- . Operational criteria to measure the adaptability or feasibility of a material's being processed by a disposal alternative
- . Environmental criteria to measure the environmental disruption that would be caused by the material's being processed by a disposal alternative.

2. Operational Rating System

The operational criteria were formulated into an operational rating system. This system was designed independent of any specific material. For each process, mutually exclusive material characteristics that would have direct bearing upon the operation of a specific process were determined. Next, a relative importance factor, expressed as a fraction, was assigned to each characteristic for each process.

3. Environmental Rating System

The environmental criteria were formulated into an environmental rating system. This system was designed independent of a specific material/process. In this system, environmental disruptions were analyzed and relative importance factors based on portions of unity (1.0) were assigned to each environmental impact.

4. Operational and Environmental Rating Definitions

To utilize the aforementioned rating systems, rating and rating code scales ranging in numerical value from 0 to 10 were employed. In each system, 0 stands for unsatisfactory and 10 for excellent. Moreover, for each characteristic and environmental impact, definitions

corresponding to each rating and rating code have been developed in order to apply the rating system consistently. Basically, these definitions were used as a guide for classifying the waste packaging material on the basis of either a numerically measurable or clearly defined characteristic.

By way of illustration, Tables 3 and 4 show, respectively, the solid waste operational and environmental rating system; Tables 5 and 6, respectively, depict the solid waste operational and environmental rating definitions. As stated earlier, a complete listing of all tables and a comprehensive definition of these systems can be found in Appendix B.

5. Operational and Environmental Rating Methodology

Each material was rated in accordance with the criteria developed in the rating definitions for both operational characteristics and environmental impacts.

After numerical calculations had been made, a total disposal rating was expressed. The total disposal rating determined the best possible disposal process subject to the constraints of maximization of process utility and minimization of environmental pollution. The Numerical Process Evaluation Matrices, which are the matrices utilized in standardizing the numerical calculations for each packaging material under study, can be found in Appendix C.

After computing the total disposal rating, each process was ranked. The disposal ranking is the assignment of sequential numbers starting with the highest disposal rating (ranked as number 1) and ending with the lowest disposal rating. This ranking shows the facility officer the order in which the disposal alternatives should be utilized.

III. SUMMARY FACT SHEETS

The Summary Fact Sheets contained herein present a disposability ranking and additional details for 104 military packaging materials including 17 liquids (i. e., chemicals) and 87 solids (i. e., glass, metal, paper, plastic, textile, and wood).

To select the disposal process that will result in minimal pollution of the environment, the Summary Fact Sheet section, entitled "Disposal Rating Summary, " should be used as a guide. Within this block is the "Total Disposal Ranking, " which indicates the relative order for selection of the best method of disposal on the basis of the operational and environmental analysis. The best method is given the ranking of 1. The determination of economic feasibility, which depends on such local factors as availability and efficiency of equipment, transportation costs, market for materials, etc., must be made at the installation level on the basis of a life-cycle cost analysis. The proposed economic analysis methodology is described in Appendix D of this report.

SUMMARY FACT SHEET LIQUID WASTE						REFERENCE CODE		
						MATERIAL NO.	REFERENCE NO.	OTHER
						1	C-1	
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES	
CATEGORY	CHEMICAL					HEALTH	TOXIC HAZARD RATING CODE	1
NAME	ACETONE					FIRE	TOXIC HAZARD RATING CODE	2
COMMON NAME (FORM)	ACETONE (LIQUID)					REACTIVITY	TOXIC HAZARD RATING CODE	0
USES	SOLVENT					FLASH POINT	0	°F
FEDERAL SPECIFICATION NUMBER	O-A-51					IGNITION TEMPERATURE	1000	°F
COMPOSITION	CONSTITUENTS			% BY WEIGHT		BOILING POINT	133	°F
	CARBON			62.5		MELTING TEMPERATURE	-137	°F
	HYDROGEN			10.0				
OXYGEN			27.5					
3	DISPOSAL RATING SUMMARY					SPECIFIC GRAVITY	0.79	
METHOD OF DISPOSAL	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	SCD RANKING	EXPLOSIVE LIMITS	3 - 13	
RECOVERY/REUSE	8.5	8.0	6.3	1		HEAT OF COMBUSTION	-	BTU/LB.
SANITARY LANDFILL	4.3	5.2	4.8	3		VAPOR DENSITY (AIR = 1)	2.0	
INCINERATION	8.0	8.4	7.2	2		SOLUBILITY IN WATER	SL. SOLUBLE	
SEA DISPOSAL	4.8	2.2	2.4	5		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
MICROBIAL TREATMENT	5.1	2.2	2.7	4				
NOTES:						MCA LABEL. ELIMINATE ALL SOURCES OF IGNITION AND FLAMMABLES. WEAR RUBBER GLOVES, FACE SHIELD, LABORATORY COAT. HAVE ALL-PURPOSE CANISTER MASK AVAILABLE.		
5	WASTE DISPOSAL METHOD FOR SMALL SPILL							
ABSORB ON PAPER. EVAPORATE ON AN IRON PAN IN A FUME HOOD. BURN THE PAPER. OR ATOMIZE THE WASTE INTO AN INCINERATOR.								
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES							
RECLAIM BY DISTILLATION. INCINERATE RESIDUE.								
7*	NOTES AND COMMENTS							
*TO BE COMPLETED BY THE COGNIZANT OFFICER								

SUMMARY FACT SHEET LIQUID WASTE						REFERENCE CODE		
						MATERIAL NO.	REFERENCE PG.	OTHER
						2	C-2	
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES	
CATEGORY	CHEMICAL					HEALTH	TOXIC HAZARD RATING CODE	2
NAME	BENZENE					FIRE	TOXIC HAZARD RATING CODE	3
COMMON NAME (FORM)	BENZOL (LIQUID)					REACTIVITY	TOXIC HAZARD RATING CODE	0
USES	SOLVENT					FLASH POINT	12	°F
FED/ML SPECIFICATION NUMBER	VV-B-231					IGNITION TEMPERATURE	1044	°F
COMPOSITION	CONSTITUENTS		% BY WEIGHT			BOILING POINT	176	°F
	CARBON		92.0			MELTING TEMPERATURE	41	°F
	HYDROGEN		8.0					
3	DISPOSAL RATING SUMMARY					SPECIFIC GRAVITY	.88	
METHOD OF DISPOSAL	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	EXPLOSIVE LIMITS	1.4 - 8	
RECOVERY/REUSE	8.2	7.6	7.9	1		HEAT OF COMBUSTION	- BTU/LB.	
SANITARY LANDFILL	5.2	2.8	4.0	4		VAPOUR DENSITY (AIR - 1)	2.8	
INCINERATION	8.2	4.8	6.4	2		SOLUBILITY IN WATER	SL. SOLUBLE	
SEA DISPOSAL	8.4	2.8	4.8	3		4* SPECIAL PRECAUTIONS; APPLICABLE REGULATIONS		
MICROBIAL TREATMENT	5.1	2.8	4.0	4				
NOTES:						MCA LABEL. ELIMINATE ALL SOURCES OF IGNITION AND FLAMMABLES. PROVIDE VENTILATION, PROVIDE PERSONAL RESPIRATION FOR EMERGENCY.		
5	WASTE DISPOSAL METHOD FOR SMALL SPILL							
ABSORB ON PAPER. EVAPORATE ON AN IRON PAN IN A HOOD. BURN THE PAPER. OR ATOMIZE THE LIQUID WASTE INTO AN INCINERATOR. COMBUSTION MAY BE IMPROVED BY MIXING WITH A MORE FLAMMABLE SOLVENT.								
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES							
RECOVER BY DISTILLATION, ESPECIALLY IF USED AS A DRY CLEANING SOLVENT. INCINERATE RESIDUE.								
7*	NOTES AND COMMENTS							
*TO BE COMPLETED BY THE COGNIZANT OFFICER								

SUMMARY FACT SHEET LIQUID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PG.	OTHER	
							3	C-3		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	CHEMICAL						HEALTH	TOXIC HAZARD RATING CODE	3	
NAME	CARBON TETRACHLORIDE						FIRE	TOXIC HAZARD RATING CODE	0	
COMMON NAME (FORM)	CARBON TETRACHLORIDE (LIQUID)						REACTIVITY	TOXIC HAZARD RATING CODE	0	
USES	SOLVENT						FLASH POINT	NONE	°F	
FED/MIL SPECIFICATION NUMBER	-						IGNITION TEMPERATURE	-	°F	
COMPOSITION	CONSTITUENTS			% BY WEIGHT			BOILING POINT	171	°F	
	CARBON CHLORINE			8.2 91.8			MELTING TEMPERATURE	-9.4	°F	
3	DISPOSAL RATING SUMMARY						SPECIFIC GRAVITY	1.58		
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RATING	ECO-NOMIC RATING	EXPLOSIVE LIMITS	NONE		
RECOVERY/REUSE	NOTES	8.7	8.4	8.8	1		HEAT OF COMBUSTION	37.3 ^{KC} / _G ^{BTU} / _{LB.}		
SANITARY LANDFILL		4.5	2.8	3.6	4		VAPOR DENSITY (AIR = 1)	5.3		
INCINERATION		5.4	6.2	5.8	2		SOLUBILITY IN WATER	INSOLUBLE		
SEA DISPOSAL		5.7	3.0	4.4	3		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
MICROBIAL TREATMENT		2.7	2.8	2.8	5		MCA WARNING LABEL. PROVIDE VENTILATION. WEAR RUBBER GLOVES, SELF-CONTAINED RESPIRATOR (OR WORK IN HOOD), LABORATORY COAT. NEVER USE CONTAMINATED DRUMS. FOLLOW PROCEDURES FOR HANDLING OF SPILLS FOR CONTAINER CONTAMINATION.			
NOTES:										
5	WASTE DISPOSAL METHOD FOR SMALL SPILL									
ABSORB ON PAPER TOWELS AND ALLOW TO EVAPORATE IN THE FUME HOOD. BURN THE PAPER. WASH SITE WITH SOAP SOLUTION.										
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES									
CONTAMINATED THROUGH USE: PURIFY BY DISTILLATION, PLACE THE PURE DISTILLATE BACK ON THE SHELF. THE SLUDGE REMAINING MAY BE INCINERATED OR DISPOSED OF IN SANITARY LANDFILL OR INCINERATE WITH SUPPLEMENTARY FUEL IN FUEL-RICH MIXTURE.										
7*	NOTES AND COMMENTS									
<ol style="list-style-type: none"> NOT CORROSIVE OR DANGEROUSLY REACTIVE, BUT TOXIC BY INHALATION, BY PROLONGED OR REPEATED CONTACT WITH THE SKIN, OR MUCOUS MEMBRANE, OR WHEN INGESTED BY MOUTH. DANGEROUS WHEN HEATED TO DECOMPOSITION. EMITS HIGHLY TOXIC FUMES OF CHLORIDES. REPROCESSING EQUIPMENT IS NORMALLY INTEGRAL WITH USE MACHINERY. 										
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET LIQUID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE NO.	OTHER	
							4	C-4		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES			
CATEGORY		CHEMICAL				HEALTH		TOXIC HAZARD RATING CODE		
NAME		CORROSION PREVENTIVE				FIRE		TOXIC HAZARD RATING CODE		
COMMON NAME (FORM)		CORROSION PREVENTIVE (FLUID)				REACTIVITY		TOXIC HAZARD RATING CODE		
USES		PRESERVATIVE				FLASH POINT		100 °F		
FED/MIL SPECIFICATION NUMBER		MIL-C-6520 MIL-C-15074 MIL-C-18123		MIL-C-81304 MIL-C-11796		IGNITION TEMPERATURE		450 - 500 °F		
COMPOSITION		CONSTITUENTS			% BY WEIGHT		BOILING POINT		220 - 310 °F	
		PETROLEUM SOLVENT NONVOLATILE BASE					MELTING TEMPERATURE		-40 °F	
3	DISPOSAL RATING SUMMARY					SPECIFIC GRAVITY		.859 - .970		
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING	EXPLOSIVE LIMITS		1 - 5%	
RECOVERY/REUSE		5.5	7.6	6.6	2		HEAT OF COMBUSTION		15,000 BTU/LB.	
SANITARY LANDFILL		3.8	2.8	3.3	5		VAPOR DENSITY (AIR = 1)		N/A	
INCINERATION		6.1	7.0	7.6	1		SOLUBILITY IN WATER		INSOLUBLE	
SEA DISPOSAL		5.0	3.0	4.0	3		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATION: AGITATE WELL BEFORE USING. CONTAINS COMBUSTIBLE PETROLEUM THINNERS OF 100°F MINIMUM FLASH POINT. AVOID USE NEAR OPEN FLAMES, SPARKS, OR WELDING OR CUTTING OPERATIONS. AVOID PROLONGED OR REPEATED CONTACT WITH THE SKIN, OR BREATHING OF VAPORS. USE PROTECTIVE CLOTHING AND PROPER MASKS FOR PROLONGED			
MICROBIAL TREATMENT		3.5	3.2	3.4	4					
NOTES:										
5	WASTE DISPOSAL METHOD FOR SMALL SPILL					EXPOSURES.				
ABSORB ON PAPER. EVAPORATE ON AN IRON PAN IN A HOOD AND BURN THE PAPER. OR ATOMIZE THE LIQUID WASTE INTO AN INCINERATOR. COMBUSTION MAY BE IMPROVED BY MIXING WITH A MORE FLAMMABLE SOLVENT.										
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES									
IF A LARGE SPILL, FILTER OR CENTRIFUGE TO REMOVE CONTAMINATES (DIRT) AND USE IMMEDIATELY. OR RETURN TO SUPPLIER FOR REFORMULATION. INCINERATE RESIDUE OR CONTAMINATED MATERIAL.										
7*	NOTES AND COMMENTS									
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET LIQUID WASTE						REFERENCE CODE			
						FATIGAL NO.	REFERENCE NO.	OTHER	
						5	C-5		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY	CHEMICAL					HEALTH	TOXIC HAZARD RATING CODE 2		
NAME	CORROSION PREVENTIVE					FIRE	TOXIC HAZARD RATING CODE -		
COMMON NAME (FORM)	DESSICANT (POWDER)					REACTIVITY	TOXIC HAZARD RATING CODE -		
USES	DEHYDRATING AGENT					FLASH POINT	- °F		
FED/ML SPECIFICATION NUMBER	MIL-D-3464					IGNITION TEMPERATURE	- °F		
COMPOSITION	CONSTITUENTS		% BY WEIGHT			BOILING POINT	600 °F		
	CALCIUM COMPOUNDS AND/OR SILICATES					MELTING TEMPERATURE	400-600 °F		
3	DISPOSAL RATING SUMMARY					SPECIFIC GRAVITY	0.65 - 0.85		
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING	EXPLOSIVE LIMITS		
RECOVERY/ REUSE		8.5	8.4	8.5	1		HEAT OF COMBUSTION - BTU/LB.		
SANITARY LANDFILL		6.9	7.6	7.3	2		VAPOR DENSITY (AIR = 1) -		
INCINERATION		4.1	7.2	5.7	5		SOLUBILITY IN WATER INSOLUBLE		
SEA DISPOSAL		8.0	7.8	6.6	3		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
MICROBIAL TREATMENT		5.6	7.6	6.6	4				
NOTES:									
6	WASTE DISPOSAL METHOD FOR SMALL SPILL								
IF LESS THAN 1 KILOGRAM OF LOOSE MATERIAL, COLLECT AND DISPOSE BY SANITARY LANDFILL. DISPOSE OF DESSICANT BAGS (1) FROM NON-RETURNABLE CONTAINERS IN SANITARY LANDFILL.									
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES								
SEGREGATE DEBRIS FROM CHEMICAL. REBAG (1) IF LOOSE AND CHEMICAL CAN BE USED ON SITE. MAINTAIN DESSICANT BAGS (1) WITH ALL RETURNABLE CONTAINERS AND RETURN BAGS WITH CONTAINER.									
7*	NOTES AND COMMENTS								
(1) CHEMICAL IS NORMALLY USED IN CLOTH BAGS TO MAINTAIN DRY ENVIRONMENT DURING STORAGE AND TRANSPORT OF PRESERVED ARTICLE.									
*TO BE COMPLETED BY THE COGNITIVE OFFICER									

SUMMARY FACT SHEET LIQUID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE NO.	OTHER	
						6	C-6		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY	CHEMICAL					HEALTH	TOXIC HAZARD RATING CODE -		
NAME	CORROSION PREVENTIVE					FIRE	TOXIC HAZARD RATING CODE -		
COMMON NAME (FDRM)	OIL TYPE VCI (FLUID)					REACTIVITY	TOXIC HAZARD RATING CODE -		
USES	PRESERVATIVE					FLASH POINT	100	°F	
FED/MIL SPECIFICATION NUMBER	MIL-I-23310					IGNITION TEMPERATURE	450 - 500	°F	
COMPOSITION	CONSTITUENTS		% BY WEIGHT			BOILING POINT	220 - 310	°F	
						MELTING TEMPERATURE	-40	°F	
						SPECIFIC GRAVITY	0.659 - 0.970		
3	DISPOSAL RATING SUMMARY					EXPLOSIVE LIMITS	1 - 5%		
METHOD OF DISPOSAL	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	HEAT OF COMBUSTION	15,000	BTU/LB.	
RECOVERY/REUSE	5.5	7.2	6.4	2		VAPOR DENSITY (AIR = 1)	N/A		
SANITARY LANDFILL	4.6	6.0	5.3	5		SOLUBILITY IN WATER	INSOLUBLE		
INCINERATION	7.9	6.4	7.2	1		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
SEA DISPOSAL	5.2	6.0	5.6	3		ELIMINATE ALL SOURCES OF IGNITION. AVOID LONG OR REPEATED CONTACT WITH CHEMICAL OR VAPOR. USE PROTECTIVE MASK AND CLOTHING FOR PROLONGED EXPOSURE.			
MICROBIAL TREATMENT	4.6	6.2	5.4	4					
NOTES:									
5	WASTE DISPOSAL METHOD FOR SMALL SPILL								
ABSORB ON PAPER. EVAPORATE IN FUME HOOD. INCINERATE THE PAPER, OR ATOMIZE LIQUID WASTE INTO AN INCINERATOR. COMBUSTION MAY BE IMPROVED BY MIXING WITH A MORE FLAMMABLE SOLVENT.									
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES								
COLLECT AND RETURN TO SUPPLIER FOR REPROCESSING AND REFORMULATION OR INCINERATE AND DISPOSE OF INCINERATOR RESIDUE BY SANITARY LANDFILL.									
7*	NOTES AND COMMENTS								
*TO BE COMPLETED BY THE COGNIZANT OFFICER									

SUMMARY FACT SHEET LIQUID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE NO.	OTHER	
							7	C-7		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	CHEMICAL						HEALTH	TOXIC HAZARD RATING CODE -		
NAME	CORROSION PREVENTIVE						FIRE	TOXIC HAZARD RATING CODE -		
COMMON NAME (FORM)	VCI (SOLID)						REACTIVITY	TOXIC HAZARD RATING CODE -		
USES	PRESERVATIVE						FLASH POINT	150	°F	
FED/MIL SPECIFICATION NUMBER	MIL-I-22110						IGNITION TEMPERATURE	550 - 600	°F	
COMPOSITION	CONSTITUENTS			% BY WEIGHT			BOILING POINT	300	°F	
							MELTING TEMPERATURE	100	°F	
3	DISPOSAL RATING SUMMARY						SPECIFIC GRAVITY	0.7 - 0.9		
METHOD OF DISPOSAL	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING		EXPLOSIVE LIMITS	1 - 5%		
RECOVERY/REUSE	5.5	7.0	6.3	2			HEAT OF COMBUSTION	16,000	BTU/LB.	
SANITARY LANDFILL	4.6	6.0	5.3	4			VAPOR DENSITY (AIR = 1)	N/A		
INCINERATION	7.9	6.6	7.3	1			SOLUBILITY IN WATER	INSOLUBLE		
SEA DISPOSAL	4.6	6.2	5.4	3			4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS ELIMINATE ALL SOURCES OF IGNITION. AVOID LONG OR REPEATED CONTACT WITH CHEMICAL OR VAPOR. USE PROTECTIVE MASK AND CLOTHING FOR PROLONGED EXPOSURE.			
MICROBIAL TREATMENT	4.3	6.4	5.4	4						
NOTES:										
5	WASTE DISPOSAL METHOD FOR SMALL SPILL									
COLLECT AND INCINERATE. DISPOSE OF INCINERATED RESIDUE IN SANITARY LANDFILL.										
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES									
COLLECT AND RETURN TO SUPPLIER FOR REPROCESSING AND REFORMULATION OR INCINERATE AND DISPOSE OF INCINERATOR RESIDUE BY SANITARY LANDFILL.										
7*	NOTES AND COMMENTS									
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET LIQUID WASTE							REFERENCE CODE		
							MATERIAL NO.	REFERENCE PG.	OTHER
							8	C-8	
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES	
CATEGORY	CHEMICAL						HEALTH	TOXIC HAZARD RATING CODE 2	
NAME	DETERGENT						FIRE	TOXIC HAZARD RATING CODE -	
COMMON NAME (FCRM)	ALKALI CLEANING COMPOUND (LIQUID)						REACTIVITY	TOXIC HAZARD RATING CODE -	
USES	DETERGENT						FLASH POINT	350 °F	
FED/MIL SPECIFICATION NUMBER	P-C-438						IGNITION TEMPERATURE	600 °F	
COMPOSITION	CONSTITUENTS			% BY WEIGHT			BOILING POINT	220 - 250 °F	
							MELTING TEMPERATURE	10 °F	
3	DISPOSAL RATING SUMMARY						SPECIFIC GRAVITY	1.020 - 1.050	
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	EXPLOSIVE LIMITS	-	
RECOVERY/REUSE	NOTES	8.5	7.8	8.1	1		HEAT OF COMBUSTION	- BTU/LB.	
SANITARY LANDFILL		7.3	6.6	7.0	2		VAPOR DENSITY (AIR = 1)	-	
INCINERATION		5.3	5.0	5.2	5		SOLUBILITY IN WATER	INFINITE	
SEA DISPOSAL		7.2	4.4	5.8	4		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS DO NOT TAKE INTERNALLY. KEEP OUT OF EYES. IF SWALLOWED INDUCE VOMITING AND FLUSH WITH WATER. EXTERNAL CONTACT - FLUSH WITH WATER. CALL PHYSICIAN.		
MICROBIAL TREATMENT		6.6	8.0	6.3	3				
NOTES:									
6	WASTE DISPOSAL METHOD FOR SMALL SPILL								
IF LESS THAN 1 LITER NEUTRALIZE AND MOP UP DISCHARGE INTO SANITARY SEWER WITH LARGE EXCESS OF WATER.									
8	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES								
IF A LARGE SPILL, COLLECT MATERIAL AND USE IMMEDIATELY. NEUTRALIZE REMAINING MATERIAL, FLUSH AREA WITH WATER, AND ALLOW WATER TO FLOW INTO SANITARY SEWER.									
7*	NOTES AND COMMENTS								
*TO BE COMPLETED BY THE COGNIZANT OFFICER									

SUMMARY FACT SHEET LIQUID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE NO.	OTHER	
						8	C-8		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY	CHEMICAL					HEALTH	TOXIC HAZARD RATING CODE		
NAME	DETERGENT					FIRE	TOXIC HAZARD RATING CODE		
COMMON NAME (FDRM)	DETERGENT (LIQUID)					REACTIVITY	TOXIC HAZARD RATING CODE		
USES	DETERGENT					FLASH POINT	350	°F	
FED/MIL SPECIFICATION NUMBER	MIL-D-18791					IGNITION TEMPERATURE	800	°F	
COMPOSITION	CONSTITUENTS			% BY WEIGHT		BOILING POINT	430 - 480	°F	
	NONIONIC SURFACE ACTIVE AGENT (TYPE I)			99.0		MELTING TEMPERATURE	32	°	
3	DISPOSAL RATING SUMMARY					SPECIFIC GRAVITY	1.07		
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	EXPLOSIVE LIMITS	N/A	
RECOVERY/REUSE	NOTES	6.5	7.4	7.0	2		HEAT OF COMBUSTION	-	BTU/LB.
SANITARY LANDFILL		8.0	5.2	6.6	3		VAPOR DENSITY (AIR = 1)	N/A	
INCINERATION		5.3	5.0	5.2	5		SOLUBILITY IN WATER	INFINITE	
SEA DISPOSAL		7.6	4.8	6.2	4		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
MICROBIAL TREATMENT		8.0	8.4	7.2	1				
NOTES:						DO NOT TAKE INTERNALLY. KEEP OUT OF EYES. IF SWALLOWED, INDUCE VOMITING AND CALL A PHYSICIAN. FOR EYES, FLUSH WITH PLENTY OF WATER AND GET MEDICAL ATTENTION.			
5	WASTE DISPOSAL METHOD FOR SMALL SPILL								
NEUTRALIZE AND MOP UP OR USE WATER-VAC. DISCHARGE TO SEWER WITH LARGE EXCESS OF WATER.									
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES								
IF A LARGE SPILL, COLLECT MATERIAL AND USE IMMEDIATELY. FLUSH AREA WITH WATER AND ALLOW WATER TO FLOW INTO A SANITARY SEWER. DILUTE RESIDUE WITH LARGE QUANTITIES OF WATER AND FLUSH INTO SANITARY SEWER.									
7*	NOTES AND COMMENTS								
*TO BE COMPLETED BY THE COGNIZANT OFFICER									

SUMMARY FACT SHEET LIQUID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PG.	OTHER	
							10	C-10		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY		CHEMICAL					HEALTH		TOXIC HAZARD RATING CODE	
NAME		GREASE					FIRE		TOXIC HAZARD RATING CODE	
COMMON NAME (FORM)		GREASE (FLUID)					REACTIVITY		TOXIC HAZARD RATING CODE	
USES		PRESERVATIVE					FLASH POINT		400 - 500 °F	
FED/MIL SPECIFICATION NUMBER		MIL-G-7711		MIL-G-10924			IGNITION TEMPERATURE		700 °F	
COMPOSITION		CONSTITUENTS			% BY WEIGHT		BOILING POINT		N/A °F	
							MELTING TEMPERATURE		LESS THAN -40 °F	
3	DISPOSAL RATING SUMMARY						SPECIFIC GRAVITY		.85 - .82	
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	EXPLOSIVE LIMITS		N/A	
RECOVERY/REUSE		5.0	7.8	6.4	2		HEAT OF COMBUSTION		18,800 - 20,000 BTU/LB.	
SANITARY LANDFILL		4.2	3.2	3.7	4		VAPOR DENSITY (AIR = 1)		N/A	
INCINERATION		8.6	5.4	7.0	1		SOLUBILITY IN WATER		INSOLUBLE	
SEA DISPOSAL		5.8	2.0	3.9	3		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS ELIMINATE ALL SOURCES OF IGNITION AND FLAMMABLES.			
MICROBIAL TREATMENT		4.9	2.0	3.5	5					
NOTES:										
5	WASTE DISPOSAL METHOD FOR SMALL SPILL									
MAKE UP PACKAGES IN PAPER OR OTHER FLAMMABLE MATERIAL. BURN IN THE INCINERATOR. OR THE SOLID MAY BE DISSOLVED IN A FLAMMABLE SOLVENT AND SPRAYED INTO THE FIRE CHAMBER.										
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES									
IF A LARGE SPILL, COLLECT UNCONTAMINATED MATERIAL AND USE IMMEDIATELY. INCINERATE RESIDUE OR CONTAMINATED MATERIAL.										
7*	NOTES AND COMMENTS									
TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET LIQUID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE NO.	OTHER	
						11	C-11		
1 MATERIAL DESCRIPTION						2 CHEMICAL PROPERTIES			
CATEGORY		CHEMICAL				HEALTH		TOXIC HAZARD RATING CODE	
NAME		LUBRICATING OIL				FIRE		TOXIC HAZARD RATING CODE	
COMMON NAME (FORM)		LUBRICATING OIL (LIQUID)				REACTIVITY		TOXIC HAZARD RATING CODE	
USES		PRESERVATIVE				FLASH POINT		275 °F	
FED/MIL SPECIFICATION NUMBER		VV-L-800 MIL-L-3150				IGNITION TEMPERATURE		500 °F	
COMPOSITION		CONSTITUENTS		% BY WEIGHT		BOILING POINT		250 - 300 °F	
		PETROLEUM FRACTION				MELTING TEMPERATURE		-20 °F	
3 DISPOSAL RATING SUMMARY						SPECIFIC GRAVITY		0.75 - 0.88	
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	EXPLOSIVE LIMITS		N/A
NOTES							HEAT OF COMBUSTION		- BTU/LB.
RECOVERY/REUSE		5.0	7.8	6.4	2		VAPOR DENSITY (AIR = 1)		N/A
SANITARY LANDFILL		4.2	3.2	3.7	4		SOLUBILITY IN WATER		INSOLUBLE
INCINERATION		8.8	5.4	7.0	1		4° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
SEA DISPOSAL		5.8	2.0	3.9	3		ELIMINATE ALL SOURCES OF IGNITION AND FLAMMABLES.		
MICROBIAL TREATMENT		4.9	2.0	3.5	5				
NOTES:									
5 WASTE DISPOSAL METHOD FOR SMALL SPILL									
ATOMIZE INTO AN INCINERATOR. COMBUSTION MAY BE IMPROVED BY MIXING WITH A MORE FLAMMABLE SOLVENT.									
6 RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES									
COLLECT AND MARK FOR REFORMULATION BY SUPPLIER IF AVAILABLE, OTHERWISE DISPOSE OF BY INCINERATION;									
7° NOTES AND COMMENTS									
TO BE COMPLETED BY THE COGNIZANT OFFICER									

SUMMARY FACT SHEET LIQUID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PG.	OTHER	
							12	C-12		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	CHEMICAL						HEALTH	TOXIC HAZARD RATING CODE	1	
NAME	METHANOL						FIRE	TOXIC HAZARD RATING CODE	3	
COMMON NAME (FDRM)	WOOD ALCOHOL (LIQUID)						REACTIVITY	TOXIC HAZARD RATING CODE	0	
USES	SOLVENT						FLASH POINT	12	°F	
FED/MIL SPECIFICATION NUMBER	O-M-232						IGNITION TEMPERATURE	667	°F	
COMPOSITION	CONST. TUENTS				% BY WEIGHT		BOILING POINT	149	°F	
	CARBON				37.5		MELTING TEMPERATURE	-144	°F	
	OXYGEN				50.0					
HYDROGEN				12.5						
3	DISPOSAL RATING SUMMARY						SPECIFIC GRAVITY	.79		
METHOD OF DISPOSAL	NOTES	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	EXPLOSIVE LIMITS	6 - 36.5		
RECOVERY/REUSE		6.6	6.4	7.5	1		HEAT OF COMBUSTION	-	BTU/LB.	
SANITARY LANDFILL		5.2	3.6	4.4	4		VAPOR DENSITY (AIR = 1)	1.11		
INCINERATION		6.0	6.2	7.1	2		SOLUBILITY IN WATER	-		
SEA DISPOSAL		6.7	2.6	4.6	3		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
MICROBIAL TREATMENT		3.6	2.8	3.2	5		MCA LABEL. ELIMINATE ALL SOURCES OF IGNITION. WEAR RUBBER GLOVES, FACE SHIELD, LABORATORY COAT. HAVE ALL-PURPOSE CANISTER MASK AVAILABLE. ELIMINATE ALL SOURCES OF FLAMMABLES.			
NOTES:										
5	WASTE DISPOSAL METHOD FOR SMALL SPILL									
ABSORB ON PAPER. EVAPORATE ON AN IRON PAN IN A FUME HOOD. BURN THE PAPER.										
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES									
PURIFY BY DISTILLATION OR ATOMIZE AND BURN IN AN INCINERATOR. INCINERATE DISTILLATION RESIDUE. COMBUSTION MAY BE IMPROVED BY MIXING WITH A MORE FLAMMABLE SOLVENT.										
7*	NOTES AND COMMENTS									
* TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET LIQUID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PU.	OTHER	
							13	C-13		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY		CHEMICAL					HEALTH		TOXIC HAZARD RATING CODE	
NAME		PETROLATUM					FIRE		TOXIC HAZARD RATING CODE	
COMMON NAME (FORM)		PETROLATUM (LIQUID)					REACTIVITY		TOXIC HAZARD RATING CODE	
USES		PRESERVATIVE					FLASH POINT		100 °F	
FED/MIL SPECIFICATION NUMBER		MIL-C-10382					IGNITION TEMPERATURE		450 °F	
COMPOSITION		CONSTITUENTS			% BY WEIGHT		BOILING POINT		300 - 400 °F	
		PETROLATUM LANOLIN			31.0 10.5		MELTING TEMPERATURE		150 - 170 °F	
3	DISPOSAL RATING SUMMARY						SPECIFIC GRAVITY		0.9 - 1.0	
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	EXPLOSIVE LIMITS		1 - 8%	
NOTES							HEAT OF COMBUSTION		-	
RECOVERY/REUSE		5.0	7.8	6.4	2		VAPOR DENSITY (AIR = 1)		N/A	
SANITARY LANDFILL		4.2	3.2	3.7	4		SOLUBILITY IN WATER		INSOLUBLE	
INCINERATION		8.8	5.4	7.0	1		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
SEA DISPOSAL		5.8	2.0	3.9	3		USE ONLY FOR CORROSIO., PREVENTION DURING STORAGE. REMOVE THE PREVENTIVE FROM FOOD HANDLING EQUIPMENT AND MACHINRY BEFORE OPERATING BY FLUSHING WITH HOT WATER (100 F). ELIMINATE ALL SOURCES OF IGNITION AND FLAMMABLES.			
MICROBIAL TREATMENT		4.9	2.0	3.5	5					
NOTES:										
5	WASTE DISPOSAL METHOD FOR SMALL SPILL									
SWEEP ONTO PAPER AND PLACE IN AN IRON PAN IN THE HOOD. BURN THE PAPER AND COMPOUND. OR MAKE UP PACKAGES IN PAPER OR OTHER FLAMMABLE MATERIAL. BURN IN THE INCINERATOR. OR THE SOLID MAY BE DISSOLVED IN A FLAMMABLE SOLVENT AND SPRAYED INTO THE FIRE CHAMBER.										
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES									
INCINERATE MATERIAL AND DISPOSE OF RESIDUE IN A LANDFILL.										
7*	NOTES AND COMMENTS									
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET LIQUID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PG.	OTHER	
							14	C-14		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	CHEMICAL						HEALTH	TOXIC HAZARD RATING CODE 1		
NAME	PETROLEUM CLEANING SOLVENT						FIRE	TOXIC HAZARD RATING CODE 2		
COMMON NAME (FORM)	STODDARD SOLVENT (LIQUID)						REACTIVITY	TOXIC HAZARD RATING CODE		
USES	SOLVENT						FLASH POINT	100 °F		
FED/MIL SPECIFICATION NUMBER	P-D-680						IGNITION TEMPERATURE	441 °F		
COMPOSITION	CONSTITUENTS				% BY WEIGHT		BOILING POINT	428 °F		
	PETROLEUM DISTILLATE						MELTING TEMPERATURE	- °F		
3	DISPOSAL RATING SUMMARY						SPECIFIC GRAVITY	1.0		
METHOD OF DISPOSAL	NOTES	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	EXPLOSIVE LIMITS	8.5		
RECOVERY/REUSE		8.2	7.8	7.9	1		HEAT OF COMBUSTION	- BTU/LB.		
SANITARY ANDFILL		5.2	2.8	4.0	4		VAPOR DENSITY (AIR = 1)	-		
INCINERATION		8.2	4.8	6.4	2		SOLUBILITY IN WATER	-		
SEA DISPOSAL		6.4	2.8	4.3	3		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS: WEAR RUBBER GLOVES, FACE SHIELD, LABORATORY COAT. HAVE ALL-PURPOSE CANISTER MASK AVAILABLE. ELIMINATE ALL SOURCES OF IGNITION AND FLAMMABLES.			
MICROBIAL TREATMENT		5.1	2.8	4.0	4					
NOTES:										
6	WASTE DISPOSAL METHOD FOR SMALL SPILL									
ABSORB ON PAPER. EVAPORATE ON AN IRON PAN IN A HOOD. BURN THE PAPER. OR ATOMIZE INTO AN INCINERATOR. COMBUSTION MAY BE IMPROVED BY MIXING WITH A MORE FLAMMABLE SOLVENT.										
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES									
RECLAIM BY DISTILLATION ESPECIALLY IF USED AS A DRY CLEANING SOLVENT. INCINERATE RESIDUE.										
7*	NOTES AND COMMENTS									
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET LIQUID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE NO.	OTHER	
							15	C-15		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	CHEMICAL						HEALTH	TOXIC HAZARD RATING CODE		
NAME	PETROLEUM DISTILLATE						FIRE	TOXIC HAZARD RATING CODE		
COMMON NAME (FORM)	MINERAL SPIRITS (LIQUID)						REACTIVITY	TOXIC HAZARD RATING CODE		
USES	SOLVENT						FLASH POINT	100	°F	
FED/MIL SPECIFICATION NUMBER	TT-T-291						IGNITION TEMPERATURE	450 - 500	°F	
COMPOSITION	CONSTITUENTS			% BY WEIGHT			BOILING POINT	200 - 300	°F	
	AROMATIC COMPOUNDS			8.0			MELTING TEMPERATURE	-50	°F	
			ETHYLBENZENE			20.0				
3	DISPOSAL RATING SUMMARY						SPECIFIC GRAVITY	0.885 - 0.970		
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	EXPLOSIVE LIMITS	1 - 6%		
RECOVERY/REUSE	NOTES	7.8	7.2	7.5	1		HEAT OF COMBUSTION	-	BTU LB.	
SANITARY LANDFILL		4.0	4.0	4.0	5		VAPOR DENSITY (AIR = 1)	N/A		
INCINERATION		7.1	4.6	5.9	2		SOLUBILITY IN WATER	INSOLUBLE		
SEA DISPOSAL		4.9	4.4	4.5	3		4* SPECIAL PRECAUTIONS; APPLICABLE REGULATIONS WEAR RUBBER GLOVES, FACE SHIELD, LABORATORY COAT. HAVE ALL-PURPOSE CANISTER MASK AVAILABLE. ELIMINATE ALL SOURCES OF IGNITION AND FLAMMABLES.			
MICROBIAL TREATMENT		4.6	3.6	4.1	4					
NOTES:										
5	WASTE DISPOSAL METHOD FOR SMALL SPILL									
ABSORB ON PAPER. EVAPORATE ON AN IRON PAN IN A HOOD. BURN THE PAPER. OR ATOMIZE INTO AN INCINERATOR. COMBUSTION MAY BE IMPROVED BY MIXING WITH A MORE FLAMMABLE SOLVENT.										
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES									
RECOVER BY DISTILLATION. INCINERATE RESIDUE. RECOVERED THINNER MAY NOT BE SUITABLE FOR HIGH QUALITY PAINTS WHERE COLOR IS CRITICAL.										
7*	NOTES AND COMMENTS									
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET LIQUID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE PG.	OTHER	
						16	C-16		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY	CHEMICAL					HEALTH	TOXIC HAZARD RATING CODE 2		
NAME	TETRACHLOROETHYLENE					FIRE	TOXIC HAZARD RATING CODE 1		
COMMON NAME (FORM)	PERCHLOROETHYLENE (LIQUID)					REACTIVITY	TOXIC HAZARD RATING CODE		
USES	DRY CLEANING SOLVENT DEGREASING SOLVENT					FLASH POINT	NONE °F		
FED/MIL SPECIFICATION NUMBER	MIL-O-T-236					IGNITION TEMPERATURE	- °F		
COMPOSITION	CONSTITUENTS				% BY WEIGHT	BOILING POINT	250 °F		
	CARBON				14.48	MELTING TEMPERATURE	-11 °F		
				CHLORINE	85.52				
3	DISPOSAL RATING SUMMARY					SPECIFIC GRAVITY	1.62		
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	FCO NOMIC RANKING	EXPLOSIVE LIMITS	-	
RECOVERY/REUSE	NOTES	8.7	8.0	8.4	1		HEAT OF COMBUSTION	5400	BTU LB.
SANITARY LANDFILL		4.5	2.6	3.8	4		VAPOR DENSITY (AIR = 1)	5.83	
INCINERATION	(1)	5.4	5.8	5.6	2		SOLUBILITY IN WATER	INSOLUBLE	
SEA DISPOSAL		5.7	3.0	4.4	3		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
MICROBIAL TREATMENT		2.7	2.8	2.8	5				
NOTES: (1) INCINERATOR MUST HAVE SUPPLEMENTAL FUEL AND WATER SCRUBBER.						PROVIDE VENTILATION, WEAR RUBBER GLOVES AND LABORATORY COAT, AND PROVIDE PERSONAL RESPIRATOR FOR EMERGENCY. DO NOT REUSE CONTAMINATED DRUMS. FOLLOW PROCEDURES FOR SPILLS TO CLEAN CONTAINERS AND RECYCLE OR DISPOSE OF CONTAINERS IN ACCORDANCE WITH SOLID WASTE PROCEDURES.			
5	WASTE DISPOSAL METHOD FOR SMALL SPILL								
ABSORB ON PAPER TOWELS AND EVAPORATE IN A FUME HOOD. BURN THE PAPER AND WASH THE SITE WITH A SOAP SOLUTION.									
6	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES								
RECOVER BY DISTILLATION. INCINERATE SLUDGE WITH SUPPLEMENTAL FUEL IN FUEL-RICH MIXTURE (2)									
7*	NOTES AND COMMENTS								
(2) FUEL-RICH MIXTURE PERMITS ALL CL TO FORM HCL WHICH CAN BE REMOVED IN A WATER SCRUBBER. A LEAN FUEL MIXTURE PRODUCES CL ₂ WHEN TETRACHLOROETHYLENE IS INCINERATED.									
*TO BE COMPLETED BY THE COGNIZANT OFFICER									

SUMMARY FACT SHEET LIQUID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE NO.	OTHER	
						17	C-17		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY	CHEMICAL					HEALTH	TOXIC HAZARD RATING CODE 2		
NAME	TRICHLOROETHYLENE					FIRE	TOXIC HAZARD RATING CODE 1		
COMMON NAME (FORM)	PERCHLOROETHYLENE (LIQUID)					REACTIVITY	TOXIC HAZARD RATING CODE		
USES	DRY CLEANING SOLVENT DEGREASER					FLASH POINT	NONE °F		
FED/MIL SPECIFICATION NUMBER	MIL-O-T-834					IGNITION TEMPERATURE	770 °F		
COMPOSITION	CONSTITUENTS		% BY WEIGHT			BOILING POINT	190 °F		
	CARBON					MELTING TEMPERATURE	-99C °F		
	HYDROGEN								
CHLORINE									
3	DISPOSAL RATING SUMMARY					SPECIFIC GRAVITY	1.456		
METHOD OF DISPOSAL	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO. NOMIC RANKING *	EXPLOSIVE LIMITS	NONE		
RECOVERY/REUSE	8.7	8.0	8.4	1		HEAT OF COMBUSTION	280 $\frac{KC}{G}$ $\frac{BTU}{LB.}$		
SANITARY LANDFILL	4.5	2.8	3.6	4		VAPOR DENSITY (AIR = 1)	4.53		
INCINERATION (1)	5.4	5.8	5.6	2		SOLUBILITY IN WATER	INSOLUBLE		
SEA DISPOSAL	5.7	3.0	4.4	3		4* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
MICROBIAL TREATMENT	2.7	2.6	2.8	5					
NOTES: (1) INCINERATOR MUST HAVE SUPPLEMENTAL FUEL AND WATER SCRUBBER.						PROVIDE VENTILATION, WEAR RUBBER GLOVES AND LABORATORY COAT, AND PROVIDE PERSONAL RESPIRATOR FOR EMERGENCY. DO NOT REUSE CONTAMINATED DRUMS. FOLLOW PROCEDURES FOR SPILLS TO CLEAN CONTAINERS AND RECYCLE OR DISPOSE OF CONTAINERS IN ACCORDANCE WITH SOLID WASTE PROCEDURES.			
5	WASTE DISPOSAL METHOD FOR SMALL SPILL								
ABSORB ON PAPER TOWELS AND EVAPORATE IN A FUME HOOD. BURN THE PAPER AND WASH THE SITE WITH A SOAP SOLUTION.									
E	RECOVERY/DISPOSAL METHOD OF HIGHLY HAZARDOUS LIQUIDS IN LARGE QUANTITIES								
RECOVER BY DISTILLATION. INCINERATE SLUDGE WITH SUPPLEMENTAL FUEL AND FUEL-RICH MIXTURE. (2)									
7*	NOTES AND COMMENTS								
(2) A FUEL-RICH MIXTURE PERMITS ALL CL TO FORM HCL WHICH CAN BE REMOVED IN A WATER SCRUBBER. A LEAN FUEL MIXTURE PRODUCES CL ₂ WHEN TRICHLOROETHYLENE IS INCINERATED.									
*TO BE COMPLETED BY THE COGNIZANT OFFICER									

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							18	C-18			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	GLASS						MELTING TEMPERATURE	1500	°F		
NAME	GLASS						COMBUSTION TEMPERATURE	-	°F		
COMMON NAME (FORM)	FIBERGLASS(FIBER)						HEAT OF COMBUSTION	-	BTU/LB		
USES	CUSHIONING						MATERIAL DENSITY	156	LB/CU.FT.		
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-C-17435						BULK DENSITY	156	LB/CU.FT.		
COMPOSITION	SODA-LIME-SILICA						3	CHARACTERISTICS			
							FRAGMENTABILITY	EXCELLENT			
4							DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING				
REUSE	A		3.0	10.0	6.5	3		SEPARABILITY	POOR		
RECYCLE	A/B		2.4	9.0	5.7	5		COMPACTIBILITY	EXCELLENT		
PYROLYSIS	A		3.0	8.2	5.6	6		COMBUSTIBILITY	UNSATISFACTORY		
COMPOSTING	A		3.6	8.2	6.0	4		TOXICITY	EXCELLENT		
BALING	B		5.6	8.2	7.0	2		BIOLOGICAL DEGRADABILITY	POOR		
INCINERATION	A		3.3	6.8	5.1	7		CHEMICAL DEGRADABILITY	POOR		
SANITARY LANDFILL	B		7.6	7.8	7.7	1		REUSABILITY	POOR		
SEA DISPOSAL	B		5.6	4.6	5.1	7		5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING									
6°	HANDLING DATA					6°	OFF-BASE DISPOSAL/ PROCESSING DATA			10°	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD				
							SECONDARY MATERIAL HANDLER				
7°	ON-BASE DISPOSAL/ RECLAMATION DATA					9°	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD				
							SECONDARY MATERIAL HANDLER				
										*TO BE COMPLETED BY THE COGIZANT OF FILE #	

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE NO.	OTHER	
							19	C-19		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	GLASS						MELTING TEMPERATURE	1500	°F	
NAME	GLASS/PLASTIC						COMBUSTION TEMPERATURE	-	°F	
COMMON NAME (FORM)	FIBERGLASS (SHEET)						HEAT OF COMBUSTION	-	BTU/LB	
USES	CONTAINERS, TRAYS						MATERIAL DENSITY	156	LB/CU.FT.	
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-T-43259						BULK DENSITY	156	LB/CU.FT.	
COMPOSITION	SODA, LIME, SILICA, WITH PLASTIC LAMINATION						3 CHARACTERISTICS			
							FRAGMENTABILITY	GOOD		
							SEPARABILITY	POOR		
							COMPACTIBILITY	EXCELLENT		
							COMBUSTIBILITY	UNSATISFACTORY		
							TOXICITY	EXCELLENT		
							BIOLOGICAL DEGRADABILITY	POOR		
							CHEMICAL DEGRADABILITY	POOR		
							REUSABILITY	GOOD		
							8* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
4 DISPOSAL RATING SUMMARY										
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING			
REUSE	A		5.0	10.0	7.5	1				
RECYCLE	A B		2.4	9.0	5.7	4				
PYROLYSIS	A C		2.4	8.2	5.3	5				
COMPOSTING	A C		3.2	8.2	5.7	4				
BALING	B		5.8	8.2	7.0	3				
INCINERATION	A C		2.7	6.8	4.8	7				
LANDFILL	B		7.0	7.8	7.4	2				
SEA DISPOSAL	B		5.6	4.6	5.1	6				
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING								
6* HANDLING DATA			8* OFF-BASE DISPOSAL/ PROCESSING DATA				10* NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD							
			SECONDARY MATERIAL HANDLER							
7* ON-BASE DISPOSAL/ RECLAMATION DATA			9* OFF-BASE DISPOSAL/ RECYCLING DATA							
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD							
			SECONDARY MATERIAL HANDLER							
							* TO BE COMPLETED BY THE COGNIZANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
20							C-20				
1 MATERIAL DESCRIPTION							2 CHEMICAL PROPERTIES				
CATEGORY	GLASS						MELTING TEMPERATURE	2282- ^{O_F} 2732			
NAME	GLASS						COMBUSTION TEMPERATURE	- ^{D_F}			
COMMON NAME (FORM)	GLASS (SOLID STOCK)						HEAT OF COMBUSTION	- ^{BTU LB}			
USES	CONTAINERS						MATERIAL DENSITY	156 ^{LB CU.FT.}			
FEDERAL/ MILITARY SPECIFICATION NUMBER	-						BULK DENSITY	45 ^{LB CU.FT.}			
COMPOSITION							3 CHARACTERISTICS				
SODA-LIME-SILICA							FRAGMENTABILITY	GOOD			
4 DISPOSAL RATING SUMMARY							SEPARABILITY	GOOD			
METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING *	COMPACTIBILITY	EXCELLENT			
REUSE	A	8.5	10.0	9.3	1		COMBUSTIBILITY	UNSATISFACTORY			
RECYCLE	A B	6.6	9.0	7.9	2		TOXICITY	EXCELLENT			
PYROLYSIS	A C	3.6	6.2	5.9	6		BIOLOGICAL DEGRADABILITY	UNSATISFACTORY			
COMPOSTING	A C	4.4	8.2	6.3	5		CHEMICAL DEGRADABILITY	UNSATISFACTORY			
BALING	B	6.4	8.2	7.3	4		REUSABILITY	EXCELLENT			
INCINERATION	A C	3.4	6.6	5.1	7		5 SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
SANITARY LANDFILL	B	7.4	7.6	7.6	3						
SEA DISPOSAL	B	5.6	4.6	5.1	7						
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING									
6 HANDLING DATA				8 OFF-BASE DISPOSAL/ PROCESSING DATA				10 NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD							
				SECONDARY MATERIAL HANDLER							
7 ON-BASE DISPOSAL/ RECLAMATION DATA				9 OFF-BASE DISPOSAL/ RECYCLING DATA							
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD							
				SECONDARY MATERIAL HANDLER							
								*TO BE COMPLETED BY THE COGNIZANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE				REFERENCE CODE		
				MATERIAL NO.	REFERENCE PG.	OTHER
				21	C-21	
1	MATERIAL DESCRIPTION			2	CHEMICAL PROPERTIES	
CATEGORY	CLASS			MELTING TEMPERATURE	2200-	°F
NAME	MINERAL			COMBUSTION TEMPERATURE	-	°F
COMMON NAME (FORM)	VERMICULITE (FIBER)			HEAT OF COMBUSTION	-	BTU/LB
USES	CUSHIONING			MATERIAL DENSITY	4-9	LB/CU.FT.
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-V-21826 MIL-V-23778			BULK DENSITY	4-9	LB/CU.FT.
COMPOSITION	EXPANDED FORM OF MICA			3 CHARACTERISTICS		
				FRAGMENTABILITY	EXCELLENT	
DISPOSAL RATING SUMMARY				SEPARABILITY	POOR	
METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING
REUSE	A	4.0	10.0	7.0	2	
RECYCLE	A B	4.8	9.0	6.9	3	
PYROLYSIS	A	2.4	8.2	5.3	6	
COMPOSTING	A	2.6	8.2	5.4	5	
BALING	B	8.8	8.2	7.5	1	
INCINERATION	A	3.7	8.8	5.3	3	
SANITARY LANDFILL	B	5.4	7.8	8.8	4	
SEA DISPOSAL	C	3.4	4.8	4.0	7	
PRE-PROCESSES:		A - SEPARATION B - COMPACTION C - SHREDDING				
				COMBUSTIBILITY	UNSATISFACTORY	
				TOXICITY	EXCELLENT	
				BIOLOGICAL DEGRADABILITY	UNSATISFACTORY	
				CHEMICAL DEGRADABILITY	UNSATISFACTORY	
				REUSABILITY	FAIR	
				5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
6*	HANDLING DATA			8*	OFF-BASE DISPOSAL/ PROCESSING DATA	
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD		
				SECONDARY MATERIAL HANDLER		
7*	ON-BASE DISPOSAL/ RECLAMATION DATA			8*	OFF-BASE DISPOSAL/ RECYCLING DATA	
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD		
				SECONDARY MATERIAL HANDLER		
* TO BE COMPLETED BY THE COGNIZANT OF FICHE						

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE				
						MATERIAL NO.	REFERENCE PG.	OTHER		
						22	C-22			
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES			
CATEGORY		METAL				MELTING TEMPERATURE		700	°F	
NAME		ALUMINUM				COMBUSTION TEMPERATURE		-	°F	
COMMON NAME (FORM)		ALUMINUM (FOIL)				HEAT OF COMBUSTION		-	BTU/LB	
USES		TRAYS, WRAPPING				MATERIAL DENSITY		169	LB/CU.FT.	
FEDERAL/MILITARY SPECIFICATION NUMBER		MIL-A-146				BULK DENSITY		169	LB/CU.FT.	
COMPOSITION		NOT LESS THEN 99% UNCOATED ALUMINUM				3	CHARACTERISTICS			
		FRAGMENTABILITY		GOOD						
		SEPARABILITY		POOR						
		COMPACTIBILITY		EXCELLENT						
		COMBUSTIBILITY		UNSATISFACTORY						
		TOXICITY		EXCELLENT						
		BIOLOGICAL DEGRADABILITY		UNSATISFACTORY						
		CHEMICAL DEGRADABILITY		UNSATISFACTORY						
		REUSABILITY		POOR						
		5*		SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS						
		PRE-PROCESSES: A - SEPARATION B - COMPACTION C - SHREDDING								
8*	HANDLING DATA				8*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*	NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD					
					SECONDARY MATERIAL HANDLER					
7*	ON-BASE DISPOSAL/ RECLAMATION DATA				9*	OFF-BASE DISPOSAL/ RECYCLING DATA		*TO BE COMPLETED BY THE COGNIZANT OFFICE		
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD					
					SECONDARY MATERIAL HANDLER					

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PG.	OTHER	
							23	C-23		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	METAL						MELTING TEMPERATURE	1220	°F	
NAME	ALUMINUM						COMBUSTION TEMPERATURE	-	°F	
COMMON NAME (FORM)	ALUMINUM (SHEET)						HEAT OF COMBUSTION	-	BTU/LB	
USES	CANS, TUBES						MATERIAL DENSITY	169	LB/CU.FT.	
FEDERAL/MILITARY SPECIFICATION NUMBER	QQ-A-250						BULK DENSITY	10	LB/CU.FT.	
COMPOSITION	ALUMINUM						3	CHARACTERISTICS		
							FRAGMENTABILITY	GOOD		
							SEPARABILITY	POOR		
							COMPACTIBILITY	EXCELLENT		
							COMBUSTIBILITY	UNSATISFACTORY		
							TOXICITY	EXCELLENT		
							BIOLOGICAL DEGRADABILITY	UNSATISFACTORY		
							CHEMICAL DEGRADABILITY	UNSATISFACTORY		
							REUSABILITY	POOR		
							5*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
4							DISPOSAL RATING SUMMARY			
METHOD OF DISPOSAL		PRE-PROCESSING	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING*			
REUSE	A		4.0	10.0	7.0	4				
RECYCLE	A B		7.0	9.0	8.0	2				
PYROLYSIS	A C		3.2	7.4	5.3	5				
COMPOSTING	A C		2.8	7.4	5.1	8				
BALING	B		9.4	7.4	8.4	1				
INCINERATION	A C		3.6	8.0	4.8	7				
MILITARY LANDFILL	B		7.4	6.8	7.1	3				
SEA DISPOSAL	B		5.8	3.8	4.7	8				
PRE-PROCESSES:							A - SEPARATION B - COMPACTION C - SHREDDING			
6*	HANDLING DATA					8*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD					
					SECONDARY MATERIAL HANDLER					
7*	ON-BASE DISPOSAL/ RECLAMATION DATA					9*	OFF-BASE DISPOSAL/ RECYCLING DATA		* TO BE COMPLETED BY THE COGNIZANT OF FIELD	
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD					
					SECONDARY MATERIAL HANDLER					

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE		
							MATERIAL NO.	REFERENCE PG.	OTHER
							24	C-24	
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES	
CATEGORY	METAL						MELTING TEMPERATURE	821	°F
NAME	LEAD						COMBUSTION TEMPERATURE	-	°F
COMMON NAME (FORM)	LEAD (SHEET)						HEAT OF COMBUSTION	-	BTU/LB
USES	TUBES						MATERIAL DENSITY	710	LB/CU.FT.
FEDERAL/MILITARY SPECIFICATION NUMBER	QQ-L-201						BULK DENSITY	100	LB/CU.FT.
COMPOSITION	VIRGIN AND/OR RECLAIMED LEAD						3 CHARACTERISTICS		
							FRAGMENTABILITY	POOR	
							SEPARABILITY	FAIR	
							COMPACTIBILITY	UNSATISFACTORY	
							COMBUSTIBILITY	UNSATISFACTORY	
							TOXICITY	EXCELLENT	
							BIOLOGICAL DEGRADABILITY	UNSATISFACTORY	
							CHEMICAL DEGRADABILITY	UNSATISFACTORY	
							REUSABILITY	GOOD	
							5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
4 DISPOSAL RATING SUMMARY									
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING		
REUSE	A		6.0	10.0	8.0	2			
RECYCLE	A B		7.4	9.0	8.2	1			
PYROLYSIS	A		2.0	7.4	4.7	5			
COMPOSTING	A		2.0	7.4	4.7	5			
SPLING	B		3.2	7.4	5.3	3			
INCINERATION	A		2.5	6.0	4.3	6			
SANITARY LANDFILL	B		3.4	6.8	5.1	4			
SEA DISPOSAL	B		2.9	3.8	3.4	7			
PRE-PROCESSES:							A - SEPARATION S - COMPACTION C - SHREDDING		
6° HANDLING DATA			8° OFF-BASE DISPOSAL/ PROCESSING DATA				10° NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD						
			SECONDARY MATERIAL HANDLER						
7° ON-BASE DISPOSAL/ RECLAMATION DATA			9° OFF-BASE DISPOSAL/ RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD						
			SECONDARY MATERIAL HANDLER						
*TO BE COMPLETED BY THE COGNIZANT OFFICER									

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							25	C-25			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	METAL						MELTING TEMPERATURE	2800	^{D_F}		
NAME	STEEL, IRON						COMBUSTION TEMPERATURE	-	^{D_F}		
COMMON NAME (FORM)	METAL CYLINDERS (SOLID STOCK)						HEAT OF COMBUSTION	-	^{BTU} _{LB}		
USES	CYLINDERS, CAPS						MATERIAL DENSITY	489	^{LB} _{CU.FT.}		
FEDERAL/MILITARY SPECIFICATION NUMBER	-						BULK DENSITY	15	^{LB} _{CU.FT.}		
COMPOSITION	IRON, CARBON, MANGANESE, PHOSPHORUS, SULPHUR, SILICON						3 CHARACTERISTICS				
							FRAGMENTABILITY	UNSATISFACTORY			
							SEPARABILITY	EXCELLENT			
							COMPACTIBILITY	POOR			
							COMBUSTIBILITY	UNSATISFACTORY			
							TOXICITY	EXCELLENT			
							BIOLOGICAL DEGRADABILITY	POOR			
							CHEMICAL DEGRADABILITY	POOR			
							REUSABILITY	GOOD			
							8* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
4 DISPOSAL RATING SUMMARY											
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING					
REUSE		A	8.0	10.0	9.0	1					
RECYCLE		A B	4.8	9.0	6.9	2					
PYROLYSIS		A	2.8	7.4	5.1	5					
COMPOSTING		A	2.4	7.4	4.9	8					
BALING		B	5.8	7.4	8.6	3					
INCINERATION		A	1.5	6.0	3.8	7					
SANITARY LANDFILL			3.6	8.8	5.2	4					
SEA DISPOSAL			3.7	3.8	3.8	7					
PRE-PROCESSES:		A - SEPARATION B - COMPACTION C - SHREDDING									
6* HANDLING DATA				8* OFF-BASE DISPOSAL/ PROCESSING DATA				10* NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD							
				SECONDARY MATERIAL HANDLER							
7* ON-BASE DISPOSAL/ RECLAMATION DATA				9* OFF-BASE DISPOSAL/ RECYCLING DATA							
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD							
				SECONDARY MATERIAL HANDLER							
								*TO BE COMPLETED BY THE COGNIZANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCES PG.	OTHER	
							26	C-26		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	METAL						MELTING TEMPERATURE	2800	^{OF}	
NAME	STEEL, IRON						COMBUSTION TEMPERATURE	-	^{OF}	
COMMON NAME (FORM)	METAL DRUMS (SHEET)						HEAT OF COMBUSTION	-	^{BTU} _{LB}	
USED	DRUMS						MATERIAL DENSITY	489	^{LB} _{CU.FT.}	
FEDERAL/ MILITARY SPECIFICATION NUMBER	PPP-D-705 PPP-D-711						BULK DENSITY	6	^{LB} _{CU.FT.}	
COMPOSITION	-						3 CHARACTERISTICS			
							FRAGMENTABILITY	POOR		
4 DISPOSAL RATING SUMMARY							SEPARABILITY	EXCELLENT		
METHOD OF DISPOSAL	PRE- PRO- CESS	OPERA- TIONAL RATING	ENVIRON- MENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO- NOMIC RANKING e	COMPACTIBILITY	FAIR		
REUSE	A	10.0	10.0	10.0	1		CONDUCTIBILITY	UNSATISFACTORY		
RECYCLE	A B	7.6	9.0	8.3	2		TOXICITY	EXCELLENT		
PYROLYSIS	A C	3.8	7.4	5.5	5		BIOLOGICAL DEGRADABILITY	UNSATISFACTORY		
COMPOSTING	A C	3.2	7.4	5.3	6		CHEMICAL DEGRADABILITY	UNSATISFACTORY		
BALING	B	7.6	7.4	7.5	3		REUSABILITY	EXCELLENT		
INCINERATION	A	3.2	6.0	4.8	7		5 SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
SANITARY LANDFILL	B	5.3	6.8	6.1	4					
SEA DISPOSAL	B	4.4	3.8	4.1	6					
PRE-PROCESSES							A - SEPARATION B - COMPACTION C - SHREDDING			
6	HANDLING DATA					6	OFF-BASE DISPOSAL/ PROCESSING DATA		10	NOTES AND COMMENTS
METHOD OF STORAGE/CONTAINMENT						DISPOSAL/PROCESSING METHOD				
						SECONDARY MATERIAL HANDLER				
7	ON-BASE DISPOSAL/ RECLAMATION DATA					8	OFF-BASE DISPOSAL/ RECYCLING DATA			
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD				
						SECONDARY MATERIAL HANDLER				
									TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE					
							MATERIAL NO.	REFERENCE PG.	OTHER			
							27	C-27				
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES				
CATEGORY	METAL						MELTING TEMPERATURE	2800	°F			
NAME	STEEL, IRON						COMBUSTION TEMPERATURE	-	°F			
COMMON NAME (FORM)	METAL STRAPPING (STRAPS)						HEAT OF COMBUSTION	-	BTU/LB			
USE	STRAPPING						MATERIAL DENSITY	489	LB/ CU.FT.			
FEDERAL/ MILITARY SPECIFICATION NUMBER	QQ-S-7P1						BULK DENSITY	489	LB/ CU.FT.			
COMPOSITION	IRON, CARBON, MANGANESE, PHOSPHORUS, SULPHUR, SILICON						3 CHARACTERISTICS					
							FRAGMENTABILITY	UNSATISFACTORY				
							SEPARABILITY	EXCELLENT				
							COMPACTIBILITY	POOR				
							COMBUSTIBILITY	UNSATISFACTORY				
							TOXICITY	EXCELLENT				
							BIOLOGICAL DEGRADABILITY	UNSATISFACTORY				
							CHEMICAL DEGRADABILITY	UNSATISFACTORY				
							REUSABILITY	UNSATISFACTORY				
							5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS					
4 DISPOSAL RATING SUMMARY												
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING						
PRE-PROCESS												
REUSE	A	1.0	10.0	5.5	3							
RECYCLE	A B	9.0	9.0	9.0	1							
PYROLYSIS	A	2.8	7.4	5.1	4							
COMPOSTING		2.4	7.4	4.9	5							
BALING	B	2.2	7.4	4.8	8							
INCINERATION	A	2.5	6.0	4.3	7							
SANITARY LANDFILL		4.8	6.8	5.7	2							
SEA DISPOSAL		4.1	3.8	4.0	8							
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING										
6°	HANDLING DATA						8°	OFF-BASE DISPOSAL/ PROCESSING DATA			10°	NOTES AND COMMENTS
METHOD OF STORAGE/ COLLECTION								DISPOSAL/PROCESSING METHOD				
								SECONDARY MATERIAL HANDLER				
7° ON-BASE DISPOSAL/ RECLAMATION DATA								9° OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD								DISPOSAL/RECYCLING METHOD				
								SECONDARY MATERIAL HANDLER				
											*TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE							
							MATERIAL NO.	REFERENCE PG.	OTHER					
							28	C-28						
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES						
CATEGORY	METAL						MELTING TEMPERATURE	449 (TIN) °F 2800 (STEEL)						
NAME	TIN-PLATED STEEL						COMBUSTION TEMPERATURE	- °F						
COMMON NAME (FORM)	TIN CANS (SHEET)						HEAT OF COMBUSTION	- BTU LB						
USES	CANS						MATERIAL DENSITY	488 LB CU.FT.						
FEDERAL/ MILITARY SPECIFICATION NUMBER	PPP-C-96 PPP-C-29						BULK DENSITY	25 LB CU.FT.						
COMPOSITION	STEEL WITH AN EXTREMELY THIN TIN COATING						3 CHARACTERISTICS							
							FRAGMENTABILITY	FAIR						
							SEPARABILITY	EXCELLENT						
							COMPACTIBILITY	EXCELLENT						
							COMBUSTIBILITY	UNSATISFACTORY						
							TOXICITY	EXCELLENT						
							BIOLOGICAL DEGRADABILITY	UNSATISFACTORY						
							CHEMICAL DEGRADABILITY	UNSATISFACTORY						
							REUSABILITY	GOOD						
							5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS							
4 DISPOSAL RATING SUMMARY														
METHOD OF		OPERA-	ENVIRON-	TOTAL	TOTAL	ECO								
DISPOSAL	PRE- PRO- CESSES	TIONAL RATING	MENTAL RATING	DISPOSAL RATING	DISPOSAL RANKING	NOMIC RANKING								
REUSE	A	6.5	10.0	9.3	1									
RECYCLE	A B	8.8	9.0	6.9	2									
PYROLYSIS	A C	4.0	7.4	5.7	5									
COMPOSTING	A C	3.6	7.4	5.6	6									
BALING	B	9.4	7.4	6.4	3									
INCINERATION	A	3.8	8.0	4.9	7									
SAFETY LANDFILL	B	7.2	6.6	7.0	4									
SEA DISPOSAL	B	5.6	3.6	4.7	8									
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING												
6°	HANDLING DATA					8°	OFF-BASE DISPOSAL/ PROCESSING DATA			10°	NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD							
							SECONDARY MATERIAL HANDLER							
7°	ON-BASE DISPOSAL/ RECLAMATION DATA					9°	OFF-BASE DISPOSAL/ RECYCLING DATA							
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD							
							SECONDARY MATERIAL HANDLER							
										*TO BE COMPLETED BY THE COGNIZANT OFFICER				

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE								
							MATERIAL NO.	REFERENCE PG.	OTHER						
							29	C-29							
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES							
CATEGORY	METAL						MELTING TEMPERATURE	2491(TIN) 2800(STEEL) 1200(AL)							
NAME	TIN PLATED STEEL/ ALUMINUM						COMBUSTION TEMPERATURE	-							
COMMON NAME (FORM)	BIMETALLICS (SHEET)						HEAT OF COMBUSTION	-							
USES	CANS						MATERIAL DENSITY	488 $\frac{LB}{CU.FT.}$							
FEDERAL/ MILITARY SPECIFICATION NUMBER	-						BULK DENSITY	25 $\frac{LB}{CU.FT.}$							
COMPOSITION	STEEL/ALUMINUM WITH EXTREMELY THIN TIN COATING						3	CHARACTERISTICS							
							FRAGMENTABILITY	FAIR							
							SEPARABILITY	EXCELLENT							
							COMPACTIBILITY	EXCELLENT							
							COMBUSTIBILITY	UNSATISFACTORY							
							TOXICITY	EXCELLENT							
							BIOLOGICAL DEGRADABILITY	UNSATISFACTORY							
							CHEMICAL DEGRADABILITY	UNSATISFACTORY							
							REUSABILITY	GOOD							
							5*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS							
4							DISPOSAL RATING SUMMARY								
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING								
REUSE	A		6.5	10.0	9.3	1									
RECYCLE	A B		6.6	9.0	6.9	2									
PYROLYSIS	A C		4.0	7.4	5.7	5									
COMPOSTING	A C		3.6	7.4	5.5	6									
BALING	B		9.4	7.4	6.4	3									
INCINERATION	A		3.8	6.0	4.9	7									
SANITARY LANDFILL	B		7.2	6.6	7.0	4									
SEA DISPOSAL	P		5.6	3.6	4.7	8									
PRE-PROCESSES:							A - SEPARATION B - COMPACTION C - SHREDDING								
6*			HANDLING DATA				8*			OFF-BASE DISPOSAL/ PROCESSING DATA		10*		NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD								
							SECONDARY MATERIAL HANDLER								
7*			ON-BASE DISPOSAL/ RECLAMATION DATA				9*			OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD								
							SECONDARY MATERIAL HANDLER								
													* TO BE COMPLETED BY THE COGNIZANT OFFICER		

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE					
							MATERIAL NO.	REFERENCE PG.	OTHER			
							30	C-30				
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES				
CATEGORY	METAL						MELTING TEMPERATURE	449(TIN) ^{0F} 2800(STEEL)				
NAME	VARIOUS METALS						COMBUSTION TEMPERATURE	- ^{0F}				
COMMON NAME (FORM)	AEROSOLS (SHEET)						HEAT OF COMBUSTION	- ^{BTU} LB				
USES	PRESSURIZED CANS						MATERIAL DENSITY	488	LB CU.FT.			
FEDERAL/ MILITARY SPECIFICATION NUMBER	PPP-C-96						BULK DENSITY	3	LB CU.FT.			
COMPOSITION	ELECTROTIN PLATED STEEL						3	CHARACTERISTICS				
							FRAGMENTABILITY	UNSATISFACTORY				
							SEPARABILITY	EXCELLENT				
							COMPACTIBILITY	POOR				
							COMBUSTIBILITY	UNSATISFACTORY				
							TOXICITY	EXCELLENT				
							BIOLOGICAL DEGRADABILITY	UNSATISFACTORY				
							CHEMICAL DEGRADABILITY	UNSATISFACTORY				
							REUSABILITY	UNSATISFACTORY				
							5*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATION				
4							DISPOSAL RATING SUMMARY					
METHOD OF DISPOSAL		PRE- PRO- CESS	OPER- TIONAL RATING	ENVIRON- MENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO- NOMIC RANKING					
REUSE		A	5.0	10.0	7.5	1						
RECYCLE		A B	4.8	9.0	8.9	2						
PYROLYSIS		A	2.8	7.4	5.1	5						
COMPOSTING		A	2.4	7.4	4.9	8						
BALING		B	5.8	7.4	8.8	3						
INCINERATION		A	1.5	8.0	3.8	7						
SANITARY LANDFILL		B	3.8	8.8	5.2	4						
SEA DISPOSAL		B	3.2	3.8	3.5	8						
PRE-PROCESSES			A - SEPARATION B - COMPACTION C - SHREDDING									
6*	HANDLING DATA						8*	OFF-BASE DISPOSAL/ PROCESSING DATA			10*	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD					
							SECONDARY MATERIAL HANDLER					
7*	ON-BASE DISPOSAL/ RECLAMATION DATA						9*	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD					
							SECONDARY MATERIAL HANDLER					
* TO BE COMPLETED BY THE COGNIZANT OF FICFH												

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE													
							MATERIAL NO.	REFERENCE NO.	OTHER											
							31	C-31												
1	MATERIAL DESCRIPTION						2			CHEMICAL PROPERTIES										
CATEGORY		PAPER					MELTING TEMPERATURE			-										
NAME		FIBERBOARD					COMBUSTION TEMP. °TURE			600										
COMMON NAME (FORM)		COATED CORRUGATED CONTAINERBOARD (SHEET)					HEAT OF COMBUSTION			7429 BTU/LB										
USE		CONTAINERS					MATERIAL DENSITY			47 LB/CUFT.										
FEDERAL/MILITARY SPECIFICATION NUMBER		PPP-B-1608					BULK DENSITY			2 LB/CUFT.										
COMPOSITION		KRAFT PAPER COATED AND/OR RESIN					3						CHARACTERISTICS							
		FRAGMENTABILITY		GOOD																
		SEPARABILITY		GOOD																
		COMPACTIBILITY		EXCELLENT																
		COMBUSTIBILITY		EXCELLENT																
		TOXICITY		EXCELLENT																
		BIOLOGICAL DEGRADABILITY		GOOD																
		CHEMICAL DEGRADABILITY		EXCELLENT																
		REUSABILITY		EXCELLENT																
		8*		SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS																
4	DISPOSAL RATING SUMMARY																			
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING													
REUSE		A	8.5	10.0	9.3	1														
RECYCLE		A/B	5.2	9.0	7.1	4														
PYROLYSIS		A/C	7.8	7.8	7.6	3														
COMPOSTING		A/C	6.2	7.8	7.0	5														
BALING		B	9.4	7.8	8.6	2														
INCINERATION		A/C	9.1	6.4	7.8	3														
SANITARY LANDFILL		B	7.2	7.0	7.1	4														
SEA DISPOSAL		B	5.6	4.2	4.9	6														
PRE-PROCESSES:		A - SEPARATION B - COMPACTION C - SHREDDING																		
6*	HANDLING DATA				8*				OFF-BASE DISPOSAL/ PROCESSING DATA				10*				NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD														
						SECONDARY MATERIAL HANDLER														
7*	ON-BASE DISPOSAL/ RECLAMATION DATA				9*				OFF-BASE DISPOSAL/ RECYCLING DATA											
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD														
						SECONDARY MATERIAL HANDLER														
																*TO BE COMPLETED BY THE COGNIZANT OFFICER				

SUMMARY FACT SHEET SOLID WASTE						REPORT CODE																																																																							
						MATERIAL NO.	REFERENCE NO.	OTHER																																																																					
						32	C-3																																																																						
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES																																																																						
CATEGORY	PAPER					MELTING TEMPERATURE	-																																																																						
NAME	FIBERBOARD					COMBUSTION TEMPERATURE	440 °F																																																																						
COMMON NAME (FORM)	CORRUGATED AND SOLID BOARD OR CONTAINERBOARD (SHEET)					HEAT OF COMBUSTION	7043 BTU/LB																																																																						
USES	CONTAINERS					MATERIAL DENSITY	13 LB/CU.FT.																																																																						
FEDERAL/MILITARY SPECIFICATION NUMBER	PPP-B-640 PPP-B-638 PPP-B-676 PPP-F-320 PPP-B-1384					BULK DENSITY	1 LB/CU.FT.																																																																						
COMPOSITION	ANY ORGANIC FIBER, WOOD PULP, WOOD CHIP, OR BAGASSE					3 CHARACTERISTICS																																																																							
4 DISPOSAL RATING SUMMARY						FRAGMENTABILITY	GOOD																																																																						
						<table border="1"> <thead> <tr> <th>METHOD OF DISPOSAL</th> <th>PRE-PROCESS</th> <th>OPERATIONAL RATING</th> <th>ENVIRONMENTAL RATING</th> <th>TOTAL DISPOSAL RATING</th> <th>TOTAL DISPOSAL RANKING</th> <th>ECONOMIC RANKING</th> </tr> </thead> <tbody> <tr> <td>REUSE</td> <td>A</td> <td>8.5</td> <td>10.0</td> <td>9.3</td> <td>1</td> <td></td> </tr> <tr> <td>RECYCLE</td> <td>A/B</td> <td>7.0</td> <td>9.0</td> <td>8.0</td> <td>3</td> <td></td> </tr> <tr> <td>PYROLYSIS</td> <td>C</td> <td>7.8</td> <td>7.8</td> <td>7.8</td> <td>4</td> <td></td> </tr> <tr> <td>COMPOSTING</td> <td>A/C</td> <td>6.6</td> <td>7.8</td> <td>7.2</td> <td>5</td> <td></td> </tr> <tr> <td>BALING</td> <td>B</td> <td>9.4</td> <td>7.8</td> <td>8.6</td> <td>2</td> <td></td> </tr> <tr> <td>INCINERATION</td> <td>A/C</td> <td>9.1</td> <td>6.4</td> <td>7.8</td> <td>4</td> <td></td> </tr> <tr> <td>SANITARY LANDFILL</td> <td>B</td> <td>6.9</td> <td>7.0</td> <td>7.0</td> <td>6</td> <td></td> </tr> <tr> <td>SEA DISPOSAL</td> <td>B</td> <td>5.0</td> <td>4.2</td> <td>4.6</td> <td>7</td> <td></td> </tr> </tbody> </table>						METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	REUSE	A	8.5	10.0	9.3	1		RECYCLE	A/B	7.0	9.0	8.0	3		PYROLYSIS	C	7.8	7.8	7.8	4		COMPOSTING	A/C	6.6	7.8	7.2	5		BALING	B	9.4	7.8	8.6	2		INCINERATION	A/C	9.1	6.4	7.8	4		SANITARY LANDFILL	B	6.9	7.0	7.0	6		SEA DISPOSAL	B	5.0	4.2	4.6	7		SEPARABILITY	GOOD	
												METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING																																																											
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								SECONDARY MATERIAL HANDLER																																																																					

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODES																																																																							
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						33	C-33																																																																						
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES																																																																						
CATEGORY	PAPER					MEI. 'NG TEMPERATURE	-																																																																						
NAME	FIBERBOARD					COMBUSTION TEMPERATURE	500	$^{\circ}\text{F}$																																																																					
COMMON NAME (FORM)	WAX-IMPREGNATED CORRUGATED BOARD (SHEET)					HEAT OF COMBUSTION	7703	$\frac{\text{BTU}}{\text{LB}}$																																																																					
USES	CONTAINERS					MATERIAL DENSITY	47	$\frac{\text{LB}}{\text{CU.FT.}}$																																																																					
FEDERAL/MILITARY SPECIFICATION NUMBER	PPP-B-1163 MIL-C-3955					BULK DENSITY	2	$\frac{\text{LB}}{\text{CU.FT.}}$																																																																					
COMPOSITION	KRAFT PAPER IMPREGNATED WITH WATER AND GREASE RESISTANT COATINGS (VARIETY 4)					3 CHARACTERISTICS																																																																							
4 DISPOSAL RATING SUMMARY						FRAGMENTABILITY	GOOD																																																																						
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												COMPOSTING	A C	6.2	7.8	7.0	5																																																												
												BALING	B	9.1	7.8	8.8	2																																																												
												INCINERATION	A C	9.1	8.4	7.8	3																																																												
												SANITARY LANDFILL	B	7.2	7.0	7.1	4																																																												
SEA DISPOSAL	B	5.8	4.2	4.9	6																																																																								
COMPACTIBILITY	EXCELLENT																																																																												
COMBUSTIBILITY	EXCELLENT																																																																												
TOXICITY	EXCELLENT																																																																												
BIOLOGICAL DEGRADABILITY	GOOD																																																																												
CHEMICAL DEGRADABILITY	EXCELLENT																																																																												
REUSABILITY	EXCELLENT																																																																												
5* SPECIAL PRECAUTIONS/APPLICABLE REGULATIONS																																																																													
PRE-PROCESSES						A - SEPARATION B - COMPACTION C - SHREDDING																																																																							
6*	HANDLING DATA				8*	OFF-BASE DISPOSAL/PROCESSING DATA		10*	NOTES AND COMMENTS																																																																				
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD																																																																								
					SECONDARY MATERIAL HANDLER																																																																								
7* ON-BASE DISPOSAL/RECLAMATION DATA					8* OFF-BASE DISPOSAL/RECYCLING DATA																																																																								
					DISPOSAL/RECYCLING METHOD																																																																								
					SECONDARY MATERIAL HANDLER																																																																								
*TO BE COMPLETED BY THE COGNIZANT OFFICER																																																																													

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODES		
							MATERIAL NO.	REFERENCE PG.	OTHER
							34	C-34	
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES	
CATEGORY	PAPER						MELTING TEMPERATURE	-	
NAME	PAPER						COMBUSTION TEMPERATURE	300	
COMMON NAME (FORM)	BAG, SACK (SHEET)						HEAT OF COMBUSTION	7706 $\frac{BTU}{LB}$	
UNBS	BAGS, SACKS						MASS DENSITY	40 $\frac{LB}{CU.FT.}$	
FEDERAL/MILITARY SPECIFICATION NUMBER	PPP-S-30 UU-B-38 UU-S-48						BULK DENSITY	8 $\frac{LB}{CU.FT.}$	
COMPOSITION	SULPHATE PULP (UNBLEACHED) SULPHATE OR KRAFT PAPER)						3 CHARACTERISTICS		
							FRAGMENTABILITY	GOOD	
							SEPARABILITY	POOR	
							COMPACTIBILITY	EXCELLENT	
							COMBUSTIBILITY	EXCELLENT	
							TOXICITY	EXCELLENT	
							BIOLOGICAL DEGRADABILITY	GOOD	
							CHEMICAL DEGRADABILITY	EXCELLENT	
							REUSABILITY	GOOD	
							5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
4 DISPOSAL RATING SUMMARY									
METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING			
REFUSE	A	5.5	10.0	7.8	1				
RECYCLE	A B	5.2	9.0	7.1	5				
PYROLYSIS	A C	7.4	7.6	7.6	3				
COMPOSTING	A C	6.2	7.8	7.0	6				
BALING	B	7.4	7.8	7.6	3				
INCINERATION	A C	8.0	8.4	7.7	2				
LANDFILL	B	7.6	7.0	7.3	4				
SEA DISPOSAL	B	5.9	4.2	5.1	7				
PRE-PROCESSES							A - SEPARATION E - COMPACTION C - SHREDDING		
6* HANDLING DATA				6* OFF-BASE DISPOSAL/ PROCESSING DATA				10* NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD					
				SECONDARY MATERIAL HANDLER					
7* ON-BASE DISPOSAL/ RECLAMATION DATA				8* OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD					
				SECONDARY MATERIAL HANDLER					
								*TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PR.	OTHER	
							35	C-35		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	PAPER						MELTING TEMPERATURE	-		
NAME	PAPER						COMBUSTION TEMPERATURE	225		
COMMON NAME (FORM)	COATED, IMPREGNATED (SHEET)						HEAT OF COMBUSTION	7706		BTU/LB
USES	WRAPPING, BAGS						MATERIAL DENSITY	47		LB/CU.FT.
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-P-20293 UU-P-134						BULK DENSITY	12		LB/CU.FT.
COMPOSITION	ASPHALT-IMPREGNATED KRAFT PAPER						3 CHARACTERISTICS			
							FRAGMENTABILITY	GOOD		
							SEPARABILITY	GOOD		
							COMPACTIBILITY	EXCELLENT		
							COMBUSTIBILITY	EXCELLENT		
							TOXICITY	EXCELLENT		
							BIOLOGICAL DEGRADABILITY	GOOD		
							CHEMICAL DEGRADABILITY	EXCELLENT		
							REUSABILITY	EXCELLENT		
							8* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
4 DISPOSAL RATING SUMMARY										
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING*				
DISPOSAL	PRE-PROCESS									
REUSE	A	8.5	10.0	9.3	1					
RECYCLE	A B	5.2	9.0	7.1	4					
PYROLYSIS	A C	7.8	7.8	7.8	2					
COMPOSTING	A C	6.2	7.8	7.0	5					
BALING	B	7.0	7.8	7.4	3					
INCINERATION	A C	9.1	6.4	7.8	2					
SANITARY LANDFILL	B	7.2	7.0	7.1	4					
SEA DISPOSAL	B	5.6	4.2	4.9	6					
PRE-PROCESSES: A - SEPARATION S - COMPACTION C - SHREDDING										
6* HANDLING DATA					9* OFF-BASE DISPOSAL/PROCESSING DATA				10* NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD					
					SECONDARY MATERIAL HANDLER					
7* ON-BASE DISPOSAL/RECLAMATION DATA					9* OFF-BASE DISPOSAL/RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD					
					SECONDARY MATERIAL HANDLER					
									*TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE								
							MATERIAL NO.	REFERENCE NO.	OT/IR						
3A							C-36								
1	MATERIAL DESCRIPTION						2		CHEMICAL PROPERTIES						
CATEGORY		PAPER					MELTING TEMPERATURE		-						
NAME		PAPER					COMBUSTION TEMPERATURE		150						
COMMON NAME (FORM)		CONVERTING, ENVELOPE (SHEET)					HEAT OF COMBUSTION		8088 BTU/LB						
USES		ENVELOPES, TAPES					MATERIAL DENSITY		51 LB/CU.FT.						
FEDERAL/MILITARY SPECIFICATION NUMBER		PPP-T-45					BULK DENSITY		51 LB/CU.FT.						
COMPOSITION		KRAFT PAPER WITH ASPHALT LAMINATION					3		CHARACTERISTICS						
							FRAGMENTABILITY		EXCELLENT						
4		DISPOSAL RATING SUMMARY					SEPARABILITY		GOOD						
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING	COMPACTIBILITY		EXCELLENT					
REUSE		A	1.5	10.0	5.8	7		COMBUSTIBILITY		EXCELLENT					
RECYCLE		A B	3.6	9.0	6.3	6		TOXICITY		EXCELLENT					
PYROLYSIS		A	6.6	7.8	7.2	3		BIOLOGICAL DEGRADABILITY		POOR					
COMPOSTING		A	5.2	7.6	6.5	5		CHEMICAL DEGRADABILITY		POOR					
BALING		B	6.4	7.6	7.1	4		REUSABILITY		UNSATISFACTORY					
INCINERATION		A	9.1	6.4	7.8	1		5		SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS					
SANITARY LANDFILL		B	7.7	7.0	7.4	2									
SEA DISPOSAL		B	5.6	4.2	5.0	6									
PRE-PROCESSES:		A - SEPARATION B - COMPACTION C - SHREDDING													
6		HANDLING DATA					8		OFF-BASE DISPOSAL/ PROCESSING DATA			10		NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD								
							SECONDARY MATERIAL HANDLER								
7		ON-BASE DISPOSAL/ RECLAMATION DATA					9		OFF-BASE DISPOSAL/ RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD								
							SECONDARY MATERIAL HANDLER								
									*TO BE COMPLETED BY THE COGNIZANT OFFICER						

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE		
							MATERIAL NO.	REFERENCE PB.	OTHER
							37	C-37	
1 MATERIAL DESCRIPTION							2 CHEMICAL PROPERTIES		
CATEGORY		PAPER					MELTING TEMPERATURE		- °F
NAME		PAPER					COMBUSTION TEMPERATURE		150 °F
COMMON NAME (FORM)		NEWSPRINT (SHEET, SHREDS)					HEAT OF COMBUSTION		7974 $\frac{\text{BTU}}{\text{LB}}$
USES		WRAPPING, DUNNAGE					MATERIAL DENSITY		42 $\frac{\text{LB}}{\text{CU.FT.}}$
FEDERAL/MILITARY SPECIFICATION NUMBER		-					BULK DENSITY		21 $\frac{\text{LB}}{\text{CU.FT.}}$
COMPOSITION							3 CHARACTERISTICS		
GROUND WOOD PULP (75%) CHEMICAL PULP (25%)							FRAGMENTABILITY		EXCELLENT
4 DISPOSAL RATING SUMMARY							SEPARABILITY		UNSATISFACTORY
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	COMPACTIBILITY		EXCELLENT
REUSE		A	3.5	10.0	6.8	5	COMBUSTIBILITY		EXCELLENT
RECYCLE		A/B	3.8	9.0	8.4	6	TOXICITY		EXCELLENT
PYROLYSIS		A	7.4	7.8	7.6	2	BIOLOGICAL DEGRADABILITY		GOOD
COMPOSTING		A	6.2	7.8	7.0	4	CHEMICAL DEGRADABILITY		EXCELLENT
BALING		B	6.8	7.8	7.3	3	REUSABILITY		FAIR
INCINERATION		A	9.2	6.4	7.8	1	5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
SANITARY LANDFILL		B	8.2	7.0	7.6	2			
SEA DISPOSAL		B	6.2	4.2	5.2	7			
PRE-PROCESSES:		A - SEPARATION B - COMPACTION C - SHREDDING							
6° HANDLING DATA			8° OFF-BASE DISPOSAL/ PROCESSING DATA				10° NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD						
			SECONDARY MATERIAL HANDLER						
7° ON-BASE DISPOSAL/ RECLAMATION DATA			9° OFF-BASE DISPOSAL/ RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD						
			SECONDARY MATERIAL HANDLER						
							*TO BE COMPLETED BY THE COGNIZANT OFFICER		

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							38	C-38			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	PAPER						MELTING TEMPERATURE	-			
NAME	PAPER						COMBUSTION TEMPERATURE	350 °F			
COMMON NAME (FORM)	PULP (MOLDED)						HEAT OF COMBUSTION	7341 BTU/LB			
USES	TRAYS						MATERIAL DENSITY	38 LB/ CU.FT.			
FEDERAL/ MILITARY SPECIFICATION NUMBER							BULK DENSITY	38 LB/ CU.FT.			
COMPOSITION	MECHANICAL WOOD PULP OR GROUNDWOOD						3	CHARACTERISTICS			
							FRAGMENTABILITY	GOOD			
							REPARABILITY	UNSATISFACTORY			
							COMPACTIBILITY	EXCELLENT			
							COMBUSTIBILITY	GOOD			
							TOXICITY	EXCELLENT			
							BIOLOGICAL DEGRADABILITY	GOOD			
							CHEMICAL DEGRADABILITY	EXCELLENT			
							REUSABILITY	GOOD			
							5°	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
4							DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING				
REFUSE	A		4.5	10.0	7.3	3					
RECYCLE	A/B		5.0	9.0	7.0	5					
PYROLYSIS	A/C		7.0	7.8	7.4	2					
COMPOSTING	A/C		5.8	7.3	8.8	8					
LEACHING	B		5.8	7.8	8.8	6					
INCINERATION	A		7.8	6.4	7.1	4					
SANITARY LANDFILL	B		8.0	7.0	7.5	1					
SEA DISPOSAL	B		6.2	4.2	5.2	7					
PRE-PROCESSES:							A - SEPARATION E - COMPACTION C - SHREDDING				
6°	HANDLING DATA				8°	OFF-BASE DISPOSAL/ PROCESSING DATA			10°	NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD						
					SECONDARY MATERIAL HANDLER						
7°	ON-BASE DISPOSAL/ RECLAMATION DATA				9°	OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD						
					SECONDARY MATERIAL HANDLER						
*TO BE COMPLETED BY THE COGNIZANT OFFICER											

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PG.	OTHER	
							39	C-39		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	PAPER						MELTING TEMPERATURE	-		
NAME	PAPER						COMBUSTION TEMPERATURE	150		
COMMON NAME (FORM)	TISSUE (SHEET)						HEAT OF COMBUSTION	6999 $\frac{BTU}{LB}$		
USES	WRAPPING						MATERIAL DENSITY	21 $\frac{LB}{CU.FT.}$		
FEDERAL/MILITARY SPECIFICATION NUMBER	UU-P-553						BULK DENSITY	10 $\frac{LB}{CU.FT.}$		
COMPOSITION	SULPHATE PULP, BLEACHED KRAFT PAPER						3 CHARACTERISTICS			
							FRAGMENTABILITY	GOOD		
							SEPARABILITY	POOR		
							COMPACTIBILITY	EXCELLENT		
							COMBUSTIBILITY	EXCELLENT		
							TOXICITY	EXCELLENT		
							BIOLOGICAL DEGRADABILITY	GOOD		
							CHEMICAL DEGRADABILITY	EXCELLENT		
							REUSABILITY	FAIR		
							5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
4 DISPOSAL RATING SUMMARY										
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING				
REUSE	A	4.5	10.0	7.3	4					
RECYCLE	A B	5.8	9.0	7.4	3					
PYROLYSIS	A C	7.4	7.8	7.6	2					
COMPOSTING	A C	5.8	7.8	6.8	6					
BALING	B	6.8	7.8	7.3	4					
INCINERATION	A C	9.0	6.4	7.7	1					
SANITARY LANDFILL	B	7.3	7.0	7.2	5					
ESA DISPOSAL	B	5.5	4.2	4.9	7					
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING								
6*	HANDLING DATA					8*	OFF-SITE DISPOSAL/ PROCESSING DATA		10*	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD			
							SECONDARY MATERIAL HANDLER			
7*	ON-SITE DISPOSAL/ RECLAMATION DATA					9*	OFF-SITE DISPOSAL/ RECYCLING DATA			
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD			
							SECONDARY MATERIAL HANDLER			
									*TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PS.	OTHER		
							40	C-40			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	PAPER						MELTING TEMPERATURE	-			
NAME	PAPER						COMBUSTION TEMPERATURE	440 °F			
COMMON NAME (FORM)	VCI TREATED PACKAGING MATERIALS (SHEET)						HEAT OF COMBUSTION	7706 BTU/LB			
USES	CONTAINERS						MATERIAL DENSITY	40 LB/CU.FT.			
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-P-3420						BULK DENSITY	2 LB/CU.FT.			
COMPOSITION	FLAT KRAFT PAPER COATED OR IMPREGNATED WITH CORROSION INHIBITORS						3	CHARACTERISTICS			
							FRAGMENTABILITY	GOOD			
							SEPARABILITY	GOOD			
							COMPACTIBILITY	EXCELLENT			
							COMBUSTIBILITY	EXCELLENT			
							TOXICITY	EXCELLENT			
							BIOLOGICAL DEGRADABILITY	GOOD			
							CHEMICAL DEGRADABILITY	EXCELLENT			
							REUSABILITY	EXCELLENT			
							6*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
4							DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING ^o				
REUSE		A	6.0	10.0	9.0	1					
RECYCLE		A B	5.2	9.0	7.1	4					
PYROLYSIS		C	7.6	7.8	7.6	3					
COMPOSTING		A C	6.2	7.8	7.0	5					
BALING		B	9.4	7.6	8.6	2					
INCINERATION		A C	9.1	6.4	7.6	3					
SANITARY LANDFILL		B	7.2	7.0	7.1	4					
SEA DISPOSAL		B	5.6	4.2	4.9	6					
PRE-PROCESSES:							A - SEPARATION B - COMPACTION C - SHREDDING				
6*	HANDLING DATA				8*	OFF-BASE DISPOSAL/ PROCESSING DATA			10*		NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD						
					SECONDARY MATERIAL HANDLER						
7*	ON-BASE DISPOSAL/ RECLAMATION DATA				9*	OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD						
					SECONDARY MATERIAL HANDLER						
*TO BE COMPLETED BY THE COGNIZANT OFFICER											

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PB.	OTHER	
							41	C-41		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY		PAPER					MELTING TEMPERATURE		-	
NAME		PAPER					COMBUSTION TEMPERATURE		500	
COMMON NAME (FORM)		WAX PAPER (SHREDS)					HEAT OF COMBUSTION		11,327 $\frac{\text{BTU}}{\text{LB}}$	
UBSS		WRAPPING, DUNNAGE					MATERIAL DENSITY		47 $\frac{\text{LB}}{\text{CUFT.}}$	
FEDERAL/MILITARY SPECIFICATION NUMBER		-					BULK DENSITY		47 $\frac{\text{LB}}{\text{CUFT.}}$	
COMPOSITION		KRAFT PAPER IMPREGNATED WITH WAX COATING					3 CHARACTERISTICS			
							FRAGMENTABILITY		EXCELLENT	
							SEPARABILITY		POOR	
							COMPACTIBILITY		EXCELLENT	
							COMBUSTIBILITY		EXCELLENT	
							TOXICITY		EXCELLENT	
							BIOLOGICAL DEGRADABILITY		FAIR	
							CHEMICAL DEGRADABILITY		GOOD	
							REUSABILITY		FAIR	
							5* SPECIAL PRECAUTIONS/APPLICABLE REGULATIONS			
4 DISPOSAL RATING SUMMARY										
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING				
REUSE		A	4.0	10.0	7.0	4				
RECYCLE		A	3.0	9.0	6.0	6				
PYROLYSIS		A	6.4	7.8	7.1	3				
COMPOSTING		A	5.2	7.8	6.5	5				
BALING		B	6.4	7.6	7.1	3				
INCINERATION		A	6.6	8.4	7.6	1				
SANITARY LANDFILL		B	7.3	7.0	7.2	2				
SEA DISPOSAL		B	5.3	4.2	4.8	7				
PRE-PROCESSING: A - SEPARATION B - COMPACTION C - SHREDDING										
6* HANDLING DATA			8* OFF-BASE DISPOSAL/PROCESSING DATA				10* NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD							
			SECONDARY MATERIAL HANDLER							
7* ON-BASE DISPOSAL/RECLAMATION DATA			8* OFF-BASE DISPOSAL/RECYCLING DATA							
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD							
			SECONDARY MATERIAL HANDLER							
							* TO BE COMPLETED BY THE COGNIZANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							42	C-42			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	PAPER						MELTING TEMPERATURE	°F			
NAME	PAPER						COMBUSTION TEMPERATURE	300 °F			
COMMON NAME (FORM)	WRAPPING (SHEET)						HEAT OF COMBUSTION	7706 $\frac{\text{BTU}}{\text{LB}}$			
USES	WRAPPING, BAGS						MATERIAL DENSITY	40 $\frac{\text{LB}}{\text{CU.FT.}}$			
FEDERAL/MILITARY SPECIFICATION NUMBER	UU-P-268						BULK DENSITY	10 $\frac{\text{LB}}{\text{CU.FT.}}$			
COMPOSITION	UNTREATED KRAFT PAPER						3 CHARACTERISTICS				
							FRAGMENTABILITY	GOOD			
							SEPARABILITY	POOR			
							COMPACTIBILITY	EXCELLENT			
							COMBUSTIBILITY	EXCELLENT			
							TOXICITY	EXCELLENT			
							BIOLOGICAL DEGRADABILITY	GOOD			
							CHEMICAL DEGRADABILITY	EXCELLENT			
							REUSABILITY	FAIR			
							5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
4 DISPOSAL RATING SUMMARY											
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING				
REFUSE	A		4.5	10.0	7.3	5					
RECYCLE	A B		5.8	9.0	7.4	4					
PYROLYSIS	A C		7.4	7.8	7.6	2					
COMPOSTING	A C		6.2	7.8	7.0	6					
BALING	B		7.0	7.6	7.4	4					
INCINERATION	A C		9.0	6.4	7.7	1					
SANITARY LANDFILL	B		8.0	7.0	7.5	3					
SEA DISPOSAL	B		6.2	4.2	5.2	7					
PRE-PROCESS		A - SEPARATION B - COMPACTION C - SHREDDING									
6°	HANDLING DATA					8°	OFF-BASE DISPOSAL/ PROCESSING DATA		10° NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD					
						SECONDARY MATERIAL HANDLER					
7°	ON-BASE DISPOSAL/ RECLAMATION DATA					9°	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD					
						SECONDARY MATERIAL HANDLER					
									*TO BE COMPLETED BY THE COORDINATING OFFICER		

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE								
							MATERIAL P.D.	REFERENCE P.E.	OTHER						
							44	C-44							
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES							
CATEGORY	PAPER						MELTING TEMPERATURE	-	°F						
NAME	PAPERBOARD						COMBUSTION TEMPERATURE	700	°F						
COMMON NAME (FORM)	SPIRALLY WOUND FIBER CAN (TUBE)						HEAT OF COMBUSTION	8000	BTU/LB						
USES	CAN						MATERIAL DENSITY	52	LB/CU.FT.						
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-C-2439						BULK DENSITY	2	LB/CU.FT.						
COMPOSITION	(TYPE I, OR B, STYLE A, CAN) ADHESIVES, BARRIER MATERIAL AMMUNITION CONTAINERBOARD AL FOIL, DUPLEX AND ASPHALT IMPREGNATED KRAFT						3 CHARACTERISTICS								
4 DISPOSAL RATING SUMMARY							FRAGMENTABILITY	FAIR							
							SEPARABILITY	GOOD							
							COMPACTIBILITY	EXCELLENT							
							CONDUCTIBILITY	EXCELLENT							
							TOXICITY	EXCELLENT							
							BIOLOGICAL DEGRADABILITY	POOR							
							CHEMICAL DEGRADABILITY	GOOD							
							REUSABILITY	EXCELLENT							
							5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS								
							6* HANDLING DATA							7* ON-BASE DISPOSAL/ RECLAMATION DATA	
METHOD OF STORAGE/COLLECTION							DISPOSAL/RECLAMATION METHOD		DISPOSAL/PROCESSING METHOD		* TO BE COMPLETED BY THE COGNIZANT OFFICE				
							DISPOSAL/RECLAMATION METHOD		DISPOSAL/PROCESSING METHOD						
							DISPOSAL/RECLAMATION METHOD		DISPOSAL/PROCESSING METHOD						
							DISPOSAL/RECLAMATION METHOD		DISPOSAL/PROCESSING METHOD						
7* ON-BASE DISPOSAL/ RECLAMATION DATA							8* OFF-BASE DISPOSAL/ RECYCLING DATA		9* NOTES AND COMMENTS						
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD		DISPOSAL/RECYCLING METHOD						
							DISPOSAL/RECYCLING METHOD		DISPOSAL/RECYCLING METHOD						
							DISPOSAL/RECYCLING METHOD		DISPOSAL/RECYCLING METHOD						
							DISPOSAL/RECYCLING METHOD		DISPOSAL/RECYCLING METHOD						

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REPORTING NO.	OTHER	
							45	45		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	PAPER 3						MELTING TEMPERATURE	300	°C	
NAME	PAPER/FOIL LAMINATION						COMBUSTION TEMPERATURE	700	°C	
COMMON NAME (FORM)	POLYOLEFIN/FOIL/PAPER (SHEET)						HEAT OF COMBUSTION	18,000	BTU/LB	
USE	WRAPPING, BARRIER MATERIAL						MATERIAL DENSITY	80-90	LB/CUFT	
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-B-121						BULK DENSITY	40-70	LB/CUFT	
COMPOSITION	POLYETHYLENE PLASTIC PRODUCED WITH BUTYLENE OR STYRENE						3 CHARACTERISTICS			
							FRAGMENTABILITY	EXCELLENT		
							SEPARABILITY	POOR		
							COMPACTIBILITY	FAIR		
							COMBUSTIBILITY	POOR		
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)		
							BIOLOGICAL DEGRADABILITY	POOR		
							CHEMICAL DEGRADABILITY	POOR		
							REUSABILITY	UNSATISFACTORY		
							8° SPECIAL PRECAUTIONS/APPLICABLE REGULATIONS			
							PRODUCES OFFENSIVE ODOR WHEN INCINERATED			
4 DISPOSAL RATING SUMMARY										
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO. INDEX RANKING				
REUSE	A	2.0	10.0	6.0	4					
RECYCLE	A B	1.8	8.0	5.4	7					
PYROLYSIS	A C	4.6	7.8	8.2	3					
COMPOSTING	A C	4.0	7.8	5.8	5					
BALING	B	5.2	7.8	8.5	2					
INCINERATION	A C	5.2	6.2	5.7	8					
LANDFILL	B	5.8	7.4	6.7	1					
SEA DISPOSAL	B	4.4	4.2	4.3	8					
PRE-PROCESS							A - SEPARATION B - COMPACTION C - SHREDDING			
6°	HANDLING DATA			6°	OFF-BASE DISPOSAL/PROCESSING DATA			10°		NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD						
				SECONDARY MATERIAL HANDLER						
7°	ON-BASE DISPOSAL/RECLAMATION DATA			8°	OFF-BASE DISPOSAL/RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD						
				SECONDARY MATERIAL HANDLER						
									*TO BE COMPLETED BY THE COGNIZANT OF RISK	

SUMMARY / FACT SHEET SOLID WASTE						REFERENCE CODE			
						MATERIAL ID.	REFERENCE PG.	OTHER	
						46	C-46		
1 MATERIAL DESCRIPTION						2 CHEMICAL PROPERTIES			
CATEGORY	PAPER					MELTING TEMPERATURE	-		
NAME	PAPERBOARD/METAL					COMBUSTION TEMPERATURE	440 °F		
COLOR/N. NAME (FORM)	METAL-EDGED PAPERBOARD (SHEET)					HEAT OF COMBUSTION	7043	BTU/LB	
USE	BOXES					MATERIAL DENSITY	48	LB/CU.FT.	
FEDERAL/MILITARY SPECIFICATION NUMBER	PPP-B-665					BULK DENSITY	1	LB/CU.FT.	
CONSTRUCTION	(STYLES A-E) AT LEAST 75% RECLAIMED FIBER CONTENT. REMAINDER KRAFT PAPER. STEEL METAL STAYS.					3 CHARACTERISTICS			
						FRAGMENTABILITY	GOOD		
						SEPARABILITY	GOOD		
						COMPACTIBILITY	EXCELLENT		
						COMBUSTIBILITY	EXCELLENT		
						TOXICITY	EXCELLENT		
						BIOLOGICAL DEGRADABILITY	FAIR		
						CHEMICAL DEGRADABILITY	EXCELLENT		
						REUSABILITY	EXCELLENT		
						4 DISPOSAL RATING SUMMARY			
METHOD NO.		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL RECLAMATION RATING	ECO-NOMIC RATING			
REFUSE	A	8.5	10.0	9.3	1				
RECYCLE	A B	5.8	9.0	7.4	5				
PYROLYSIS	A C	7.4	7.8	7.6	3				
COMPOSTING	A C	4.2	7.8	6.0	7				
BALING	B	8.8	7.8	8.3	2				
REGENERATION	A C	8.6	6.4	7.5	4				
LANDFILL	B	6.8	7.0	6.8	6				
SEA DISPOSAL	B	5.0	4.2	4.6	8				
PRE-PROCESS		A - SEPARATION B - COMPACTING C - SHREDDING							
						5* SPECIAL PRECAUTIONS/APPLICABLE REGULATIONS			
6* HANDLING DATA			6* OFF-BASE DISPOSAL/PROCESSING DATA			10* NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD						
			SECONDARY MATERIAL HANDLER						
7* ON-BASE DISPOSAL/RECLAMATION DATA			6* OFF-BASE DISPOSAL/RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD						
			SECONDARY MATERIAL HANDLER			*TO BE COMPLETED BY THE COORDINATING OFFICER			

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE							
							MATERIAL NO.	REFERENCE PG.	OTHER					
							47	C-47						
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES						
CATEGORY	PAPER						MELTING TEMPERATURE	-		D _F				
NAME	PAPERBOARD/METAL						COMBUSTION TEMPERATURE	440		O _F				
COMMON NAME (FORM)	METAL EDGED PAPERBOARD (SHEET)						HEAT OF COMBUSTION	7043		BTU/LB				
USES	DRUMS, TUBES						MATERIAL DENSITY	46		LB/CU.FT.				
FEDERAL/MILITARY SPECIFICATION NUMBER	PPP-D-723						EULK DENSITY	3		LB/CU.FT.				
COMPOSITION	AT LEAST 40% RECLAIMED FIBERS, REMAINDER-VIRGIN KRAFT PAPER, LOW CARBON STEEL, AL CARRIER BOARD						3 CHARACTERISTICS							
							FRAGMENTABILITY	GOOD						
							REPAIRABILITY	GOOD						
							COMPACTIBILITY	EXCELLENT						
							COMBUSTIBILITY	EXCELLENT						
							TOXICITY	EXCELLENT						
							BIOLOGICAL DEGRADABILITY	FAIR						
							CHEMICAL DEGRADABILITY	EXCELLENT						
							REUSABILITY	EXCELLENT						
							8° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS							
4 DISPOSAL RATING SUMMARY														
METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING								
REUSE	A	6.5	10.0	9.3	1									
RECYCLE	A B	5.8	9.0	7.4	5									
PYROLYSIS	A C	7.4	7.6	7.6	3									
COMPOSTING	A C	4.2	7.8	6.0	7									
BALING	B	8.8	7.6	8.3	2									
INCINERATION	A C	8.6	6.4	7.5	4									
SANITARY LANDFILL	B	6.6	7.0	6.8	6									
SEA DISPOSAL	B	5.0	4.2	4.6	6									
PRE-PROCESSOR:							A - SEPARATION E - COMPACTING C - SHREDDING							
6° HANDLING DATA			7° ON-BASE DISPOSAL/ RECLAMATION DATA			8° OFF-BASE DISPOSAL/ PROCESSING DATA			9° OFF-BASE DISPOSAL/ RECYCLING DATA			10° NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD								
						SECONDARY MATERIAL HANDLER								
7° DISPOSAL/RECLAMATION METHOD						8° DISPOSAL/RECYCLING METHOD								
						SECONDARY MATERIAL HANDLER								
												*TO BE COMPLETED BY THE COGNIZANT OF FICHE		

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE											
							MATERIAL NO.	REFERENCE PG.	OTHER									
							48	C-48										
1	MATERIAL DESCRIPTION						2			CHEMICAL PROPERTIES								
CATEGORY		PAPER					MELTING TEMPERATURE			-								
NAME		FIBERBOARD/WOOD					COMBUSTION TEMPERATURE			523								
COMMON NAME (FORM)		WOOD-CLEATED FIBERBOARD (SHEET)					HEAT OF COMBUSTION			7841 $\frac{\text{BTU}}{\text{LB}}$								
USES		BOXES					MATERIAL DENSITY			29 $\frac{\text{LB}}{\text{CU.FT.}}$								
FEDERAL/MILITARY SPECIFICATION NUMBER		PPP-B-591					BULK DENSITY			2 $\frac{\text{LB}}{\text{CU.FT.}}$								
COMPOSITION		VIRGIN OR RECLAIMED FIBERS DOUGLAS FIR CLEATS, STEEL NAILS OR STAPLES					3						CHARACTERISTICS					
		FRAGMENTABILITY		FAIR														
		SEPARABILITY		GOOD														
		COMPACTIBILITY		EXCELLENT														
		COMBUSTIBILITY		GOOD														
		TOXICITY		EXCELLENT														
		BIOLOGICAL DEGRADABILITY		GOOD														
		CHEMICAL DEGRADABILITY		EXCELLENT														
		REUSABILITY		EXCELLENT														
		8*										SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS						
4	DISPOSAL RATING SUMMARY																	
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING											
REUSE		A	8.5	10.0	9.3	1												
RECYCLE		A B	4.0	9.0	6.5	6												
PYROLYSIS		A C	7.8	7.8	7.7	3												
COMPOSTING		A C	8.2	7.8	7.0	5												
BALING		B	8.8	7.8	8.3	2												
INCINERATION		A C	7.9	6.4	7.2	4												
SANITARY LANDFILL		B	6.7	7.2	7.0	5												
SEA DISPOSAL		B	5.2	4.2	4.7	7												
PRE-PROCESSES:		A - SEPARATION B - COMPACTION C - SHRIMPING																
6*	HANDLING DATA						8*			OFF-BASE DISPOSAL/ PROCESSING DATA			10*			NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION								DISPOSAL/PROCESSING METHOD										
								SECONDARY MATERIAL HANDLER										
7*	ON-BASE DISPOSAL/ RECLAMATION DATA						8*			OFF-BASE DISPOSAL/ RECYCLING DATA								
DISPOSAL/RECLAMATION METHOD								DISPOSAL/RECYCLING METHOD										
								SECONDARY MATERIAL HANDLER										
												*TO BE COMPLETED BY THE COORDINATOR OFFICER						

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PS.	OTHER		
							40	C-40			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC						MELTING TEMPERATURE	300-500 °F			
NAME	ACRYLONITRILE, BUTADIENE, STYRENE						COMBUSTION TEMPERATURE	700-800 °F			
COMMON NAME (FORM)	ABS (SOLID STOCK, SHEET)						HEAT OF COMBUSTION	8850 BTU/LB			
USE	TRAYS, CONTAINERS						MATERIAL DENSITY	63.65-67.39 LB/CU.FT.			
FEDERAL/MILITARY SPECIFICATION NUMBER	L-P-1183						BULK DENSITY	5-7 LB/CU.FT.			
COMPOSITION	-						3	CHARACTERISTICS			
							FRAGMENTABILITY	GOOD			
							SEPARABILITY	FAIR			
							COMPACTIBILITY	GOOD			
							COMBUSTIBILITY	FAIR			
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)			
							BIOLOGICAL DEGRADABILITY	POOR			
							CHEMICAL DEGRADABILITY	POOR			
							REUSABILITY	POOR			
							5*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES HARMFUL GASES WHEN INCINERATED				
							PRE-PROCESSES: A - SEPARATION B - COMPACTION C - SHREDDING				
6*	HANDLING DATA					8*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*	NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD					
						SECONDARY MATERIAL HANDLER					
7* ON-BASE DISPOSAL/ RECLAMATION DATA						8* OFF-BASE DISPOSAL/ RECYCLING DATA					
						DISPOSAL/RECYCLING METHOD					
						DISPOSAL/RECYCLING METHOD					
						SECONDARY MATERIAL HANDLER					
						*TO BE COMPLETED BY THE COGNIZANT OFFICER					

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							60	C-50			
1- MATERIAL DESCRIPTION					2- CHEMICAL PROPERTIES						
CATEGORY		PLASTIC					MELTING TEMPERATURE		300-350 °F		
NAME		CELLULOSICS					COMBUSTION TEMPERATURE		600 °F		
COMMON NAME (FORM)		CELLOPHANE (FILM)					HEAT OF COMBUSTION		1800 BTU/LB		
USES		WRAPPING, BAGS					MATERIAL DENSITY		74.88-98.72 LB/CU.FT.		
FEDERAL/MILITARY SPECIFICATION NUMBER		L-C-110 PPP-B-15					BULK DENSITY		70 LB/CU.FT.		
COMPOSITION		-					3- CHARACTERISTICS				
							FRAGMENTABILITY		EXCELLEN		
							SEPARABILITY		POOR		
							COMPACTIBILITY		FAIR		
							COMBUSTIBILITY		GOOD		
							TOXICITY		EXCELLENT (SEE PRECAUTIONS)		
							BIOLOGICAL DEGRADABILITY		POOR		
							CHEMICAL DEGRADABILITY		POOR		
							REUSABILITY		UNSATISFACTORY		
							5- SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
							PRODUCES HARMFUL GASES WHEN INCINERATED				
							6- DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECD-NOMMC RANKING				
REUSE		A	2.0	10.0	6.0	6					
RECYCLE		A B	3.6	9.0	6.3	4					
PYROLYSIS		A C	4.6	7.6	6.2	5					
COMPOSTING		A C	4.0	7.8	5.9	7					
SALING		B	5.6	7.6	6.7	3					
INCINERATION		A C	7.7	6.2	7.0	1					
SANITARY LANDFILL		B	6.1	7.4	6.6	2					
SEA DISPOSAL		B	4.6	4.2	4.4	6					
PRE-PROCESSES:		A - SEPARATION B - COMPACTION C - SHREDDING									
6- HANDLING DATA				8- OFF-BASE DISPOSAL/ PROCESSING DATA				10- NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD							
				SECONDARY MATERIAL HANDLER							
7- ON-BASE DISPOSAL/ RECLAMATION DATA				9- OFF-BASE DISPOSAL/ RECYCLING DATA							
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD							
				SECONDARY MATERIAL HANDLER							
								*TO BE COMPLETED BY THE COORDINATING OFFICER			

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							51	C-51			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC						MELTING TEMPERATURE	340-500 °F			
NAME	CELLULOSICS						COMBUSTION TEMPERATURE	840 °F			
COMMON NAME (FORM)	CELLULOSE ACETATE (FOAM)						HEAT OF COMBUSTION	15770 BTU/LB			
USES	CUSHIONING						MATERIAL DENSITY	6-6 LB/CL.FT.			
FEDERAL/MILITARY SPECIFICATION NUMBER	PPP-C-843						BULK DENSITY	2-8 LB/CL.FT.			
COMPOSITION	-						3	CHARACTERISTICS			
							FRAGMENTABILITY	EXCELLENT			
							SEPARABILITY	POOR			
							COMPACTIBILITY	FAIR			
							COMBUSTIBILITY	FAIR			
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)			
							BIOLOGICAL DEGRADABILITY	POOR			
							CHEMICAL DEGRADABILITY	POOR			
							REUSABILITY	UNSATISFACTORY			
							5*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES HARMFUL GASES WHEN INCINERATED				
4							DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING				
REUSE	A		2.5	10.0	6.3	3					
RECYCLE	A/B		4.0	9.0	6.5	2					
PYROLYSIS	A/C		4.8	7.8	6.3	3					
COMPOSTING	A/C		4.2	7.8	6.0	5					
BALING	B		5.6	7.8	6.7	1					
INCINERATION	A/C		6.8	6.2	6.5	2					
SANITARY LANDFILL	B		4.9	7.4	6.2	4					
SEA DISPOSAL	B		3.4	4.2	3.8	6					
PRE-PROCESS		A - SEPARATION B - COMPACTION C - SHREDDING									
6*	HANDLING DATA				6*	OFF-BASE DISPOSAL/ PROCESSING DATA			10*	NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION											
DISPOSAL/PROCESSING METHOD											
SECONDARY MATERIAL HANDLER											
ON-BASE DISPOSAL/ RECLAMATION DATA											
DISPOSAL/RECLAMATION METHOD											
DISPOSAL/RECYCLING METHOD											
SECONDARY MATERIAL HANDLER											
*TO BE COMPLETED BY THE COGNIZANT OFFICER											

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE				
						MATERIAL NO.	REFERENCE NO.	OTHER		
						52	C-52			
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC					MELTING TEMPERATURE	340-500 °F			
NAME	CELLULOSICS					COMBUSTION TEMPERATURE	240 °F			
COMMON NAME (FORM)	CELLULOSE ACETATE (SHEET, FILM)					HEAT OF COMBUSTION	15770 $\frac{B.T.U.}{LB.}$			
USES	WRAPPING					MATERIAL DENSITY	71.76-82.37 $\frac{LB.}{CU.FT.}$			
FEDERAL/MILITARY SPECIFICATION NUMBER	L-P-504					BULK DENSITY	50-70 $\frac{LB.}{CU.FT.}$			
COMPOSITION						3	CHARACTERISTICS			
						FRAGMENTABILITY	EXCELLENT			
4 DISPOSAL RATING SUMMARY						SEPARABILITY	POOR			
METHOD OF DISPOSAL		PRE-PROCESSING	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	COMPACTIBILITY		
REUSE	A		2.0	10.0	6.0	5		FAIR		
RECYCLE	A/B		3.6	9.0	6.3	3		TOXICITY		
PYROLYSIS	A/C		4.6	7.6	6.2	4		EXCELLENT (SEE PRECAUTIONS)		
COMPOSTING	A/C		4.0	7.6	5.9	6		BIOLOGICAL DEGRADABILITY		
BALING	B		5.6	7.6	6.7	1		POOR		
INCINERATION	A/C		5.7	6.2	6.0	5		CHEMICAL DEGRADABILITY		
SANITARY LANDFILL	B		5.7	7.4	6.6	2		POOR		
SEA DISPOSAL	B		4.2	4.2	4.2	7		REUSABILITY		
P&E-PROCESSES						5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
						PRODUCES HARMFUL GASES WHEN INCINERATED				
A - SEPARATION B - COMPACTION C - SHREDDING										
6*	HANDLING DATA				8*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*	NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD					
					SECONDARY MATERIAL HANDLER					
7*	ON-BASE DISPOSAL/ RECLAMATION DATA				8*	OFF-BASE DISPOSAL/ RECYCLING DATA		*TO BE COMPLETED BY THE COGNIZANT OFFICER		
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD					
					SECONDARY MATERIAL HANDLER					

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE				
						MATERIAL NO.	REFERENCE NO.	OTHER		
						53	C-83			
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC					MELTING TEMPERATURE	340-500 °F			
NAME	CELLULOSICS					COMBUSTION TEMPERATURE	640 °F			
COMMON NAME (FORM)	CELLULOSE ACETATE BUTYRATE (SOLID STOCK)					HEAT OF COMBUSTION	15,770 BTU/LB			
USES	CONTAINERS					MATERIAL DENSITY	71.76 - 62.37 LB/ CU.FT.			
FEDERAL/ MILITARY SPECIFICATION NUMBER	L-P-397 L-P-349					BULK DENSITY	5-7 LB/ CU.FT.			
COMPOSITION	-					3	CHARACTERISTICS			
						FRAGMENTABILITY	GOOD			
						REPARABILITY	FAIR			
						COMPACTIBILITY	GOOD			
						COMBUSTIBILITY	FAIR			
						TOXICITY	EXCELLENT (SEE PRECAUTIONS)			
						BIOLOGICAL DEGRADABILITY	POOR			
						CHEMICAL DEGRADABILITY	POOR			
						REUSABILITY	POOR			
						8*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
						PRODUCES HARMFUL GASES AND OFFENSIVE ODORS WHEN INCINERATED				
PRE-PROCESSSES						A - SEPARATION B - COMPACTION C - SHREDDING				
4	DISPOSAL RATING SUMMARY									
METHOD OF DISPOSAL		PRE-PROCESSSES	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING			
REUSE	A		4.5	10.0	7.3	2				
RECYCLE	A B		4.4	9.0	6.7	4				
PYROLYSIS	A C		4.6	7.8	6.3	8				
COMPOSTING	A C		4.2	7.8	6.0	7				
BALING	B		7.0	7.6	7.4	1				
INCINERATION	A C		8.7	6.2	6.5	5				
SANITARY LANDFILL	B		6.2	7.4	6.8	3				
SEA DISPOSAL	B		4.7	4.2	4.5	8				
6*	HANDLING DATA		8*			OFF-BASE DISPOSAL/ PROCESSING DATA		10*		NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD							
			SECONDARY MATERIAL HANDLER							
7*			9*			OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD							
			SECONDARY MATERIAL HANDLER							
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE																																																																		
						MATERIAL NO.	REFERENCE PG.	OTHER																																																																
						54	C-54																																																																	
1 MATERIAL DESCRIPTION						2 CHEMICAL PROPERTIES																																																																		
CATEGORY		PLASTIC				MELTING TEMPERATURE		340-500 °F																																																																
NAME		CELLULOSICS				COMBUSTION TEMPERATURE		800 °F																																																																
COMMON NAME (FORM)		STRIPPABLE PLASTIC COATING - COLD (FILM)				HEAT OF COMBUSTION		16,000 BTU/LB																																																																
USES		COATING				MATERIAL DENSITY		72-82 LB/CU.FT.																																																																
FEDERAL/MILITARY SPECIFICATION NUMBER		MIL-P-45021				BULK DENSITY		72-82 LB/CU.FT.																																																																
COMPOSITION						3 CHARACTERISTICS																																																																		
4 DISPOSAL RATING SUMMARY <table border="1"> <thead> <tr> <th>METHOD OF DISPOSAL</th> <th>PRE-PROCESS</th> <th>OPERATIONAL RATING</th> <th>ENVIRONMENTAL RATING</th> <th>TOTAL DISPOSAL RATING</th> <th>TOTAL DISPOSAL RANKING</th> <th>ECONOMIC RANKING</th> </tr> </thead> <tbody> <tr> <td>REUSE</td> <td>A</td> <td>1.0</td> <td>10.0</td> <td>5.5</td> <td>5</td> <td></td> </tr> <tr> <td>RECYCLE</td> <td>A B</td> <td>0.8</td> <td>9.0</td> <td>4.9</td> <td>6</td> <td></td> </tr> <tr> <td>PYROLYSIS</td> <td>A</td> <td>3.8</td> <td>7.6</td> <td>5.2</td> <td>4</td> <td></td> </tr> <tr> <td>COMPOSTING</td> <td>A</td> <td>3.8</td> <td>7.8</td> <td>5.8</td> <td>4</td> <td></td> </tr> <tr> <td>BALING</td> <td>B</td> <td>5.2</td> <td>7.6</td> <td>6.5</td> <td>2</td> <td></td> </tr> <tr> <td>INCINERATION</td> <td>A</td> <td>5.8</td> <td>6.2</td> <td>5.9</td> <td>3</td> <td></td> </tr> <tr> <td>SANITARY LANDFILL</td> <td>B</td> <td>5.7</td> <td>7.4</td> <td>6.6</td> <td>1</td> <td></td> </tr> <tr> <td>SEA DISPOSAL</td> <td>B</td> <td>4.2</td> <td>4.2</td> <td>4.2</td> <td>7</td> <td></td> </tr> </tbody> </table> <p>PRE-PROCESSES A - SEPARATION B - COMPACTION C - SHREDDING</p>						METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	REUSE	A	1.0	10.0	5.5	5		RECYCLE	A B	0.8	9.0	4.9	6		PYROLYSIS	A	3.8	7.6	5.2	4		COMPOSTING	A	3.8	7.8	5.8	4		BALING	B	5.2	7.6	6.5	2		INCINERATION	A	5.8	6.2	5.9	3		SANITARY LANDFILL	B	5.7	7.4	6.6	1		SEA DISPOSAL	B	4.2	4.2	4.2	7		FRAGMENTABILITY		EXCELLENT	
						METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING																																																												
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						PYROLYSIS	A	3.8	7.6	5.2	4																																																													
						COMPOSTING	A	3.8	7.8	5.8	4																																																													
						BALING	B	5.2	7.6	6.5	2																																																													
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5* SPECIAL PRECAUTIONS/APPLICABLE REGULATIONS						PRODUCES HARMFUL GASES AND OFFENSIVE ODORS WHEN INCINERATED																																																																		
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*TO BE COMPLETED BY THE COGNIZANT OFFICER																																																																								

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							55	C-55			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC						MELTING TEMPERATURE	340-500 °F			
NAME	CELLULOSICS						COMBUSTION TEMPERATURE	840 °F			
COMMON NAME (FORM)	STRIPPABLE PLASTIC COATING - HOT (FILM)						HEAT OF COMBUSTION	15,770 BTU/LB			
USES	COATING						MATERIAL DENSITY	71.76-82.37 LB/CU.FT.			
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-P-149						BULK DENSITY	70-60 LB/CU.FT.			
COMPOSITION	-						3 CHARACTERISTICS				
							FRAGMENTABILITY	EXCELLENT			
							SEPARABILITY	UNSATISFACTORY			
4 DISPOSAL RATING SUMMARY							COMPACTIBILITY	FAIR			
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	COMBUSTIBILITY			
REUSE	A		1.0	10.0	5.5	5		POOR			
RECYCLE	A B		0.8	9.0	4.9	6		TOXICITY			
PYROLYSIS	A		3.8	7.8	5.8	4		EXCELLENT (SEE PRECAUTIONS)			
COMPOSTING	A		3.8	7.8	5.8	4		BIOLOGICAL DEGRADABILITY			
BALING	B		5.2	7.8	6.5	2		POOR			
INCINERATION	A		5.6	6.2	5.2	3		CHEMICAL DEGRADABILITY			
SANITARY LANDFILL	B		5.7	7.4	6.6	1		POOR			
SEA DISPOSAL	B		4.2	4.2	4.2	7		REUSABILITY			
PRE-PROCESSES							A - SEPARATION B - COMPACTION C - SHREDDING				
							5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
							PRODUCES HARMFUL GASES AND OFFENSIVE ODORS WHEN INCINERATED				
6* HANDLING DATA				8* OFF-BASE DISPOSAL/ PROCESSING DATA				10* NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD							
				SECONDARY MATERIAL HANDLER							
7* ON-BASE DISPOSAL/ RECLAMATION DATA				9* OFF-BASE DISPOSAL/ RECYCLING DATA							
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD							
				SECONDARY MATERIAL HANDLER							
*TO BE COMPLETED BY THE COGNIZANT OFFICER											

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE NO.	OTHER		
							58	C-58			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC						MELTING TEMPERATURE	250-500 °F			
NAME	EPOXY						COMBUSTION TEMPERATURE	APPROX. °F 700			
COMMON NAME (FORM)	EPOXY RESIN (FILM)						HEAT OF COMBUSTION	APPROX. BTU 1500 / LB			
USES	COATING						MATERIAL DENSITY	72.38 - LB 75.50 CU.FT.			
FEDERAL/ MILITARY SPECIFICATION NUMBER	MIL-R-21931						BULK DENSITY	72.38 - LB 75.50 CU.FT.			
COMPOSITION	-						3	CHARACTERISTICS			
							FRAGMENTABILITY	EXCELLENT			
							SEPARABILITY	UNSATISFACTORY			
							COMPACTIBILITY	FAIR			
							COMBUSTIBILITY	POOR			
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)			
							BIOLOGICAL DEGRADABILITY	POOR			
							CHEMICAL DEGRADABILITY	POOR			
							REUSABILITY	UNSATISFACTORY			
							8*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES HARMFUL GASES WHEN INCINERATED				
4							DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		PRE- PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO- NOMIC RANKING				
REUSE	A		1.0	10.0	5.5	8					
RECYCLE	A B		1.4	9.0	5.2	7					
PYROLYSIS	A C		4.4	7.8	6.1	3					
COMPOSTING	A C		3.8	7.8	5.8	5					
BALING	B		5.2	7.8	6.5	2					
INCINERATION	A C		5.6	6.2	5.9	4					
SANITARY LANDFILL	B		5.9	7.4	6.7	1					
SEA DISPOSAL	B		4.4	4.2	4.3	6					
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING									
6*	HANDLING DATA						9*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD				
							SECONDARY MATERIAL HANDLER				
7*	ON-BASE DISPOSAL/ RECLAMATION DATA						9*	OFF-BASE DISPOSAL/ RECYCLING DATA			
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD				
							SECONDARY MATERIAL HANDLER				
							*TO BE COMPLETED BY THE ORGANIZATION OFFICER				

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							57	C-57			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC						MELTING TEMPERATURE	280-350 °F			
NAME	IONOMER						COMBUSTION TEMPERATURE	825 °F			
COMMON NAME (FORM)	SURLYN (FILM, SHEET)						HEAT OF COMBUSTION	16,000 BTU/LB			
USES	WRAPPING, MOLDED PARTS						MATERIAL DENSITY	58.03-59.00 LB/CUFT			
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-P-48124						BULK DENSITY	50-60 LB/CUFT			
COMPOSITION	-						3	CHARACTERISTICS			
							FRAGMENTABILITY	GOOD			
							SEPARABILITY	FAIR			
							COMPACTIBILITY	GOOD			
							COMBUSTIBILITY	FAIR			
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)			
							BIOLOGICAL DEGRADABILITY	POOR			
							CHEMICAL DEGRADABILITY	POOR			
							REUSABILITY	POOR			
							9*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES HARMFUL GASES WHEN INCINERATED				
PWS-PROCESSING: A - SEPARATION B - COMPACTION C - SHREDDING											
6*	HANDLING DATA					8*	OFF-BASE DISPOSAL/ PROCESSING DATA			10*	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD				
							SECONDARY MATERIAL HANDLER				
7*	ON-BASE DISPOSAL/ RECLAMATION DATA					9*	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD				
							SECONDARY MATERIAL HANDLER				
*TO BE COMPLETED BY THE COGNIZANT OFFICER											

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PL.	OTHER	
							58	C-58		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	PLASTIC						MELTING TEMPERATURE	280-350 °F		
NAME	IONOMER						COMBUSTION TEMPERATURE	625 °F		
COMMON NAME (FORM)	SURLYN (FOAM)						HEAT OF COMBUSTION	16,000 BTU/LB		
USE	CUSHIONING						MATERIAL DENSITY	56.03-59.90 LB/CUFT.		
FEDERAL/MILITARY SPECIFICATION NUMBER	-						BULK DENSITY	5-10 LB/CUFT.		
COMPOSITION	-						3 CHARACTERISTICS			
							FRAGMENTABILITY	GOOD		
							SEPARABILITY	POOR		
							COMPACTIBILITY	GOOD		
							COMBUSTIBILITY	FAIR		
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)		
							BIOLOGICAL DEGRADABILITY	POOR		
							CHEMICAL DEGRADABILITY	POOR		
							REUSABILITY	UNSATISFACTORY		
							6° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES HARMFUL GASES WHEN INCINERATED			
4 DISPOSAL RATING SUMMARY										
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RATING	ECOLOGICAL RATING				
REUSE	A	3.0	10.0	6.5	3					
RECYCLE	A B	4.0	9.0	6.5	3					
PYROLYSIS	A C	4.6	7.6	6.2	4					
COMPOSTING	A C	4.0	7.6	5.9	5					
BALING	B	6.6	7.6	7.2	1					
INCINERATION	A C	6.1	6.3	6.2	4					
SANITARY LANDFILL	B	5.6	7.4	6.6	2					
SEA DISPOSAL	B	4.3	4.2	4.3	6					
PRE-PROCESSOR										
A = SEPARATION B = COMPACTION C = SHREDDING										
6° HANDLING DATA				9° OFF-BASE DISPOSAL/ PROCESSING DATA			10° NOTES AND COMMENTS			
METHOD OF STORAGE/SECTION				DISPOSAL/PROCESSING METHOD						
				SECONDARY MATERIAL HANDLER						
7° ON-BASE DISPOSAL/ RECLAMATION DATA				9° OFF-BASE DISPOSAL/ RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD						
				SECONDARY MATERIAL HANDLER						
							*TO BE COMPLETED BY THE COMMANDANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE				
						MATERIAL NO.	REFERENCE NO.	OTHER		
						19	C-88			
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC					MELTING TEMPERATURE	290-300 °C			
NAME	PHENOLICS (PHENOL-FORMALDEHYDE)					COMBUSTION TEMPERATURE	840 °C			
COMMON NAME (FORM)	BAKELITE (SOLID STOCK)					HEAT OF COMBUSTION	12,000 BTU/LB			
USES	TRAYS, CONTAINERS					MATERIAL DENSITY	80-85 LB/CU FT.			
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-R-3745 L-P-1125					BULK DENSITY	2-22 LB/CU FT.			
COMPOSITION						3	CHARACTERISTICS			
						FRAGMENTABILITY	GOOD			
						SEPARABILITY	FAIR			
						COMPACTIBILITY	GOOD			
						COMBUSTIBILITY	POOR			
						TOXICITY	EXCELLENT (SEE PRECAUTIONS)			
						BIOLOGICAL DEGRADABILITY	POOR			
						CHEMICAL DEGRADABILITY	POOR			
						REUSABILITY	POOR			
						8	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
						PRODUCES HARMFUL GASES AND OFFENSIVE ODORS WHEN INCINERATED				
4						DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING				
ROUTE	A	4.5	10.0	7.3	1					
RECYCLE	A B	2.8	9.0	5.8	8					
PYROLYSIS	A C	4.8	7.8	8.3	4					
COMPOSTING	A C	4.2	7.8	8.0	5					
BALING	B	8.2	7.8	7.0	2					
INCINERATION	A C	5.2	8.2	5.7	7					
SANITARY LANDFILL	B	8.4	7.4	8.9	3					
SEA DISPOSAL	B	4.9	4.2	4.8	8					
PRE-PROCESSING		A - SEPARATION B - COMPACTION C - SHREDDING								
9	HANDLING DATA				10	OFF-BASE DISPOSAL/ PROCESSING DATA			11	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD				
						SECONDARY MATERIAL HANDLER				
7	ON-BASE DISPOSAL/ RECLAMATION DATA				8	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD				
						SECONDARY MATERIAL HANDLER				
*TO BE COMPLETED BY THE COMBANT OFFICER										

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE PR.	OTHER	
						60	C-80		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY	PLASTIC					MELTING TEMPERATURE	300-400 °F		
NAME	PLASTIC/FOIL LAMINATION					COMBUSTION TEMPERATURE	700-800 °F		
COMMON NAME (FORM)	POLYOLEFIN/ALUMINUM/ POLYESTER, MARPLEX (SHEET)					HEAT OF COMBUSTION	18,000- 20,000 BTU/LB		
USES	WRAPPING, POUCHES					MATERIAL DENSITY	80-90 LB/ CU.FT.		
FEDERAL/ MILITARY SPECIFICATION NUMBER						BULK DENSITY	60-90 LB/ CU.FT.		
COMPOSITION						3 CHARACTERISTICS			
						FRAGILITY (FABILITY)	EXCELLENT		
4 DISPOSAL RATING SUMMARY						SEPARABILITY	POOR		
METHOD OF DISPOSAL		PRE-PROCESSING	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	COMPACTIBILITY	
REUSE		A	2.0	10.0	6.0	4		FAIR	
RECYCLE		A B	1.8	9.0	5.4	7		POOR	
PYROLYSIS		A C	4.6	7.8	6.2	3		EXCELLENT (SEE PRECAUTIONS)	
COMPOSTING		A C	4.0	7.6	5.9	5		POOR	
BALING		B	5.2	7.8	6.5	2		POOR	
INCINERATION		A C	5.2	8.2	5.7	6		UNSATISFACTORY	
SANITARY LANDFILL		B	5.0	7.4	6.7	1			
SEA DISPOSAL		B	4.4	4.2	4.5	8			
PRE-PROCESSES		A - SEPARATION B - COMPACTING C - SHREDDING						5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS	
						PRODUCES OFFENSIVE ODORS WHEN INCINERATED			
6* HANDLING DATA			8* OFF-BASE DISPOSAL/ PROCESSING DATA			10* NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD						
			SECONDARY MATERIAL HANDLER						
7* ON-BASE DISPOSAL/ RECLAMATION DATA			9* OFF-BASE DISPOSAL/ RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD						
			SECONDARY MATERIAL HANDLER						
						*TO BE COMPLETED BY THE COGNIZANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE																																																																		
							MATERIAL NO.	REFERENCE PG.	OTHER																																																																
							61	C-61																																																																	
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES																																																																	
CATEGORY	PLASTIC						MELTING TEMPERATURE	336-425 °F																																																																	
NAME	POLYACRYLICS						COMBUSTION TEMPERATURE	ABOVE 700 °F																																																																	
COMMON NAME (FORM)	LUCITE, PLEXIGLAS (SOLID STOCK, SHEET)						HEAT OF COMBUSTION	15,770 BTU/LB																																																																	
USES	CONTAINERS						MATERIAL DENSITY	66.64-74.88 LB/CU.FT.																																																																	
FEDERAL/MILITARY SPECIFICATION NUMBER	L-P-507 MIL-P-8184						BULK DENSITY	2-20 LB/CU.FT.																																																																	
COMPOSITION	-						3	CHARACTERISTICS																																																																	
4 DISPOSAL RATING SUMMARY <table border="1"> <thead> <tr> <th>METHOD OF DISPOSAL</th> <th>PRE-PROCESS</th> <th>OPERATIONAL RATING</th> <th>ENVIRONMENTAL RATING</th> <th>TOTAL DISPOSAL RATING</th> <th>TOTAL DISPOSAL RANKING</th> <th>ECONOMIC RANKING*</th> </tr> </thead> <tbody> <tr> <td>REUSE</td> <td>A</td> <td>4.5</td> <td>10.0</td> <td>7.3</td> <td>2</td> <td></td> </tr> <tr> <td>RECYCLE</td> <td>A/B</td> <td>4.4</td> <td>9.0</td> <td>6.7</td> <td>3</td> <td></td> </tr> <tr> <td>PYROLYSIS</td> <td>A/C</td> <td>4.8</td> <td>7.8</td> <td>8.3</td> <td>4</td> <td></td> </tr> <tr> <td>COMPOSTING</td> <td>A/C</td> <td>4.2</td> <td>7.8</td> <td>6.0</td> <td>5</td> <td></td> </tr> <tr> <td>BALING</td> <td>B</td> <td>7.2</td> <td>7.6</td> <td>7.5</td> <td>1</td> <td></td> </tr> <tr> <td>INCINERATION</td> <td>A/C</td> <td>5.7</td> <td>6.2</td> <td>8.0</td> <td>5</td> <td></td> </tr> <tr> <td>SANITARY LANDFILL</td> <td>B</td> <td>8.0</td> <td>7.4</td> <td>6.7</td> <td>3</td> <td></td> </tr> <tr> <td>SEA DISPOSAL</td> <td>B</td> <td>4.5</td> <td>4.2</td> <td>4.4</td> <td>6</td> <td></td> </tr> </tbody> </table> <p>PRE-PROCESSES: A - SEPARATION B - COMPACTION C - SHREDDING</p>							METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING*	REUSE	A	4.5	10.0	7.3	2		RECYCLE	A/B	4.4	9.0	6.7	3		PYROLYSIS	A/C	4.8	7.8	8.3	4		COMPOSTING	A/C	4.2	7.8	6.0	5		BALING	B	7.2	7.6	7.5	1		INCINERATION	A/C	5.7	6.2	8.0	5		SANITARY LANDFILL	B	8.0	7.4	6.7	3		SEA DISPOSAL	B	4.5	4.2	4.4	6		FRAGMENTABILITY	GOOD		
							METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING*																																																												
							REUSE	A	4.5	10.0	7.3	2																																																													
							RECYCLE	A/B	4.4	9.0	6.7	3																																																													
							PYROLYSIS	A/C	4.8	7.8	8.3	4																																																													
							COMPOSTING	A/C	4.2	7.8	6.0	5																																																													
							BALING	B	7.2	7.6	7.5	1																																																													
							INCINERATION	A/C	5.7	6.2	8.0	5																																																													
							SANITARY LANDFILL	B	8.0	7.4	6.7	3																																																													
SEA DISPOSAL	B	4.5	4.2	4.4	6																																																																				
SEPARABILITY	FAIR																																																																								
COMPACTIBILITY	GOOD																																																																								
COMBUSTIBILITY	POOR																																																																								
TOXICITY	EXCELLENT (SEE PRECAUTIONS)																																																																								
BIOLOGICAL DEGRADABILITY	POOR																																																																								
CHEMICAL DEGRADABILITY	POOR																																																																								
REUSABILITY	POOR																																																																								
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PRODUCES HARMFUL GASES AND OFFENSIVE ODORS WHEN INCINERATED																																																																									
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				SECONDARY MATERIAL HANDLER																																																																					
7*	ON-BASE DISPOSAL/RECLAMATION DATA			9*	OFF-BASE DISPOSAL/RECYCLING DATA																																																																				
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD																																																																					
				SECONDARY MATERIAL HANDLER																																																																					
*TO BE COMPLETED BY THE COGNIZANT OFFICER																																																																									

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE		
							MATERIAL NO.	REFERENCE PG.	OTHER
							62	C-62	
1 MATERIAL DESCRIPTION							2 CHEMICAL PROPERTIES		
CATEGORY	PLASTIC						MELTING TEMPERATURE	520-700 °F	
NAME	POLYAMIDS						COMBUSTION TEMPERATURE	- °F	
COMMON NAME (FORM)	NYLON (CLOTH)						HEAT OF COMBUSTION	12,000-13,500 $\frac{\text{BTU}}{\text{LB}}$	
USE	SACKS						MATERIAL DENSITY	64.89-84.24 $\frac{\text{LB}}{\text{CU.FT.}}$	
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-C-81268						BULK DENSITY	60-84 $\frac{\text{LB}}{\text{CU.FT.}}$	
COMPOSITION							3 CHARACTERISTICS		
							FRAGMENTABILITY	GOOD	
4 DISPOSAL RATING SUMMARY							SEPARABILITY	POOR	
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOT. L. DISPOSAL RANKING	ECO-NOMIC RANKING	COMPACTIBILITY	FAIR
REUSE	A		3.0	10.0	6.5	2		COMBUSTIBILITY	UNSATISFACTORY
RECYCLE	A B		3.6	9.0	6.3	3		TOXICITY	EXCELLENT
PYROLYSIS	A C		4.6	7.8	8.2	4		BIOLOGICAL DEGRADABILITY	POOR
COMPOSTING	A C		4.0	7.8	5.9	5		CHEMICAL DEGRADABILITY	POOR
BALING	B		5.2	7.8	6.5	2		REUSABILITY	POOR
INCINERATION	A C		4.7	8.2	5.5	6		9* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS	
SANITARY LANDFILL	B		5.9	7.4	6.7	1			
SEA DISPOSAL	B		4.4	4.2	4.3	7			
PRE-PROCESSOR: A - SEPARATION B - COMPACTION C - SHREDDING									
6* HANDLING DATA				8* OFF-BASE DISPOSAL/ PROCESSING DATA				10* NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD					
				SECONDARY MATERIAL HANDLER					
7* ON-BASE DISPOSAL/ RECLAMATION DATA				8* OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD					
				SECONDARY MATERIAL HANDLER				*TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE NO.	OTHER	
							83	C-83		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	PLASTIC						MELTING TEMPERATURE	520-700 °F		
NAME	POLYAMIDS						COMBUSTION TEMPERATURE	-		
COMMON NAME (FORM)	NYLON (FIBER)						HEAT OF COMBUSTION	12,000-13,500 $\frac{\text{BTU}}{\text{LB}}$		
USES	CORD						MATERIAL DENSITY	64.69-84.24 $\frac{\text{LB}}{\text{CU.FT.}}$		
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-C-5040						BULK DENSITY	60-80 $\frac{\text{LB}}{\text{CU.FT.}}$		
COMPOSITION	-						3 CHARACTERISTICS			
							FRAGMENTABILITY	GOOD		
							SEPARABILITY	POOR		
							COMPACTIBILITY	FAIR		
							COMBUSTIBILITY	UNSATISFACTORY		
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)		
							BIOLOGICAL DEGRADABILITY	POOR		
							CHEMICAL DEGRADABILITY	POOR		
							REUSABILITY	UNSATISFACTORY		
							5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES OFFENSIVE ODORS WHEN INCINERATED			
4 DISPOSAL RATING SUMMARY										
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING			
REUSE	A		2.0	10.0	6.0	5				
RECYCLE	A B		3.6	9.0	6.3	3				
PYROLYSIS	A C		4.6	7.8	6.2	4				
COMPOSTING	A C		4.0	7.8	5.9	6				
BALING	B		5.2	7.8	6.5	2				
INCINERATION	A C		4.7	6.2	5.5	7				
BANITARY LANDFILL	B		5.9	7.4	6.7	1				
SEA DISPOSAL	B		4.4	4.2	4.3	8				
PRE-PROCESSES:							A - SEPARATION B - COMPACTION C - SHREDDING			
6°	HANDLING DATA					8°	OFF-BASE DISPOSAL/ PROCESSING DATA		10° NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD				
						SECONDARY MATERIAL HANDLER				
7°	ON-BASE DISPOSAL/ RECLAMATION DATA					9°	OFF-BASE DISPOSAL/ RECYCLING DATA			
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD				
						SECONDARY MATERIAL HANDLER				
						*TO BE COMPLETED BY THE COORDINATING OFFICER				

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PB.	OTHER		
							64	C-64			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC						MELTING TEMPERATURE	480-650 °F			
NAME	POLYCARBONATE						COMBUSTION TEMPERATURE	780-800 °F			
COMMON NAME (FORM)	POLYCARBONATE (SHEET)						HEAT OF COMBUSTION	18,000 BTU/LB			
USE	WRAPPING						MATERIAL DENSITY	74.88-93.80 LB/CL.FT.			
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-P-46144 MIL-P-83310						BULK DENSITY	70-90 LB/CL.FT.			
COMPOSITION	COMMERCIAL QUALITY 3 MILS AND UNDER						3	CHARACTERISTICS			
							FRAGMENTABILITY	EXCELLENT			
							SEPARABILITY	POOR			
							COMPACTIBILITY	FAIR			
							COMBUSTIBILITY	FAIR			
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)			
							BIOLOGICAL DEGRADABILITY	POOR			
							CHEMICAL DEGRADABILITY	POOR			
							REUSABILITY	UNSATISFACTORY			
							5°	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES HARMFUL GASES WHEN INCINERATED				
4	DISPOSAL RATING SUMMARY										
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING*					
REUSE	A	2.0	10.0	6.0	5						
RECYCLE	A/B	3.6	9.0	8.3	3						
PYROLYSIS	A/C	4.8	7.8	6.2	4						
COMPOSTING	A/C	4.0	7.8	5.9	6						
BALING	B	5.2	7.8	6.5	2						
INCINERATION	A/C	6.7	6.2	6.5	2						
SANITARY LANDFILL	B	5.9	7.4	6.7	1						
SEA DISPOSAL	B	4.4	4.2	4.3	7						
PRE-PROCESSES:		A - SEPARATION B - COMPACTION C - SHREDDING									
6°	HANDLING DATA					8°	OFF-BASE DISPOSAL/ PROCESSING DATA		10°	NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD					
						SECONDARY MATERIAL HANDLER					
7°	ON-BASE DISPOSAL/ RECLAMATION DATA					9°	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD					
						SECONDARY MATERIAL HANDLER					
								*TO BE COMPLETED BY THE COGNIZANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE																																																																		
							MATERIAL NO.	REFERENCE PG.	OTHER																																																																
							85	C-85																																																																	
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES																																																																	
CATEGORY	PLASTIC						MELTING TEMPERATURE	480-650 °F																																																																	
NAME	POLYCARBONATE						COMBUSTION TEMPERATURE	780-800 °F																																																																	
COMMON NAME (FORM)	POLYCARBONATE (SOLID STOCK)						HEAT OF COMBUSTION	18,000 BTU/LB																																																																	
USES	CONTAINERS						MATERIAL DENSITY	74.88-93.60 LB/CU.FT.																																																																	
FEDERAL/MILITARY SPECIFICATION NUMBER							BULK DENSITY	2-5 LB/CU.FT.																																																																	
COMPOSITION	UNFILLED TO LESS THAN 10% GLASS FILLED						3	CHARACTERISTICS																																																																	
4 DISPOSAL RATING SUMMARY <table border="1"> <thead> <tr> <th>METHOD OF DISPOSAL</th> <th>PRE-PROCESS</th> <th>OPERATIONAL RATING</th> <th>ENVIRONMENTAL RATING</th> <th>TOTAL DISPOSAL RATING</th> <th>TOTAL DISPOSAL RANKING</th> <th>ECONOMIC RANKING</th> </tr> </thead> <tbody> <tr> <td>REUSE</td> <td>A</td> <td>4.5</td> <td>10.0</td> <td>7.3</td> <td>2</td> <td></td> </tr> <tr> <td>RECYCLE</td> <td>A/B</td> <td>4.4</td> <td>9.0</td> <td>8.7</td> <td>4</td> <td></td> </tr> <tr> <td>PYROLYSIS</td> <td>A/C</td> <td>4.8</td> <td>7.8</td> <td>6.3</td> <td>5</td> <td></td> </tr> <tr> <td>COMPOSTING</td> <td>A/C</td> <td>4.2</td> <td>7.8</td> <td>6.0</td> <td>6</td> <td></td> </tr> <tr> <td>BALING</td> <td>B</td> <td>7.0</td> <td>7.8</td> <td>7.4</td> <td>1</td> <td></td> </tr> <tr> <td>INCINERATION</td> <td>A/C</td> <td>5.2</td> <td>6.2</td> <td>5.7</td> <td>7</td> <td></td> </tr> <tr> <td>SANITARY LANDFILL</td> <td>B</td> <td>6.2</td> <td>7.4</td> <td>6.8</td> <td>3</td> <td></td> </tr> <tr> <td>SEA DISPOSAL</td> <td>B</td> <td>4.7</td> <td>4.2</td> <td>4.5</td> <td>8</td> <td></td> </tr> </tbody> </table> <p>PRE-PROCESSES: A - SEPARATION, B - COMPACTION, C - SHREDDING</p>							METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	REUSE	A	4.5	10.0	7.3	2		RECYCLE	A/B	4.4	9.0	8.7	4		PYROLYSIS	A/C	4.8	7.8	6.3	5		COMPOSTING	A/C	4.2	7.8	6.0	6		BALING	B	7.0	7.8	7.4	1		INCINERATION	A/C	5.2	6.2	5.7	7		SANITARY LANDFILL	B	6.2	7.4	6.8	3		SEA DISPOSAL	B	4.7	4.2	4.5	8		FRAGMENTABILITY	GOOD		
							METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING																																																												
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							PYROLYSIS	A/C	4.8	7.8	6.3	5																																																													
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							BALING	B	7.0	7.8	7.4	1																																																													
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REUSABILITY	POOR																																																																								
5° SPECIAL PRECAUTIONS/APPLICABLE REGULATIONS							PRODUCES HARMFUL GASES WHEN INCINERATED																																																																		
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DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD																																																																					
				SECONDARY MATERIAL HANDLER																																																																					
*TO BE COMPLETED BY THE COGNIZANT OFFICER																																																																									

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE					
						MATERIAL NO.	REFERENCE PL.	OTHER			
						66	C-66				
1 MATERIAL DESCRIPTION						2 CHEMICAL PROPERTIES					
CATEGORY		PLASTIC				MELTING TEMPERATURE		300-450 °F			
NAME		POLYESTER				COMBUSTION TEMPERATURE		760-800 °F			
COMMON NAME (FORM)		DACRON (FIBER)				HEAT OF COMBUSTION		12,000 BTU/LB			
USES		STRAPS				MATERIAL DENSITY		93.60-121.04 LB/CU.FT.			
FEDERAL/MILITARY SPECIFICATION NUMBER		-				BULK DENSITY		90-130 LB/CU.FT.			
COMPOSITION		GLASS REINFORCED WOVEN CLOTH				3 CHARACTERISTICS					
		FRAGMENTABILITY		EXCELLENT							
		SEPARABILITY		POOR							
		COMPACTIONILITY		F. :							
		COMBUSTIBILITY		GOOD							
		TOXICITY		EXCELLENT (SEE PRECAUTIONS)							
		BIOLOGICAL DEGRADABILITY		POOR							
		CHEMICAL DEGRADABILITY		POOR							
		REPAIRABILITY		UNSATISFACTORY							
		8° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		PRODUCES HARMFUL GASES WHEN INCINERATED							
4 DISPOSAL RATING SUMMARY											
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING				
REUSE		A	2.0	10.0	6.0	6					
RECYCLE		A B	3.6	9.0	6.3	4					
PYROLYSIS		A C	4.6	7.6	6.2	5					
COMPOSTING		A C	4.0	7.8	5.9	7					
BALING		B	5.2	7.8	6.5	3					
INCINERATION		A C	7.7	6.2	7.0	1					
SANITARY LANDFILL		B	6.3	7.4	6.9	2					
SEA DISPOSAL		B	4.6	4.2	4.5	8					
PRE-PROCESSES:						A = SEPARATION B = COMPACTION C = EMPLOYING					
6° HANDLING DATA			7° ON-BASE DISPOSAL/ RECLAMATION DATA			8° OFF-BASE DISPOSAL/ PROCESSING DATA			9° NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION			DISPOSAL/RECLAMATION METHOD			DISPOSAL/PROCESSING METHOD					
						SECONDARY MATERIAL HANDLER					
						DISPOSAL/RECYCLING METHOD					
						SECONDARY MATERIAL HANDLER					
									*TO BE COMPLETED BY THE COGNIZANT OFFICER		

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE						
							MATERIAL NO.	REFERENCE NO.	OTHER				
							87	C-87					
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES					
CATEGORY	PLASTIC						MELTING TEMPERATURE	480-509 °F					
NAME	POLYESTER						COMBUSTION TEMPERATURE	760-800 °F					
COMMON NAME (FORM)	MYLAR (FILM)						HEAT OF COMBUSTION	12,000 BTU/LB					
USES	POUCHES						MATERIAL DENSITY	93.80- 131.04 LB CU.FT.					
FEDERAL/ MILITARY SPECIFICATION NUMBER	L-P-377						BULK DENSITY	90-130 LB CU.FT.					
COMPOSITION	GLASS REINFORCED WOVEN CLOTH						3	CHARACTERISTICS					
							FRAGMENTABILITY	EXCELLENT					
4							DISPOSAL RATING SUMMARY						
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING						
REUSE	A		2.0	10.0	6.0	6		SEPARABILITY	POOR				
RECYCLE	A B		3.6	9.0	6.3	4		COMPACTIBILITY	FAIR				
PYROLYSIS	A C		4.6	7.8	6.2	5		COMBUSTIBILITY	GOOD				
COMPOSTING	A C		4.0	7.8	5.9	7		TOXICITY	EXCELLENT (SEE PRECAUTIONS)				
BALING	B		5.2	7.8	6.5	3		BIOLOGICAL DEGRADABILITY	POOR				
INCINERATION	A C		7.7	6.2	7.0	1		CHEMICAL DEGRADABILITY	POOR				
SANITARY LANDFILL	B		6.3	7.4	6.9	2		REUSABILITY	UNSATISFACTORY				
SEA DISPOSAL	B		4.8	4.2	4.5	8		8°	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
PRE-PROCESSES							A - SEPARATION B - COMPACTION C - SHREDDING						
PRODUCES OFFENSIVE ODORS WHEN INCINERATED													
6°	HANDLING DATA						8°	OFF-BASE DISPOSAL/ PROCESSING DATA			10°	NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD						
							SECONDARY MATERIAL HANDLER						
7°	ON-BASE DISPOSAL/ RECLAMATION DATA						9°	OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD						
							SECONDARY MATERIAL HANDLER						
												*TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE PR.	OTHER	
						88	C-88		
1 MATERIAL DESCRIPTION						2 CHEMICAL PROPERTIES			
CATEGORY		PLASTIC				MELTING TEMPERATURE		300-600 °F	
NAME		POLYOLEFIN				COMBUSTION TEMPERATURE		660 °F	
COMMON NAME (FORM)		POLYETHYLENE (FILM)				HEAT OF COMBUSTION		18,500-19,500 BTU/LB	
USES		WRAPPING, POUCHES				MATERIAL DENSITY		58.78-60.22 LB/CU.FT.	
FEDERAL/MILITARY SPECIFICATION NUMBER		L-P-378				BULK DENSITY		50-60 LB/CU.FT.	
COMPOSITION						3 CHARACTERISTICS			
COMMERCIAL PACKING QUALITY (3MILS AND UNDER)						FRAGMENTABILITY		EXCELLENT	
4 DISPOSAL RATING SUMMARY						SEPARABILITY		POOR	
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING	COMPACTIBILITY		
REUSE		A	2.0	10.0	6.0	5	FAIR		
RECYCLE		A B	3.8	9.0	6.3	3	COMBUSTIBILITY		
PYROLYSIS		A C	4.8	7.8	6.2	4	FAIR		
COMPOSTING		A C	4.0	7.8	5.9	6	TOXICITY		
BALING		B	5.0	7.8	6.4	2	EXCELLENT (SEE PRECAUTIONS)		
INCINERATION		A C	6.7	6.2	6.5	1	BIOLOGICAL DEGRADABILITY		
SANITARY LANDFILL		B	5.5	7.4	6.5	1	POOR		
SEA DISPOSAL		B	4.0	4.2	4.1	7	CHEMICAL DEGRADABILITY		
PRE-PROCESSES		A - SEPARATION B - COMPACTIFICATION C - SHREDDING				REUSABILITY		UNSATISFACTORY	
						5 SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
						PRODUCES HARMFUL GASES WHEN INCINERATED			
6 HANDLING DATA				8 OFF-BASE DISPOSAL/ PROCESSING DATA			10 NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD					
				SECONDARY MATERIAL HANDLER					
7 ON-BASE DISPOSAL/ RECLAMATION DATA				9 OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD					
				SECONDARY MATERIAL HANDLER					
							*TO BE COMPLETED BY THE COGNIZANT OFFICER		

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE																																																																	
							MATERIAL NO.	REFERENCE NO.	OTHER																																																															
							69	C-69																																																																
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES																																																																
CATEGORY	PLASTIC						MELTING TEMPERATURE	300-600 °F																																																																
NAME	POLYOLEFIN						COMBUSTION TEMPERATURE	660 °F																																																																
COMMON NAME (FORM)	POLYETHYLENE (SOLID STOCK)						HEAT OF COMBUSTION	18,500-19,500 BTU/LB																																																																
USE	CONTAINERS						MATERIAL DENSITY	56.78-60.22 LB/CUFT.																																																																
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-D-40030						BULK DENSITY	2-6 LB/CUFT.																																																																
COMPOSITION	-						3 CHARACTERISTICS																																																																	
4 DISPOSAL RATING SUMMARY <table border="1"> <thead> <tr> <th>METHOD OF DISPOSAL</th> <th>PRE-PROCESS</th> <th>OPERATIONAL RATING</th> <th>ENVIRONMENTAL RATING</th> <th>TOTAL DISPOSAL RATING</th> <th>TOTAL DISPOSAL RANKING</th> <th>ECONOMIC RANKING^a</th> </tr> </thead> <tbody> <tr> <td>REUSE</td> <td>A</td> <td>4.5</td> <td>10.0</td> <td>7.3</td> <td>2</td> <td></td> </tr> <tr> <td>RECYCLE</td> <td>A B</td> <td>4.4</td> <td>9.0</td> <td>6.7</td> <td>3</td> <td></td> </tr> <tr> <td>PYROLYSIS</td> <td>A C</td> <td>4.6</td> <td>7.8</td> <td>6.3</td> <td>6</td> <td></td> </tr> <tr> <td>COMPOSTING</td> <td>A C</td> <td>4.2</td> <td>7.6</td> <td>6.0</td> <td>7</td> <td></td> </tr> <tr> <td>BALING</td> <td>B</td> <td>7.0</td> <td>7.8</td> <td>7.4</td> <td>1</td> <td></td> </tr> <tr> <td>INCINERATION</td> <td>A C</td> <td>6.7</td> <td>6.2</td> <td>6.5</td> <td>5</td> <td></td> </tr> <tr> <td>SANITARY LANDFILL</td> <td>B</td> <td>5.6</td> <td>7.4</td> <td>6.6</td> <td>4</td> <td></td> </tr> <tr> <td>SEA DISPOSAL</td> <td>B</td> <td>4.3</td> <td>4.2</td> <td>4.3</td> <td>6</td> <td></td> </tr> </tbody> </table>							METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING ^a	REUSE	A	4.5	10.0	7.3	2		RECYCLE	A B	4.4	9.0	6.7	3		PYROLYSIS	A C	4.6	7.8	6.3	6		COMPOSTING	A C	4.2	7.6	6.0	7		BALING	B	7.0	7.8	7.4	1		INCINERATION	A C	6.7	6.2	6.5	5		SANITARY LANDFILL	B	5.6	7.4	6.6	4		SEA DISPOSAL	B	4.3	4.2	4.3	6		FRAGMENTABILITY	GOOD	
							METHOD OF DISPOSAL	PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING ^a																																																											
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							BALING	B	7.0	7.8	7.4	1																																																												
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TOXICITY	EXCELLENT (SEE PRECAUTIONS)																																																																							
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*TO BE COMPLETED BY THE COGNIZANT OFFICER																																																																								

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE NO.	OTHER		
							70	C-70			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY		PLASTIC					MELTING TEMPERATURE		400-550 °F		
NAME		POLYOLEFIN					COMBUSTION TEMPERATURE		640 °F		
COMMON NAME (FORM)		POLYPROPYLENE (FIBER)					HEAT OF COMBUSTION		16,500-19,500 BTU/LB		
USES		CORD					MATERIAL DENSITY		57.02 LB/CU.FT.		
FEDERAL/MILITARY SPECIFICATION NUMBER		MIL-R-2:049					BULK DENSITY		57 LB/CU.FT.		
COMPOSITION		-					3 CHARACTERISTICS				
		FRAGMENTABILITY		EXCELLENT							
		SEPARABILITY		POOR							
		COMPACTIBILITY		FAIR							
		COMBUSTIBILITY		FAIR							
		TOXICITY		EXCELLENT (SEE PRECAUTIONS)							
		BIOLOGICAL DEGRADABILITY		POOR							
		CHEMICAL DEGRADABILITY		POOR							
		REUSABILITY		UNSATISFACTORY							
4 DISPOSAL RATING SUMMARY							5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING *				
REUSE		A	2.0	10.0	6.0	4					
RECYCLE		A B	3.6	9.0	6.3	2					
PYROLYSE		A C	4.6	7.8	6.2	3					
COMPOSTING		A C	4.0	7.8	5.9	5					
BALING		B	5.2	7.8	6.5	1					
INCINERATION		A C	6.7	6.2	6.5	1					
SANITARY LANDFILL		B	5.5	7.4	6.5	1					
SEA DISPOSAL		B	4.0	4.2	4.1	6					
PRE-PROCESS:		A - SEPARATION B - COMPACTION C - SHREDDING									
8* HANDLING DATA							9* OFF-BASE DISPOSAL/ PROCESSING DATA			10* NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD				
							SECONDARY MATERIAL HANDLER				
7* ON-BASE DISPOSAL/ RECLAMATION DATA							9* OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD				
							SECONDARY MATERIAL HANDLER			*TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							71	C-71			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC						MELTING TEMPERATURE	400-550 °F			
NAME	POLYOLEFIN						COMBUSTION TEMPERATURE	640 °F			
COMMON NAME (FORM)	POLYPROPYLENE (FILM)						HEAT OF COMBUSTION	30,000 BTU/LB			
USES	WRAPPING, POUCHES						MATERIAL DENSITY	57.02 LB/CUFT.			
FEDERAL/MILITARY SPECIFICATION NUMBER	L-P-376						BULK DENSITY	50-60 LB/CUFT.			
COMPOSITION	-						3	CHARACTERISTICS			
							FRAGMENTABILITY	EXCELLENT			
							SEPARABILITY	POOR			
							COMPACTIBILITY	FAIR			
							COMBUSTIBILITY	FAIR			
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)			
							BIOLOGICAL DEGRADABILITY	POOR			
							CHEMICAL DEGRADABILITY	POOR			
							REURABILITY	UNSATISFACTORY			
							8°	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES OFFENSIVE ODORS WHEN INCINERATED				
4							DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING					
REUSE	A	2.5	10.0	6.3	3						
RECYCLE	A B	3.6	9.0	6.3	3						
PYROLYSIS	A C	4.6	7.6	6.2	4						
COMPOSTING	A C	4.0	7.6	5.9	5						
BALING	B	5.6	7.8	6.7	1						
INCINERATION	A C	6.7	6.2	6.5	2						
SANITARY LANDFILL	B	5.5	7.4	6.5	2						
SEA DISPOSAL	B	4.0	4.2	4.1	6						
PRE-PROCESSES:							A - SEPARATION B - COMPACTION C - SHREDDING				
6°	HANDLING DATA					8°	OFF-BASE DISPOSAL/ PROCESSING DATA			10°	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD					
						SECONDARY MATERIAL HANDLER					
7°	ON-BASE DISPOSAL/ RECLAMATION DATA					9°	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD					
						SECONDARY MATERIAL HANDLER					
										*TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE						
						MATERIAL NO.	REFERENCE NO.	OTHER				
						78	C-78					
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES					
CATEGORY	PLASTIC					MELTING TEMPERATURE	400-880 °F					
NAME	POLYOLEFIN					COMBUSTION TEMPERATURE	640 °F					
COMMON NAME (FORM)	POLYPROPYLENE (FOAM)					HEAT OF COMBUSTION	30,000 BTU/LB					
USE	CUSHIONING					MATERIAL DENSITY	35 LB/CUFT					
FEDERAL/STATE/LOCAL SPECIFICATION NUMBER	MIL-C-81823					BULK DENSITY	.4-.9 LB/CUFT					
COMPOSITION						3	CHARACTERISTICS					
						FRAGMENTABILITY	EXCELLENT					
4 DISPOSAL RATING SUMMARY						SEPARABILITY	POOR					
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECOLOGICAL RANKING	COMPACTIBILITY	FAIR				
REUSE	A	3.0	10.0	6.8	2		COMBUSTIBILITY	FAIR				
RECYCLE	A B	4.0	9.0	6.5	2		TOXICITY	EXCELLENT (SEE PRECAUTIONS)				
PYROLYSIS	A C	4.8	7.8	6.3	3		BIOLOGICAL DEGRADABILITY	POOR				
COMPOSTING	A C	4.2	7.8	6.0	4		CHEMICAL DEGRADABILITY	POOR				
BALING	B	8.2	7.8	6.0	1		REUSABILITY	UNSATISFACTORY				
INCINERATION	A C	8.8	8.2	6.5	2		5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS					
SANITARY LANDFILL	B	8.8	7.4	6.5	2		PRODUCES OFFENSIVE ODORS WHEN INCINERATED					
SEA DISPOSAL	B	4.0	4.2	4.1	5							
PRE-PROCESSING: A - SEPARATION B - COMPACTION C - SHREDDING												
6°	HANDLING DATA				8°	OFF-BASE DISPOSAL/ PROCESSING DATA		10°	NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD								
				SECONDARY MATERIAL HANDLER								
7°	ON-BASE DISPOSAL/ RECLAMATION DATA				9°	OFF-BASE DISPOSAL/ RECYCLING DATA		*TO BE COMPLETED BY THE COGNIZANT OFFICER				
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD								
				SECONDARY MATERIAL HANDLER								

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE		
							MATERIAL NR.	REFERENCE NO.	OTHER
							73	C-73	
1 MATERIAL DESCRIPTION							2 CHEMICAL PROPERTIES		
CATEGORY		PLASTIC					MELTING TEMPERATURE		400-550 °F
NAME		POLYOLEFIN					COMBUSTION TEMPERATURE		640 °F
COMMON NAME (FORM)		POLYPROPYLENE (SOLID STOC)					HEAT OF COMBUSTION		20,000 BTU/LB
USE		CONTAINERS					MATERIAL DENSITY		57.02 LB/CU FT
FEDERAL/MILITARY SPECIFICATION NUMBER		L-P-393 L-P-394					BULK DENSITY		8-10 LB/CU FT
3 CHARACTERISTICS							FRAGMENTABILITY		GOOD
4 DISPOSAL RATING SUMMARY							SEPARABILITY		FAIR
METHOD OF DISPOSAL		PRE-PROCESSING	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	COMPACTION RATING	
REFUSE	A		4.5	10.0	7.3	1		GOOD	
RECYCLE	A B		4.4	9.0	6.7	3		FAIR	
PYROLYSIS	A C		4.6	7.6	6.3	6		EXCELLENT (SEE PRECAUTIONS)	
COMPOSTING	A C		4.2	7.6	6.0	7		POOR	
BALING	B		6.6	7.6	7.2	2		POOR	
INCINERATION	A C		6.7	6.2	6.5	5		POOR	
SANITARY LANDFILL	B		5.8	7.4	6.6	4		SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS	
SEA DISPOSAL	B		4.3	4.2	4.3	6		PRODUCES OFFENSIVE ODORS WHEN INCINERATED	
PRE-PROCESSES:		A = SEPARATION B = COMPACTION C = SHREDDING							
6 HANDLING DATA				6 OFF-SITE DISPOSAL/ PROCESSING DATA				10 NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD					
				SECONDARY MATERIAL HANDLER					
7 ON-SITE DISPOSAL/ RECLAMATION DATA				8 OFF-SITE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD					
				SECONDARY MATERIAL HANDLER					
								*TO BE COMPLETED BY THE COMMUNITY OFFICER	

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE NO.	OTHER	
						74	C-74		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY	PLASTIC					MELTING TEMPERATURE	375-500 °F		
NAME	POLYSTYRENE					COMBUSTION TEMPERATURE	660 °F		
COMMON NAME (FORM)	POLYSTYRENE (SHEET, FILM)					HEAT OF COMBUSTION	17,000-17,500 BTU/LB		
USES	WRAPPING					MATERIAL DENSITY	64.90-66.02 LB/CU.FT.		
FEDERAL/MILITARY SPECIFICATION NUMBER	L-P-506					BULK DENSITY	60-70 LB/CU.FT.		
COMPOSITION						3	CHARACTERISTICS		
						FRAGMENTABILITY	EXCELLENT		
						SEPARABILITY	POOR		
						COMPACTIBILITY	FAIR		
						COMBUSTIBILITY	FAIR		
						TOXICITY	EXCELLENT (SEE PRECAUTIONS)		
						BIOLOGICAL DEGRADABILITY	POOR		
						CHEMICAL DEGRADABILITY	POOR		
						REUSABILITY	UNSATISFACTORY		
						8*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
						PRODUCES HARMFUL GASES WHEN INCINERATED			
4						DISPOSAL RATING SUMMARY			
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING		
REFUSE	A		2.0	10.0	6.0	6			
RECYCLE	A B		3.6	9.0	6.3	4			
PYROLYSIS	A C		4.6	7.6	6.2	5			
COMPOSTING	A C		4.0	7.6	5.9	7			
BALING	B		5.6	7.6	6.7	1			
INCINERATION	A C		6.7	6.2	6.5	3			
SANITARY LANDFILL	B		5.7	7.4	6.6	2			
SEA DISPOSAL	B		4.2	4.2	4.2	6			
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING							
9*	HANDLING DATA				9*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD					
				SECONDARY MATERIAL HANDLER					
7*				ON-BASE DISPOSAL/ RECLAMATION DATA		8*		OFF-BASE DISPOSAL/ RECYCLING DATA	
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD					
				SECONDARY MATERIAL HANDLER					
*TO BE COMPLETED BY THE COORDINATING OFFICER									

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE NO.	OTHER	
						75	C-75		
1	MATERIAL DESCRIPTION					3	CHEMICAL PROPERTIES		
CATEGORY	PLASTIC					MELTING TEMPERATURE	375-500 °F		
NAME	POLYSTYRENE					COMBUSTION TEMPERATURE	680 °F		
COMMON NAME (FORM)	POLYSTYRENE (SOLID STOCK)					HEAT OF COMBUSTION	17,000-17,500 BTU/LB		
USES	CONTAINERS, MOLDED PARTS, SHEETING					MATERIAL DENSITY	64.90-68.02 LB/CU.FT.		
FEDERAL/MILITARY SPECIFICATION NUMBER	L-P-396					BULK DENSITY	6-15 LB/CU.FT.		
COMPOSITION	-					3 CHARACTERISTICS			
						FRAGMENTABILITY	GOOD		
						SEPARABILITY	FAIR		
						COMPACTIBILITY	GOOD		
						COMBUSTIBILITY	FAIR		
						TOXICITY	EXCELLENT (SEE PRECAUTIONS)		
						BIOLOGICAL DEGRADABILITY	POOR		
						CHEMICAL DEGRADABILITY	POOR		
						REUSABILITY	POOR		
						5* SPECIAL PRECAUTIONS/APPLICABLE REGULATIONS			
						PRODUCES HARMFUL GASES AND OFFENSIVE ODORS WHEN INCINERATED			
4 DISPOSAL RATING SUMMARY									
METHOD OF DISPOSAL		PRE-PROCESSING	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING *		
REUSE	A		4.5	10.0	7.3	1			
RECYCLE	A/B		4.4	9.0	8.7	3			
PYROLYSIS	A/C		4.8	7.8	6.3	5			
COMPOSTING	A/C		4.2	7.8	6.0	6			
BALING	B		6.2	7.6	7.0	2			
INCINERATION	A/C		8.7	6.2	6.5	4			
SANITARY LANDFILL	B		6.0	7.4	6.7	3			
SEA DISPOSAL	B		4.5	4.2	4.4	7			
PRE-PROCESSES:						A = SEPARATION B = COMPACTION C = SHREDDING			
6* HANDLING DATA			8* OFF-BASE DISPOSAL/PROCESSING DATA			10* NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD						
			SECONDARY MATERIAL HANDLER						
7* ON-BASE DISPOSAL/RECLAMATION DATA			8* OFF-BASE DISPOSAL/RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD						
			SECONDARY MATERIAL HANDLER						
						*TO BE COMPLETED BY THE COGNIZANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PS.	OTHER		
76							C-76				
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY		PLASTIC					MELTING TEMPERATURE		375-500 °F		
NAME		POLYSTYRENE					COMBUSTION TEMPERATURE		680 °F		
COMMON NAME (FORM)		STYROFOAM (FOAM)					HEAT OF COMBUSTION		17,000- 17,500 BTU LB		
USES		CONTAINERS					MATERIAL DENSITY		64.90- 66.02 LB CU.FT.		
FEDERAL/ MILITARY SPECIFICATION NUMBER		-					BULK DENSITY		1-3 LB CU.FT.		
COMPOSITION		-					3	CHARACTERISTICS			
							FRAGMENTABILITY		GOOD		
							SEPARABILITY		FAIR		
							COMPACTIBILITY		GOOD		
							COMBUSTIBILITY		POOR		
							TOXICITY		EXCELLENT (SEE PRECAUTIONS)		
							BIOLOGICAL DEGRADABILITY		POOR		
							CHEMICAL DEGRADABILITY		POOR		
							REUSABILITY		POOR		
							5*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES HARMFUL GASES AND OFFENSIVE ODORS WHEN INCINERATED				
							PRE-PROCESSSES: A - SEPARATION E - COMPACTION C - SHREDDING				
6*	HANDLING DATA						9*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*	NOTES AND COMMENTS
	METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD			
								SECONDARY MATERIAL HANDLER			
7*	ON-BASE DISPOSAL/ RECLAMATION DATA						8*	OFF-BASE DISPOSAL/ RECYCLING DATA			
	DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD			
								SECONDARY MATERIAL HANDLER			
											*TO BE COMPLETED BY THE COGNIZANT OFFICER

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE		
						MATERIAL NO.	REFERENCE PG.	OTHER
						77	C-77	
1 MATERIAL DESCRIPTION						2 CHEMICAL PROPERTIES		
CATEGORY		PLASTIC				MELTING TEMPERATURE		375-500 °F
NAME		POLYSTYRENE				COMBUSTION TEMPERATURE		880 °F
COMMON NAME (FORM)		STYROFOAM (FOAM)				HEAT OF COMBUSTION		17,000-17,500 BTU/LB
USES		CUSHIONING				MATERIAL DENSITY		64.90-68.02 LB/CU.FT.
FEDERAL/MILITARY SPECIFICATION NUMBER		PPP-C-850				BULK DENSITY		.4-1.2 LB/CU.FT.
COMPOSITION						3 CHARACTERISTICS		
						FRAGMENTABILITY		EXCELLENT
4 DISPOSAL RATING SUMMARY						SEPARABILITY		POOR
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	COMPACTIBILITY	
REUSE		A	3.0	10.0	6.5	3	FAIR	
RECYCLE		A	4.0	9.0	8.5	3	COMBUSTIBILITY	
PYROLYSIS		A	4.8	7.8	8.3	4	POOR	
COMPOSTING		A	4.2	7.8	8.0	5	TOXICITY	
BALING		B	8.4	7.8	7.1	1	EXCELLENT (SEE PRECAUTIONS)	
INCINERATION		A	5.3	6.2	5.8	6	BIOLOGICAL DEGRADABILITY	
SANITARY LANDFILL		B	5.7	7.4	8.6	2	POOR	
ON-SITE DISPOSAL		B	4.2	4.2	4.2	7	CHEMICAL DEGRADABILITY	
PRE-PROCESSING: A - SEPARATION B - COMPACTION C - SHREDDING						REUSABILITY		UNSATISFACTORY
						5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
						PRODUCES HARMFUL GASES AND OFFENSIVE ODORS WHEN INCINERATED		
6* HANDLING DATA			9* OFF-BASE DISPOSAL/ PROCESSING DATA			10* NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD					
			SECONDARY MATERIAL HANDLER					
7* ON-BASE DISPOSAL/ RECLAMATION DATA			8* OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD					
			SECONDARY MATERIAL HANDLER					
						*TO BE COMPLETED BY THE COGNIZANT OFFICER		

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE					
							MATERIAL NO.	REFERENCE PG.	OTHER			
							78	C-78				
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES				
CATEGORY	PLASTIC						MELTING TEMPERATURE	375-500 °F				
NAME	POLYSTYRENE						COMBUSTION TEMPERATURE	660 °F				
COMMON NAME (FORM)	STYROFOAM (PELLETS)						HEAT OF COMBUSTION	17,000- 17,500 $\frac{\text{BTU}}{\text{LB}}$				
USES	DUNNAGE						MATERIAL DENSITY	64.80- 68.02 $\frac{\text{LB}}{\text{CU.FT.}}$				
FEDERAL/ MILITARY SPECIFICATION NUMBER	MIL-P-19644						BULK DENSITY	1-3 $\frac{\text{LB}}{\text{CU.FT.}}$				
COMPOSITION	-						3	CHARACTERISTICS				
							FRAGMENTABILITY	EXCELLENT				
4							DISPOSAL RATING SUMMARY	SEPARABILITY			POOR	
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING *	COMPACTIBILITY			FAIR	
REUSE	A		2.0	10.0	6.0	5		COMBUSTIBILITY			POOR	
RECYCLE	A B		3.6	9.0	6.3	3		TOXICITY			EXCELLENT (SEE PRECAUTIONS)	
PYROLYSIS	A C		4.8	7.6	6.2	4		BIOLOGICAL DEGRADABILITY			POOR	
COMPOSTING	A C		4.0	7.8	5.9	6		CHEMICAL DEGRADABILITY			POOR	
BALING	B		6.4	7.8	7.1	1		REUSABILITY			UNSATISFACTORY	
INCINERATION	A C		5.2	8.2	5.7	7		5°			SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS	
SANITARY LANDFILL	B		5.7	7.4	6.6	2		PRODUCES HARMFUL GASES AND OFFENSIVE ODORS WHEN INCINERATED				
SEA DISPOSAL	B		4.2	4.2	4.2	8						
PRE-PROCESSES:							A = SEPARATION B = COMPACTION C = SHREDDING					
6°	HANDLING DATA						8°	OFF-BASE DISPOSAL/ PROCESSING DATA			10°	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD					
							SECONDARY MATERIAL HANDLER					
7°	ON-BASE DISPOSAL/ RECLAMATION DATA						9°	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD					
							SECONDARY MATERIAL HANDLER					
											*TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PB.	OTHER	
							79	C-79		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	PLASTIC						MELTING TEMPERATURE	650-750 °F		
NAME	POLYSULPHONE						COMBUSTION TEMPERATURE	-		
COMMON NAME (FORM)	POLYSULPHONE (SOLID STOCK)						HEAT OF COMBUSTION	8000-11,000 BTU/LB		
USES	TRAYS, CONTAINERS						MATERIAL DENSITY	77.38 LB/CU.FT.		
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-P-48120						BULK DENSITY	2-5 LB/CU.FT.		
COMPOSITION	-						3	CHARACTERISTICS		
							FRAGMENTABILITY	GOOD		
							SEPARABILITY	FAIR		
							COMPACTIBILITY	GOOD		
							COMBUSTIBILITY	POOR		
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)		
							BIOLOGICAL DEGRADABILITY	POOR		
							CHEMICAL DEGRADABILITY	POOR		
							REUSABILITY	POOR		
							5*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
							PRODUCES OXIDES OF SULPHUR IN CONJUNCTION WITH OTHER HARMFUL GASES WHEN INCINERATED			
PRE-PROCESSING: A - SEPARATION B - COMPACTIFICATION C - SHREDDING										
6*	HANDLING DATA					6*	OFF-BASE DISPOSAL/ PROCESSING DATA		7*	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD				
						SECONDARY MATERIAL HANDLER				
7*	ON-BASE DISPOSAL/ RECLAMATION DATA					8*	OFF-BASE DISPOSAL/ RECYCLING DATA			
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD				
						SECONDARY MATERIAL HANDLER				
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE				
						MATERIAL NO.	REFERENCE PG.	OTHER		
						80	C-80			
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC					MELTING TEMPERATURE	620	°F		
NAME	POLYTETRAFLUOROETHYLENE					COMBUSTION TEMPERATURE	-	°F		
COMMON NAME (FORM)	TEFLON, TFE-FLUOROCARBON RESIN (SHEET)					HEAT OF COMBUSTION	-	BTU/LB		
USES	WRAPPING					MATERIAL DENSITY	120-130	LB/CU.FT.		
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-P-22241					BULK DENSITY	100-130	LB/CU.FT.		
COMPOSITION						3	CHARACTERISTICS			
						FRAGMENTABILITY	EXCELLENT			
						REPARABILITY	POOR			
						COMPACTIBILITY	FAIR			
						COMBUSTIBILITY	UNSATISFACTORY			
						TOXICITY	EXCELLENT (SEE PRECAUTIONS)			
						BIOLOGICAL DEGRADABILITY	POOR			
						CHEMICAL DEGRADABILITY	POOR			
						REUSABILITY	UNSATISFACTORY			
						8*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
						PRODUCES HALOGENATED COMPOUNDS WHEN INCINERATED				
4						DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING				
REUSE	A	2.0	10.0	6.0	5					
RECYCLE	A B	3.6	9.0	6.3	3					
PYROLYSIS	A C	4.6	7.8	6.2	4					
COMPOSTING	A C	4.0	7.8	5.9	6					
BALING	B	5.6	7.8	6.7	2					
INCINERATION	A C	4.7	6.2	5.5	7					
SANITARY LANDFILL	B	6.3	7.4	6.9	1					
SEA DISPOSAL	B	4.8	4.2	4.5	6					
PRE-PROCESSING						A = SEPARATION B = COMPACTION C = SHREDDING				
6*	HANDLING DATA				8*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*		NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD					
					SECONDARY MATERIAL HANDLER					
7*	ON-BASE DISPOSAL/ RECLAMATION DATA				9*	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD					
					SECONDARY MATERIAL HANDLER					
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE NO.	OTHER	
							81	C-81		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY		PLASTIC				MELTING TEMPERATURE		620	°F	
NAME		POLYTETRAFLUOROETHYLENE				COMBUSTION TEMPERATURE		-	°F	
COMMON NAME (FORM)		TEFLON (SOLID STOCK)				HEAT OF COMBUSTION		-	BTU/LB	
USE		CONTAINERS				MATERIAL DENSITY		120-130	LB/CU.FT.	
FEDERAL/MILITARY SPECIFICATION NUMBER		L-P-403				BULK DENSITY		20-30	LB/CU.FT.	
COMPOSITION		-				3 CHARACTERISTICS				
						FRAGMENTABILITY		GOOD		
						SEPARABILITY		FAIR		
						COMPACTIBILITY		GOOD		
						COMBUSTIBILITY		UNSATISFACTORY		
						TOXICITY		EXCELLENT (SEE PRECAUTIONS)		
						BIOLOGICAL DEGRADABILITY		POOR		
						CHEMICAL DEGRADABILITY		POOR		
						REUSABILITY		POOR		
						5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
						PRODUCES HALOGENATED COMPOUNDS WHEN INCINERATED				
4 DISPOSAL RATING SUMMARY										
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING*				
PRE-PROCESS										
REUSE	A	4.5	10.0	7.3	1					
RECYCLE	A B	4.4	9.0	6.7	3					
PYROLYSIS	A C	4.8	7.8	6.3	5					
COMPOSTING	A C	4.2	7.8	6.0	6					
BALING	B	5.2	7.8	6.5	4					
INCINERATION	A C	4.7	6.2	5.5	7					
SANITARY LANDFILL	B	6.6	7.4	7.0	2					
SEA DISPOSAL	B	5.1	4.2	4.7	8					
PRE-PROCESSES: A - SEPARATION E - COMPACTION C - SHREDDING										
6*	HANDLING DATA				8*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*		NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD				
						SECONDARY MATERIAL HANDLER				
7*	ON-BASE DISPOSAL/ RECLAMATION DATA				9*	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD				
						SECONDARY MATERIAL HANDLER				
										*TO BE COMPLETED BY THE COGNIZANT OFFICER

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE							
							MATERIAL NO.	REFERENCE PG.	OTHER					
							82	C-82						
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES						
CATEGORY	PLASTIC						MELTING TEMPERATURE	800-375 °F						
NAME	POLYURETHANE						COMBUSTION TEMPERATURE	700-800 °F						
COMMON NAME (FORM)	POLYURETHANE (FILM)						HEAT OF COMBUSTION	11,000-12,000 $\frac{\text{BTU}}{\text{LB}}$						
USES	WRAPPING						MATERIAL DENSITY	69.89-74.88 $\frac{\text{LB}}{\text{CU.FT.}}$						
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-P-43604						BULK DENSITY	80-70 $\frac{\text{LB}}{\text{CU.FT.}}$						
COMPOSITION	-						3	CHARACTERISTICS						
							FRAGMENTABILITY	EXCELLENT						
4							DISPOSAL RATING SUMMARY	SEPARABILITY	POOR					
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	COMPACTIBILITY	FAIR					
REUSE	A		2.5	10.0	6.3	4		COMBUSTIBILITY	POOR					
RECYCLE	A/B		4.0	9.0	6.5	3		TOXICITY	EXCELLENT (SEE PRECAUTIONS)					
PYROLYSIS	A/C		4.8	7.8	8.3	4		BIOLOGICAL DEGRADABILITY	POOR					
COMPOSTING	A/C		4.2	7.8	8.0	5		CHEMICAL DEGRADABILITY	FAIR					
BALING	B		5.6	7.8	6.7	1		REUSABILITY	UNSATISFACTORY					
INCINERATION	A/C		5.3	6.2	5.8	8		5° SPECIAL PRECAUTIONS/APPLICABLE REGULATIONS						
SANITARY LANDFILL	B		5.7	7.4	8.6	2		PRODUCES OFFENSIVE ODORS WHEN INCINERATED						
SEA DISPOSAL	B		4.2	4.2	4.2	7								
PRE-PROCESSES:							A - SEPARATION B - COMPACTION C - SHREDDING							
6°	HANDLING DATA					8°	OFF-BASE DISPOSAL/PROCESSING DATA			10°	NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD								
						SECONDARY MATERIAL HANDLER								
7°	ON-BASE DISPOSAL/RECLAMATION DATA					9°	OFF-BASE DISPOSAL/RECYCLING DATA			*TO BE COMPLETED BY THE COGNIZANT OFFICER				
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD								
						SECONDARY MATERIAL HANDLER								

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE PB.	OTHER	
						63	C-83		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY	PLASTIC					MELTING TEMPERATURE	185-350 °F		
NAME	POLYURETHANE					COMBUSTION TEMPERATURE	700-600 °F		
COMMON NAME (FOAM)	POLYURETHANE (FOAM)					HEAT OF COMBUSTION	11,000-12,000 BTU/LB		
USES	CUSHIONING					MATERIAL DENSITY	65.52-93.60 LB/CU.FT.		
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-P-26514					BULK DENSITY	.6-30 LB/CU.FT.		
COMPOSITION	-					3 CHARACTERISTICS			
						FRAGMENTABILITY	EXCELLENT		
						SEPARABILITY	POOR		
						COMPACTIBILITY	FAIR		
						COMBUSTIBILITY	POOR		
						TOXICITY	EXCELLENT (SEE PRECAUTIONS)		
						BIOLOGICAL DEGRADABILITY	POOR		
						CHEMICAL DEGRADABILITY	FAIR		
						REUSABILITY	UNSATISFACTORY		
						5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
						PRODUCES OFFENSIVE ODORS WHEN INCINERATED			
4 DISPOSAL RATING SUMMARY									
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING			
REUSE	A	2.5	10.0	6.3	3				
RECYCLE	A B	3.6	9.0	6.3	3				
PYROLYSIS	A C	4.6	7.7	6.2	4				
COMPOSTING	A C	4.0	7.6	5.9	6				
BALING	B	7.4	7.8	7.6	1				
INCINERATION	A C	5.7	6.2	6.0	5				
SANITARY LANDFILL	B	5.7	7.4	6.6	2				
SEA DISPOSAL	B	4.2	4.2	4.2	7				
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING							
6° HANDLING DATA			8° OFF-BASE DISPOSAL/ PROCESSING DATA			10° NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD						
			SECONDARY MATERIAL HANDLER						
7° ON-BASE DISPOSAL/ RECLAMATION DATA			9° OFF-BASE DISPOSAL/ RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD						
			SECONDARY MATERIAL HANDLER			*TO BE COMPLETED BY THE COGNIZANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE				
						MATERIAL NO.	REFERENCE NO.	OTHER		
						84	C-84			
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC					MELTING TEMPERATURE	300-375 °F			
NAME	POLYURETHANE					COMBUSTION TEMPERATURE	700-800 °F			
COMMON NAME (FORM)	POLYURETHANE (SOLID STOCK)					HEAT OF COMBUSTION	11,000- 12,000 BTU LB			
USES	CONTAINERS					MATERIAL DENSITY	85.52- 93.80 LB CU.FT.			
FEDERAL/ MILITARY SPECIFICATION NUMBER	MIL-M-24041 MIL-C-36226					BULK DENSITY	2-5 LB CU.FT.			
COMPOSITION						3	CHARACTERISTICS			
						FRAGMENTABILITY	GOOD			
4						DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING			
REUSE	A		4.5	10.0	7.3	2		COMBUSTIBILITY	POOR	
RECYCLE	A B		4.4	9.0	6.7	4		TOXICITY	EXCELLENT (SEE PRECAUTIONS)	
PYROLYSE	A C		4.6	7.6	6.3	5		BIOLOGICAL DEGRADABILITY	POOR	
COMPOSTING	A C		4.2	7.8	6.0	6		CHEMICAL DEGRADABILITY	FAIR	
BALING	B		7.0	7.6	7.4	1		REUSABILITY	POOR	
INCINERATION	A C		5.7	6.2	6.0	6		5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
SANITARY LANDFILL	B		6.2	7.4	6.6	3		PRODUCES OFFENSIVE ODORS WHEN INCINERATED		
SEA DISPOSAL	B		4.7	4.2	4.5	7				
PRE-PROCESSING:		A - SEPARATION B - COMPACTION C - SHREDDING								
6°	HANDLING DATA				8°	OFF-BASE DISPOSAL/ PROCESSING DATA			10°	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD					
					SECONDARY MATERIAL HANDLER					
7°	ON-BASE DISPOSAL/ RECLAMATION DATA				9°	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD					
					SECONDARY MATERIAL HANDLER					
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE					
							MATERIAL NO.	REFERENCE PK.	OTHER			
							85	C-85				
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES				
CATEGORY	PLASTIC						MELTING TEMPERATURE	375-490 °F				
NAME	POLYVINYL ALCOHOL						COMBUSTION TEMPERATURE	680 °F				
COMMON NAME (FORM)	PVA (SHEET)						HEAT OF COMBUSTION	10,760 BTU/LB				
USES	WRAPPING						MATERIAL DENSITY	75.50-81.74 LB/CU.FT.				
FEDERAL/MILITARY SPECIFICATION NUMBER	-						BULK DENSITY	20-60 LB/CU.FT.				
COMPOSITION	-						3	CHARACTERISTICS				
							FRAGMENTABILITY	EXCELLENT				
							SEPARABILITY	POOR				
							COMPACTIBILITY	FAIR				
							COMBUSTIBILITY	FAIR				
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)				
							BIOLOGICAL DEGRADABILITY	POOR				
							CHEMICAL DEGRADABILITY	POOR				
							REPAIRABILITY	UNSATISFACTORY				
							8*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
							PRODUCES OFFENSIVE ODORS WHEN INCINERATED					
4							DISPOSAL RATING SUMMARY					
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING*						
REUSE	A	2.0	10.0	6.0	8							
RECYCLE	A/B	3.6	9.0	6.3	4							
PYROLYSIS	A/C	4.6	7.8	6.2	5							
COMPOSTING	A/C	4.0	7.8	5.9	7							
BALING	B	6.0	7.8	6.9	1							
INCINERATION	A/C	6.7	8.2	6.5	3							
SANITARY LANDFILL	B	5.9	7.4	6.7	2							
SEA DISPOSAL	B	4.4	4.2	4.3	8							
PRE-PROCESSES							A - SEPARATION B - COMPACTION C - SHREDDING					
6*	HANDLING DATA					8*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*		NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD						
						SECONDARY MATERIAL HANDLER						
7*	ON-BASE DISPOSAL/ RECLAMATION DATA					9*	OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD						
						SECONDARY MATERIAL HANDLER				*TO BE COMPLETED BY THE COGNIZANT OFFICER		

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE					
						MATERIAL NO.	REFERENCE NO.	OTHER			
						86	C-86				
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES				
CATEGORY	PLASTIC					MELTING TEMPERATURE	265-400 °F				
NAME	POLYVINYL ACETATE					COMBUSTION TEMPERATURE	700 °F				
COMMON NAME (FORM)	PVAC (SHEET)					HEAT OF COMBUSTION	6830 BTU/LB				
USES	WRAPPING					MATERIAL DENSITY	64.90-68.84 LB/CU.FT.				
FEDERAL/MILITARY SPECIFICATION NUMBER	L-P-535					BULK DENSITY	20-60 LB/CU.FT.				
COMPOSITION	-					3	CHARACTERISTICS				
						FRAGMENTABILITY	EXCELLENT				
						SEPARABILITY	POOR				
						COMPACTIBILITY	FAIR				
						COMBUSTIBILITY	POOR				
						TOXICITY	EXCELLENT (SEE PRECAUTIONS)				
						BIOLOGICAL DEGRADABILITY	POOR				
						CHEMICAL DEGRADABILITY	POOR				
						REUSABILITY	UNSATISFACTORY				
						8*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
						PRODUCES OFFENSIVE ODORS WHEN INCINERATED					
4						DISPOSAL RATING SUMMARY					
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING				
REUSE	A	2.0	10.0	6.0	5						
RECYCLE	A/B	3.6	9.0	6.3	3						
PYROLYSIS	A/C	4.6	7.8	6.2	4						
COMPOSTING	A/C	4.0	7.6	5.9	6						
BALING	B	6.0	7.6	8.9	1						
INCINERATION	A/C	5.2	6.2	5.7	7						
SANITARY LANDFILL	B	5.7	7.4	6.6	2						
SEA DISPOSAL	B	4.2	4.2	4.2	6						
PRE-PROCESSOR		A - SEPARATION B - COMPACTION C - SHREDDING									
9*	HANDLING DATA				9*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*	NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD							
				SECONDARY MATERIAL HANDLER							
7*				ON-BASE DISPOSAL/ RECLAMATION DATA				9*		OFF-BASE DISPOSAL/ RECYCLING DATA	
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD							
				SECONDARY MATERIAL HANDLER							
*TO BE COMPLETED BY THE COGNIZANT OFFICER											

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PL.	OTHER		
							87	C-87			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	PLASTIC						MELTING TEMPERATURE	300-350 °F			
NAME	POLYVINYL CHLORIDE						COMBUSTION TEMPERATURE	700-800 °F			
COMMON NAME (FORM)	PVC (SHEET)						HEAT OF COMBUSTION	7500-9000 BTU/LB			
USES	WRAPPING, POUCHES, WATERPROOF COVERS						MATERIAL DENSITY	80-90 LB/CUFT.			
FEDERAL/MILITARY SPECIFICATION NUMBER	L-P-375						BULK DENSITY	20-80 LB/CUFT.			
COMPOSITION	-						3	CHARACTERISTICS			
							FRAGMENTABILITY	EXCELLENT			
							SEPARABILITY	POOR			
							COMPACTIBILITY	FAIR			
							COMBUSTIBILITY	POOR			
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)			
							BIOLOGICAL DEGRADABILITY	POOR			
							CHEMICAL DEGRADABILITY	POOR			
							REUSABILITY	UNSATISFACTORY			
							5*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES HCL GAS WHEN INCINERATED				
							PRE-PROCESSES: A - SEPARATION B - COMPACTION C - SHREDDING				
6*	HANDLING DATA					8*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*	NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD				
							SECONDARY MATERIAL HANDLER				
7*	ON-BASE DISPOSAL/ RECLAMATION DATA					9*	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD				
							SECONDARY MATERIAL HANDLER				
									*TO BE COMPLETED BY THE COGNIZANT OFFICER		

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE NO.	OTHER	
						88	88		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY		PLASTIC				MELTING TEMPERATURE		250-375 °F	
NAME		POLYVINYL CHLORIDE				COMBUSTION TEMPERATURE		700-800 °F	
COMMON NAME (FORM)		PVC (SOLID STOCK)				HEAT OF COMBUSTION		4315 BTU/LB	
USES		CONTAINERS, BLISTER PACKAGES, LINERS				MATERIAL DENSITY		99.22-108.70 LB/CU.FT.	
FEDERAL/MILITARY SPECIFICATION NUMBER		L-P-535				BULK DENSITY		90-100 LB/CU.FT.	
COMPOSITION		-				3 CHARACTERISTICS			
		FRAGMENTABILITY		GOOD					
		SEPARABILITY		FAIR					
		COMPACTIBILITY		GOOD					
		COMBUSTIBILITY		POOR					
		TOXICITY		EXCELLENT (SEE PRECAUTIONS)					
		BIOLOGICAL DEGRADABILITY		POOR					
		CHEMICAL DEGRADABILITY		POOR					
		REUSABILITY		POOR					
		8° SPECIAL PRECAUTIONS/APPLICABLE REGULATIONS		PRODUCES HYDROCHLORIC ACID GAS WHEN INCINERATED					
4 DISPOSAL RATING SUMMARY									
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING*		
REUSE	A		4.5	10.0	7.3	1			
RECYCLE	A B		4.4	9.0	8.7	3			
PYROLYSIS	A C		4.8	7.8	6.3	4			
COMPOSTING	A C		4.2	7.6	6.0	5			
SALING	B		5.6	7.8	6.7	3			
INCINERATION	A C		5.7	6.2	6.0	5			
SANITARY LANDFILL	B		8.4	7.4	6.9	2			
SEA DISPOSAL	B		4.9	4.2	4.8	8			
PRE-PROCESSES:		A - SEPARATION B - COMPACTION C - BREDDING							
6° HANDLING DATA			8° OFF-BASE DISPOSAL/PROCESSING DATA			10° NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD						
			SECONDARY MATERIAL HANDLER						
7° ON-BASE DISPOSAL/RECLAMATION DATA			9° OFF-BASE DISPOSAL/RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD						
			SECONDARY MATERIAL HANDLER						
						*TO BE COMPLETED BY THE COGNIZANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE						
							MATERIAL NO.	REFERENCE PG.	OTHER				
							89	C-89					
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES					
CATEGORY	PLASTIC						MELTING TEMPERATURE	250-375 °F					
NAME	POLYVINYLIDENE CHLORIDE						COMBUSTION TEMPERATURE	700-800 °F					
COMMON NAME (FORM)	SARAN, PVDC (FILM)						HEAT OF COMBUSTION	4315	BTU/LB				
USES	WRAPPING						MATERIAL DENSITY	69.22-106.70	LB/CU.FT.				
FEDERAL/MILITARY SPECIFICATION NUMBER	L-P-370						BULK DENSITY	80-100	LB/CU.FT.				
COMPOSITION							3				CHARACTERISTICS		
							FRAGMENTABILITY				EXCELLENT		
4							DISPOSAL RATING SUMMARY				SEPARABILITY		POOR
							METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING
REUSE		A	3.5	10.0	8.8	2	COMBUSTIBILITY		POOR				
RECYCLE		B	3.8	9.0	6.3	4	TOXICITY		EXCELLENT (SEE PRECAUTIONS)				
PYROLYSE		C	4.8	7.8	6.2	5	BIOLOGICAL DEGRADABILITY		POOR				
COMPOSTING		A	4.0	7.8	5.9	6	CHEMICAL DEGRADABILITY		POOR				
BALING		B	5.2	7.8	6.5	3	REUSABILITY		POOR				
INCINERATION		A	5.2	6.2	5.7	7	5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS						
SANITARY LANDFILL		B	6.3	7.4	6.9	1							
SEA DISPOSAL		B	4.8	4.2	4.5	8	PRODUCES HCL GAS AND OFFENSIVE ODORS WHEN INCINERATED						
PRE-PROCESSES:							A - SEPARATION B - COMPACTION C - SHREDDING						
6° HANDLING DATA			8° OFF-BASE DISPOSAL/ PROCESSING DATA				10° NOTES AND COMMENTS						
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD										
			SECONDARY MATERIAL HANDLER										
7° ON-BASE DISPOSAL/ RECLAMATION D A			8° OFF-BASE DISPOSAL/ RECYCLING DATA										
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD										
			SECONDARY MATERIAL HANDLER				*TO BE COMPLETED BY THE COGNIZANT OFFICER						

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE NO.	OTHER	
							90	C-90		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	PLASTIC						MELTING TEMPERATURE	250-400 °F		
NAME	RUBBER						COMBUSTION TEMPERATURE	-		
COMMON NAME (FORM)	LATEX (FOAM)						HEAT OF COMBUSTION	11,000 BTU/LB		
USES	CUSHIONING						MATERIAL DENSITY	50-60 LB/CU.FT.		
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-R-5001						BULK DENSITY	40-60 LB/CU.FT.		
COMPOSITION	-						3 CHARACTERISTICS			
							FRAGMENTABILITY	EXCELLENT		
4 DISPOSAL RATING SUMMARY							SEPARABILITY	POOR		
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	COMPACTIBILITY	FAIR		
REUSE	A	2.0	10.0	6.0	4		COMBUSTIBILITY	FAIR		
RECYCLE	A B	1.6	9.0	5.4	6		TOXICITY	EXCELLENT (SEE PRECAUTIONS)		
PYROLYSIS	A C	4.6	7.6	6.2	3		BIOLOGICAL DEGRADABILITY	POOR		
COMPOSTING	A C	4.0	7.6	5.9	5		CHEMICAL DEGRADABILITY	POOR		
BALING	B	5.6	7.8	6.7	1		REUSABILITY	UNSATISFACTORY		
INCINERATION	A C	6.7	6.2	6.5	2		6° SPECIAL PRECAUTIONS/APPLICABLE REGULATIONS			
SANITARY LANDFILL	B	5.5	7.4	6.5	2		PRODUCES OFFENSIVE ODORS WHEN INCINERATED			
SEA DISPOSAL	B	4.0	4.2	4.1	7					
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHRINKING								
6°	HANDLING DATA					6°	OFF-BASE DISPOSAL/PROCESSING DATA		10°	NOTES AND COMMENTS
METHOD OF STORAGE/COLECTION							DISPOSAL/PROCESSING METHOD			
							SECONDARY MATERIAL HANDLER			
7°	ON-BASE DISPOSAL/RECLAMATION DATA					8°	OFF-BASE DISPOSAL/RECYCLING DATA			
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD			
							SECONDARY MATERIAL HANDLER			
									*TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE PB.	OTHER	
						91	C-91		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY		TEXTILE				MELTING TEMPERATURE		-	°F
NAME		BOUND FIBER				COMBUSTION TEMPERATURE		680	°F
COMMON NAME (FORM)		RUBBERIZED HAIR (FIBER)				HEAT OF COMBUSTION		12,500	$\frac{BTU}{LB}$
USES		CUSHIONING				MATERIAL DENSITY		78	$\frac{LB}{CU.FT.}$
FEDERAL/MILITARY SPECIFICATION NUMBER		PPP-C-1120				BULK DENSITY		10-30	$\frac{LB}{CU.FT.}$
COMPOSITION		POLYCHLOROPRENE (NEOPRENE)				3 CHARACTERISTICS			
		FRAGMENTABILITY		EXCELLENT					
		SEPARABILITY		UNSATISFACTORY					
		COMPACTIBILITY		FAIR					
		COMBUSTIBILITY		FAIR					
		TOXICITY		EXCELLENT					
		BIOLOGICAL DEGRADABILITY		POOR					
		CHEMICAL DEGRADABILITY		POOR					
		REUSABILITY		UNSATISFACTORY					
		8°		SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS					
4 DISPOSAL RATING SUMMARY									
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING		
REUSE		A	1.5	10.0	5.8	5			
RECYCLE		A B	1.4	9.0	5.2	6			
PYROLYSE		A	4.2	7.8	6.0	4			
COMPOSTING		A	3.6	7.8	5.8	5			
BALING		B	6.4	7.8	7.1	1			
INCINERATION		A	6.1	6.2	6.2	3			
SANITARY LANDFILL		B	5.9	7.4	6.7	2			
SEA DISPOSAL		B	4.0	4.2	4.1	7			
PRE-PROCESS		A - SEPARATION B - COMPACTION C - SHREDDING							
6° HANDLING DATA			8° OFF-BASE DISPOSAL/ PROCESSING DATA				10° NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD						
			SECONDARY MATERIAL HANDLER						
7° ON-BASE DISPOSAL/ RECLAMATION DATA			9° OFF-BASE DISPOSAL/ RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD						
			SECONDARY MATERIAL HANDLER						
							*TO BE COMPLETED BY THE COGNIZANT OFFICER		

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PG.	OTHER	
							92	C-92		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	TEXTILE						MELTING TEMPERATURE	-		
NAME	CANVASS, RUBBERIZED						COMBUSTION TEMPERATURE	680		
COMMON NAME (FORM)	TARP (CLOTH)						HEAT OF COMBUSTION	12,500 $\frac{\text{BTU}}{\text{LB}}$		
USE	TARPAULIN						MATERIAL DENSITY	87 $\frac{\text{LB}}{\text{CU.FT.}}$		
FEDERAL/MILITARY SPECIFICATION NUMBER	-						BULK DENSITY	10-30 $\frac{\text{LB}}{\text{CU.FT.}}$		
COMPOSITION	-						3 CHARACTERISTICS			
							FRAGMENTABILITY	FAIR		
							SEPARABILITY	FAIR		
							COMPACTIBILITY	EXCELLENT		
							COMBUSTIBILITY	FAIR		
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)		
							BIOLOGICAL DEGRADABILITY	UNSATISFACTORY		
							CHEMICAL DEGRADABILITY	UNSATISFACTORY		
							REUSABILITY	EXCELLENT		
							5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES OFFENSIVE ODORS WHEN INCINERATED			
4 DISPOSAL RATING SUMMARY										
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING			
REUSE	A		8.0	10.0	9.0	1				
RECYCLE	A B		3.0	9.0	6.0	5				
PYROLYSIS	A C		3.6	7.8	5.7	8				
COMPOSTING	A C		3.6	7.8	5.7	6				
BALING	B		7.8	7.8	7.8	2				
INCINERATION	A C		5.7	8.2	6.1	4				
SANITARY LANDFILL	B		6.4	7.4	6.9	3				
SEA DISPOSAL	B		4.9	4.2	4.8	7				
PRE-PROCESS		A - SEPARATION B - COMPACTION C - SHREDDING								
6* HANDLING DATA				6* OFF-BASE DISPOSAL/ PROCESSING DATA				10* NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD						
				SECONDARY MATERIAL HANDLER						
7* ON-BASE DISPOSAL/ RECLAMATION DATA				8* OFF-BASE DISPOSAL/ RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD						
				SECONDARY MATERIAL HANDLER						
								*TO BE COMPLETED BY THE COGNIZANT OFFICER		

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PG.	OTHER	
							93	C-93		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	TEXTILE						MELTING TEMPERATURE	-	°F	
NAME	COTTON						COMBUSTION TEMPERATURE	491	°F	
COMMON NAME (FORM)	COTTON (CLOTH)						HEAT OF COMBUSTION	7652	BTU LB	
USES	CUSHIONING						MATERIAL DENSITY	95	LB CU.FT.	
FEDERAL/ MILITARY SPECIFICATION NUMBER	-						BULK DENSITY	70	LB CU.FT.	
COMPOSITION	CELLULOSE						3	CHARACTERISTICS		
							FRAGMENTABILITY	EXCELLENT		
							SEPARABILITY	POOR		
							COMPACTIBILITY	EXCELLENT		
							COMBUSTIBILITY	EXCELLENT		
							TOXICITY	EXCELLENT		
							BIOLOGICAL DEGRADABILITY	GOOD		
							CHEMICAL DEGRADABILITY	EXCELLENT		
							REUSABILITY	UNSATISFACTORY		
							5*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
4							DISPOSAL RATING SUMMARY			
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING			
REUSE	A		2.5	10.0	8.3	7				
RECYCLE	A B		4.6	9.0	6.9	6				
PYROLYSIS	A		7.6	7.8	7.7	3				
COMPOSTING	A		6.4	7.8	7.1	4				
BALING	B		6.2	7.6	7.0	5				
INCINERATION	A		9.3	6.4	7.9	2				
SANITARY LANDFILL	B		9.4	7.2	8.3	1				
SEA DISPOSAL	B		7.4	4.2	5.8	6				
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING								
6*	HANDLING DATA				8*	OFF-BASE DISPOSAL/ PROCESSING DATA			10*	NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD					
					SECONDARY MATERIAL HANDLER					
7*	ON-BASE DISPOSAL/ RECLAMATION DATA				9*	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD					
					SECONDARY MATERIAL HANDLER					
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE PS.	OTHER	
						94	C-94		
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES		
CATEGORY	TEXTILE					MELTING TEMPERATURE	-		
NAME	COTTON					COMBUSTION TEMPERATURE	491		
COMMON NAME (FORM)	COTTON (CLOTH)					HEAT OF COMBUSTION	7852 $\frac{BTU}{LB}$		
USES	RAGS					MATERIAL DENSITY	95 $\frac{LB}{CU.FT.}$		
FEDERAL/MILITARY SPECIFICATION NUMBER						BULK DENSITY	70 $\frac{LB}{CU.FT.}$		
COMPOSITION	CELLULOSE					3 CHARACTERISTICS			
						FRAGMENTABILITY	GOOD		
4 DISPOSAL RATING SUMMARY						SEPARABILITY	POOR		
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	COMPACTIBILITY	
REUSE	A		4.0	10.0	7.0	4		EXCELLENT	
RECYCLE	A B		4.8	8.0	6.9	5		EXCELLENT	
PYROLYSIS	A C		6.8	7.8	7.3	3		EXCELLENT	
COMPOSTING	A C		6.0	7.8	6.9	5		EXCELLENT	
BALING	B		6.2	7.8	7.0	4		EXCELLENT	
INCINERATION	A C		8.8	6.4	7.7	2		EXCELLENT	
SANITARY LANDFILL	B		9.2	7.2	8.2	1		EXCELLENT	
SEA DISPOSAL	B		7.4	4.2	5.8	6		EXCELLENT	
PRE-PROCESS		A - SEPARATION E - COMPACTION C - SHREDDING							
						5 SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
6 HANDLING DATA			8 OFF-BASE DISPOSAL/ PROCESSING DATA			10 NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD						
			SECONDARY MATERIAL HANDLER						
7 ON-BASE DISPOSAL/ RECLAMATION DATA			9 OFF-BASE DISPOSAL/ RECYCLING DATA						
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD						
			SECONDARY MATERIAL HANDLER			*TO BE COMPLETED BY THE COGNIZANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODES				
						MATERIAL NO.	REFERENCE PK.	OTHER		
						95	C-95			
1	MATERIAL DESCRIPTION					2	CHEMICAL PROPERTIES			
CATEGORY	TEXTILE					MELTING TEMPERATURE	-			
NAME	COTTON					COMBUSTION TEMPERATURE	491			
COMMON NAME (FORM)	COTTON (CLOTH)					HEAT OF COMBUSTION	7652 $\frac{BTU}{LB}$			
USES	SACKS					MATERIAL DENSITY	95 $\frac{LB}{CU.FT.}$			
FEDERAL/MILITARY SPECIFICATION NUMBER	PPP-B-1358 PPP-B-1087					BULK DENSITY	70 $\frac{LB}{CU.FT.}$			
COMPOSITION	CELLULOSE					3	CHARACTERISTICS			
						FRAGMENTABILITY	GOOD			
						SEPARABILITY	POOR			
						COMPACTIBILITY	EXCELLENT			
						COMBUSTIBILITY	EXCELLENT			
						TOXICITY	EXCELLENT			
						BIOLOGICAL DEGRADABILITY	GOOD			
						CHEMICAL DEGRADABILITY	EXCELLENT			
						REUSABILITY	EXCELLENT			
						8*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
4						DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING				
REUSE	A	6.5	10.0	8.3	1					
RECYCLE	A B	4.8	9.0	6.9	6					
PYROLYSIS	A C	6.8	7.8	7.3	4					
COMPOSTING	A C	6.0	7.8	6.9	6					
BALING	B	6.2	7.8	7.0	5					
INCINERATION	A C	8.9	6.4	7.7	3					
SANITARY LANDFILL	B	9.2	7.2	8.2	2					
SEA DISPOSAL	B	7.4	4.2	5.8	7					
PRE-PROCESSES:						A - SEPARATION B - COMPACTION C - SHREDDING				
6*	HANDLING DATA				8*	OFF-BASE DISPOSAL/ PROCESSING DATA		10*		NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION						DISPOSAL/PROCESSING METHOD				
						SECONDARY MATERIAL HANDLER				
7*	ON-BASE DISPOSAL/ RECLAMATION DATA				9*	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD						DISPOSAL/RECYCLING METHOD				
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							96	C-96			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	TEXTILE						MELTING TEMPERATURE	-			
NAME	FELT						COMBUSTION TEMPERATURE	510			
COMMON NAME (FORM)	FELT (SHEET)						HEAT OF COMBUSTION	7232 $\frac{BTU}{LB}$			
USES	CUSHIONING						MATERIAL DENSITY	92 $\frac{LB}{CU.FT.}$			
FEDERAL/MILITARY SPECIFICATION NUMBER	C-F-202 C-F-206						BULK DENSITY	92 $\frac{LB}{CU.FT.}$			
COMPOSITION	FORMATION OF NATURAL JUTE FIBERS WHICH IS COMPOSED OF LIGNO-CELLULOSE						3 CHARACTERISTICS				
							FRAGMENTABILITY	EXCELLENT			
							SEPARABILITY	POOR			
							COMPACTIBILITY	EXCELLENT			
							COMBUSTIBILITY	EXCELLENT			
							TOXICITY	EXCELLENT			
							BIOLOGICAL DEGRADABILITY	GOOD			
							CHEMICAL DEGRADABILITY	EXCELLENT			
							REUSABILITY	UNSATISFACTORY			
							8° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
4 DISPOSAL RATING SUMMARY											
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING				
REUSE	A		2.5	10.0	6.3	7					
RECYCLE	A B		4.8	9.0	6.9	5					
PYROLYSIS	A		7.6	7.8	7.7	3					
COMPOSTING	A		6.4	7.8	7.1	4					
BALING	B		5.8	7.8	6.8	6					
INCINERATION	A		9.3	6.4	7.9	2					
SANITARY LANDFILL	B		9.4	7.2	8.3	1					
SEA DISPOSAL	B		7.4	4.2	5.8	8					
PRE-PROCESSES:		A - SEPARATION B - COMPACTION C - SHREDDING									
6° HANDLING DATA				8° OFF-BASE DISPOSAL/ PROCESSING DATA				10° NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD							
				SECONDARY MATERIAL HANDLER							
7° ON-BASE DISPOSAL/ RECLAMATION DATA				9° OFF-BASE DISPOSAL/ RECYCLING DATA							
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD							
				SECONDARY MATERIAL HANDLER							
								*TO BE COMPLETED BY THE COGNIZANT OFFICER			

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PR.	OTHER		
							87	C-87			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	TEXTILE						MELTING TEMPERATURE	- °F			
NAME	JUTE						COMBUSTION TEMPERATURE	510 °F			
COMMON NAME (FORM)	BURLAP (CLOTH)						HEAT OF COMBUSTION	7332 $\frac{\text{BTU}}{\text{LB}}$			
USES	SACKS						MATERIAL DENSITY	92 $\frac{\text{LB}}{\text{CU.FT.}}$			
FEDERAL/MILITARY SPECIFICATION NUMBER	PPP-B-35 CCC-C-457						BULK DENSITY	70 $\frac{\text{LB}}{\text{CU.FT.}}$			
COMPOSITION	LIGNOCELLULOSE MADE FROM JUTE						3	CHARACTERISTICS			
							FRAGMENTABILITY	GOOD			
							SEPARABILITY	POOR			
							COMPACTIBILITY	EXCELLENT			
							COMBUSTIBILITY	EXCELLENT			
							TOXICITY	EXCELLENT			
							BIOLOGICAL DEGRADABILITY	GOOD			
							CHEMICAL DEGRADABILITY	EXCELLENT			
							REUSABILITY	EXCELLENT			
							8*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
4							DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		PRE-PROCESSES	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING *				
REUSE	A		6.5	10.0	8.3	1					
RECYCLE	A B		4.8	9.0	6.9	6					
PYROLYSIS	A C		8.8	7.8	7.3	4					
COMPOSTING	A C		6.0	7.8	6.9	6					
BALING	B		6.2	7.8	7.0	5					
INCINERATION	A C		8.9	6.4	7.7	3					
SANITARY LANDFILL	B		8.6	7.2	8.0	2					
SEA DISPOSAL	B		7.0	4.2	5.6	7					
PRE-PROCESSES							A - SEPARATION B - COMPACTION C - SHREDDING				
6*	HANDLING DATA						8*	OFF-BASE DISPOSAL/ PROCESSING DATA			
METHOD OF STORAGE/COLLECTION							DISPOSAL/PROCESSING METHOD			10* NOTES AND COMMENTS	
							SECONDARY MATERIAL HANDLER				
7*	ON-BASE DISPOSAL/ RECLAMATION DATA						9*	OFF-BASE DISPOSAL/ RECYCLING DATA			
DISPOSAL/RECLAMATION METHOD							DISPOSAL/RECYCLING METHOD			*TO BE COMPLETED BY THE COGNIZANT OFFICER	
							SECONDARY MATERIAL HANDLER				

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							98	C-98			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	TEXTILE						MELTING TEMPERATURE	1200 °F			
NAME	SCRIM/FOIL LAMINATION						COMBUSTION TEMPERATURE	- °F			
COMMON NAME (FORM)	POLYOLEFIN/ALUMINUM/SCRIM (SHEET)						HEAT OF COMBUSTION	- BTU/LB			
USES	BARRIER MATERIAL						MATERIAL DENSITY	60-90 LB/CU.FT.			
FEDERAL/MILITARY SPECIFICATION NUMBER	MIL-B-131						BULK DENSITY	40-70 LB/CU.FT.			
COMPOSITION	-						3	CHARACTERISTICS			
							FRAGMENTABILITY	EXCELLENT			
							SEPARABILITY	POOR			
							COMPACTIBILITY	FAIR			
							COMBUSTIBILITY	POOR			
							TOXICITY	EXCELLENT (SEE PRECAUTIONS)			
							BIOLOGICAL DEGRADABILITY	POOR			
							CHEMICAL DEGRADABILITY	POOR			
							REUSABILITY	UNSATISFACTORY			
							8°	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
							PRODUCES OFFENSIVE ODORS WHEN INCINERATED.				
4							DISPOSAL RATING SUMMARY				
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING *				
REUSE	A		2.0	10.0	6.0	4					
RECYCLE	A B		1.8	9.0	5.4	7					
PYROLYSIS	A C		4.6	7.8	8.2	3					
COMPOSTING	A C		4.0	7.8	5.9	5					
BALING	B		5.2	7.8	6.5	2					
INCINERATION	A C		5.2	6.2	5.7	6					
SANITARY LANDFILL	E		5.9	7.4	6.7	1					
SEA DISPOSAL	B		4.4	4.2	4.3	8					
PRE-PROCESS: A - SEPARATION B - COMPACTION C - SHREDDING											
6°	HANDLING DATA					5°	OFF-BASE DISPOSAL/ PROCESSING DATA		10°		NOTES AND COMMENTS
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD						
					SECONDARY MATERIAL HANDLER						
7°	ON-BASE DISPOSAL/ RECLAMATION DATA					9°	OFF-BASE DISPOSAL/ RECYCLING DATA				
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD						
					SECONDARY MATERIAL HANDLER				*TO BE COMPLETED BY THE COGNIZANT OFFICER		

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PG.	OTHER	
							98	C-98		
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES		
CATEGORY	WOOD						MELTING TEMPERATURE	-	°F	
NAME	WOOD						COMBUSTION TEMPERATURE	523	°F	
COMMON NAME (FOAM)	COOPERAGE (BOARD)						HEAT OF COMBUSTION	9150	BTU/LB	
USES	KEGS						MATERIAL DENSITY	28	LB/ CU.FT.	
FEDERAL/ MILITARY SPECIFICATION NUMBER	NN-K-231 PPP-B-41						SULK DENSITY	8	LB/ CU.FT.	
COMPOSITION	CELLULOSE (70%) AND LIGNIN (18-28%) SITKA SPRUCE - SOFTWOOD						3 CHARACTERISTICS			
							FRAGMENTABILITY	FAIR		
							COMPARABILITY	GOOD		
							COMPACTIBILITY	FAIR		
							COMBUSTIBILITY	EXCELLENT		
							TOXICITY	EXCELLENT		
							BIOLOGICAL DEGRADABILITY	GOOD		
							CHEMICAL DEGRADABILITY	EXCELLENT		
							REUSABILITY	EXCELLENT		
							5* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
4 DISPOSAL RATING SUMMARY										
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING			
REUSE	A		9.0	10.0	9.5	1				
RECYCLE	A B		4.4	9.0	6.7	8				
PYROLYSIS	A C		7.8	7.8	7.7	2				
COMPOSTING	A C		8.0	7.8	6.9	4				
BALING	B		5.8	7.8	6.8	5				
INCINERATION	A C		7.8	6.4	7.1	3				
SANITARY LANDFILL	B		5.0	7.2	6.1	7				
SEA DISPOSAL	B		4.0	4.2	4.1	8				
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING								
6* HANDLING DATA			9* OFF-BASE DISPOSAL/ PROCESSING DATA				10* NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD							
			SECONDARY MATERIAL HANDLER							
7* ON-BASE DISPOSAL/ RECLAMATION DATA			9* OFF-BASE DISPOSAL/ RECYCLING DATA							
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD							
			SECONDARY MATERIAL HANDLER							
							* TO BE COMPLETED BY THE COGNIZANT OFFICE			

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PR.	OTHER		
							100	C-100			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	WOOD						MELTING TEMPERATURE	-	°F		
NAME	WOOD						COMBUSTION TEMPERATURE	523	°F		
COMMON NAME (FORM)	EXCELSIOR (SHREDS)						HEAT OF COMBUSTION	8500	BTU/LB		
USFS	DUNNAGE						MATERIAL DENSITY	28	LB/CUFT.		
FEDERAL/MILITARY SPECIFICATION NUMBER	PPP-E-911						BULK DENSITY	10	LB/CUFT.		
COMPOSITION	CELLULOSE (70%) AND LIGNIN (18-28%) (AMERICAN BASEWOOD - HARDWOOD)						3 CHARACTERISTICS				
4 DISPOSAL RATING SUMMARY							FRAGMENTABILITY	EXCELLENT			
							SEPARABILITY	POOR			
METHOD OF DISPOSAL	PRE-PROCESSING	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	COMPACTIBILITY	EXCELLENT			
REFUSE	A	3.0	10.0	8.5	8		COMBUSTIBILITY	EXCELLENT			
RECYCLE	A B	7.4	9.0	5.7	7		TOXICITY	EXCELLENT			
PYROLYSIS	A	7.8	7.8	7.7	1		ECOLOGICAL DEGRADABILITY	GOOD			
COMPOSTING	A	8.0	7.8	8.9	5		CHEMICAL DEGRADABILITY	EXCELLENT			
BALING	B	8.8	7.8	7.2	4		REUSABILITY	UNSATISFACTORY			
INCINERATION	A	8.8	8.4	7.8	2		8° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS				
SANITARY LANDFILL	B	7.5	7.2	7.4	3						
SEA DISPOSAL	B	5.5	4.2	4.9	3						
PRE-PROCESSING							A - SEPARATION B - COMPACTION C - SHREDDING				
6°	HANDLING DATA					9°	OFF-BASE DISPOSAL/ PROCESSING DATA		10°	NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD						
					SECONDARY MATERIAL HANDLER						
7°	ON-BASE DISPOSAL/ RECLAMATION DATA					9°	OFF-BASE DISPOSAL/ RECYCLING DATA		*TO BE COMPLETED BY THE ORGANIZANT OFFICER		
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD						

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE NO.	OTHER	
						101	C-101		
1 MATERIAL DESCRIPTION						2 CHEMICAL PROPERTIES			
CATEGORY		WOOD				MELTING TEMPERATURE		- °F	
NAME		WOOD				COMBUSTION TEMPERATURE		523 °F	
COMMON NAME (FORM)		PLYWOOD (SHEET)				HEAT OF COMBUSTION		9150 $\frac{\text{BTU}}{\text{LB}}$	
USES		CRATES				MATERIAL DENSITY		25 $\frac{\text{LB}}{\text{CU.FT.}}$	
FEDERAL/ MILITARY SPECIFICATION NUMBER		NN-P-530				BULK DENSITY		6 $\frac{\text{LB}}{\text{CU.FT.}}$	
COMPOSITION		CELLULOSE (70%) AND LIGNIN (18-28%) SUGAR PINE - SOFTWOOD				3 CHARACTERISTICS			
		FRAGMENTABILITY		FAIR					
		SEPARABILITY		GOOD					
		COMPACTIBILITY		EXCELLENT					
		COMBUSTIBILITY		EXCELLENT					
		TOXICITY		EXCELLENT					
		BIOLOGICAL DEGRADABILITY		GOOD					
		CHEMICAL DEGRADABILITY		EXCELLENT					
		REUSABILITY		EXCELLENT					
		6* SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS							
4 DISPOSAL RATING SUMMARY									
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING			
REUSE		A	8.5	10.0	9.3	1			
RECYCLE		A/B	4.0	9.0	6.5	7			
PYROLYSIS		A/C	7.6	7.8	7.7	2			
COMPOSTING		A/C	6.0	7.8	6.9	6			
BALING		B	6.4	7.8	7.1	4			
INCINERATION		A/C	7.9	6.4	7.2	3			
SANITARY LANDFILL		B	6.7	7.2	7.0	5			
SEA DISPOSAL		B	5.2	4.4	4.7	8			
PRE-PROCESSES		A - SEPARATION B - COMPACTION C - SHREDDING							
8* HANDLING DATA				9* OFF-BASE DISPOSAL/ PROCESSING DATA				10* NOTES AND COMMENTS	
METHOD OF STORAGE/ COLLECTION				DISPOSAL/PROCESSING METHOD					
				SECONDARY MATERIAL HANDLER					
7* ON-BASE DISPOSAL/ RECLAMATION DATA				9* OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD					
				SECONDARY MATERIAL HANDLER					
								*TO BE COMPLETED BY THE COGNIZANT OFFICER	

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE				
							MATERIAL NO.	REFERENCE PG.	OTHER		
							102	C-102			
1	MATERIAL DESCRIPTION						2	CHEMICAL PROPERTIES			
CATEGORY	WOOD						MELTING TEMPERATURE	-			
NAME	WOOD						COMBUSTION TEMPERATURE	523			
COMMON NAME (FORM)	VENEER (SHEET)						HEAT OF COMBUSTION	9150 $\frac{\text{BTU}}{\text{LB}}$			
USE	CRATES						MATERIAL DENSITY	28 $\frac{\text{LB}}{\text{CU.FT.}}$			
FEDERAL/MILITARY SPECIFICATION NUMBER	PPP-V-205						BULK DENSITY	7 $\frac{\text{LB}}{\text{CU.FT.}}$			
COMPOSITION	CELLULOSE (70%) AND LIGNIN (18-28%) PONDEROSA PINE AND JEFFRY PINE - SOFTWOOD						3	CHARACTERISTICS			
							FRAGMENTABILITY	GOOD			
							SEPARABILITY	GOOD			
							COMPACTIBILITY	EXCELLENT			
							COMBUSTIBILITY	EXCELLENT			
							TOXICITY	EXCELLENT			
							BIOLOGICAL DEGRADABILITY	GOOD			
							CHEMICAL DEGRADABILITY	EXCELLENT			
							REUSABILITY	EXCELLENT			
4	DISPOSAL RATING SUMMARY						5*	SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS			
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING				
REUSE	A		8.0	10.0	8.0	1					
RECYCLE	A B		4.0	9.0	6.5	7					
PYROLYSIS	A C		8.0	7.8	7.9	2					
COMPOSTING	A C		6.8	7.8	7.3	4					
BALING	B		5.4	7.8	6.6	8					
INCINERATION	A C		8.3	6.4	7.4	3					
BANITARY LANDFILL	B		7.2	7.2	7.2	5					
SEA DISPOSAL	B		5.2	4.2	4.7	8					
PRE-PROCESSES:		A - SEPARATION E - COMPACTION C - SHREDDING									
6*	HANDLING DATA				8*	OFF-BASE DISPOSAL/ PROCESSING DATA			10*	NOTES AND COMMENTS	
METHOD OF STORAGE/COLLECTION					DISPOSAL/PROCESSING METHOD						
					SECONDARY MATERIAL HANDLER						
7*	ON-BASE DISPOSAL/ RECLAMATION DATA				9*	OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD					DISPOSAL/RECYCLING METHOD						
					SECONDARY MATERIAL HANDLER						
*TO BE COMPLETED BY THE COGNIZANT OFFICE											

SUMMARY FACT SHEET SOLID WASTE						REFERENCE CODE			
						MATERIAL NO.	REFERENCE PG.	OTHER	
						103	C-103		
1 MATERIAL DESCRIPTION						2 CHEMICAL PROPERTIES			
CATEGORY		WOOD				MELTING TEMPERATURE		- °F	
NAME		WOOD				COMBUSTION TEMPERATURE		523 °F	
COMMON NAME (FORM)		WOOD (BOARD)				HEAT OF COMBUSTION		9150 $\frac{BTU}{LB}$	
USES		CRATES, PALLETS				MATERIAL DENSITY		36 $\frac{LB}{CU.FT.}$	
FEDERAL/MILITARY SPECIFICATION NUMBER		PPP-E-821 MIL-P-3938				BULK DENSITY		11 $\frac{LB}{CU.FT.}$	
3 COMPOSITION						3 CHARACTERISTICS			
CELLULOSE (70%) AND LIGNIN (13-28%) LARCH, WESTERN - SOFTWOOD						FRAGMENTABILITY		FAIR	
4 DISPOSAL RATING SUMMARY						SEPARABILITY		GOOD	
METHOD OF DISPOSAL		OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECO-NOMIC RANKING	COMPACTIBILITY		
REUSE	A	8.5	10.0	9.3	1		FAIR		
RECYCLE	A B	4.0	9.0	6.5	6		GOOD		
PYROLYSIS	A C	7.4	7.8	7.6	2		EXCELLENT		
COMPOSTING	A C	5.8	7.6	8.7	5		GOOD		
BALING	B	5.8	7.8	6.8	4		EXCELLENT		
INCINERATION	A C	7.7	8.4	7.1	3		EXCELLENT		
SANITARY LANDFILL	B	5.2	7.2	8.2	7		5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
SEA DISPOSAL	B	4.2	4.2	4.2	8		AFTER SHREDDING REMOVE NAILS BY MECHANICAL MEANS		
PRE-PROCESSES:		A - SEPARATION S - COMPACTION C - SHREDDING							
6° HANDLING DATA				4° OFF-BASE DISPOSAL/ PROCESSING DATA			10° NOTES AND COMMENTS		
METHOD OF STORAGE/COLLECTION				DISPOSAL/PROCESSING METHOD					
				SECONDARY MATERIAL HANDLER					
7° ON-BASE DISPOSAL/ RECLAMATION DATA				5° OFF-BASE DISPOSAL/ RECYCLING DATA					
DISPOSAL/RECLAMATION METHOD				DISPOSAL/RECYCLING METHOD					
				SECONDARY MATERIAL HANDLER			*TO BE COMPLETED BY THE COGNIZANT OFFICER		

SUMMARY FACT SHEET SOLID WASTE							REFERENCE CODE			
							MATERIAL NO.	REFERENCE PG.	OTHER	
							104	C-104		
1	MATERIAL DESCRIPTION						2 CHEMICAL PROPERTIES			
CATEGORY		WOOD				MELTING TEMPERATURE		- °F		
NAME		WOOD/METAL				COMBUSTION TEMPERATURE		523 °F		
COMMON NAME (FORM)		NAILED OR WIREBOUND WOOD (BOARD)				HEAT OF COMBUSTION		9050 $\frac{BTU}{LB}$		
USES		CRATES, PALLETS				MATERIAL DENSITY		38 $\frac{LB}{CU.FT.}$		
FEDERAL/MILITARY SPECIFICATION NUMBER		PPP-B-585 PPP-B-587				BULK DENSITY		8 $\frac{LB}{CU.FT.}$		
COMPOSITION		CELLULOSE (70%) AND LIGNIN (16-28%) INLAND DOUGLAS FIR - SOFTWOOD				3 CHARACTERISTICS				
		FRAGMENTABILITY		UNSATISFACTORY						
4		DISPOSAL RATING SUMMARY					SEPARABILITY		GOOD	
METHOD OF DISPOSAL		PRE-PROCESS	OPERATIONAL RATING	ENVIRONMENTAL RATING	TOTAL DISPOSAL RATING	TOTAL DISPOSAL RANKING	ECONOMIC RANKING	COMPACTIBILITY		
REUSE		A	8.0	10.0	9.0	1		FAIR		
RECYCLE		A B	4.0	9.0	6.5	5		EXCELLENT		
PYROLYSIS		A C	6.4	7.6	7.1	2		EXCELLENT		
COMPOSTING		A C	5.2	7.6	6.5	5		GOOD		
BALING		B	6.2	7.8	7.0	3		EXCELLENT		
INCINERATION		A C	7.1	6.4	8.8	4		EXCELLENT		
SANITARY LANDFILL		B	5.3	7.2	8.3	8		5° SPECIAL PRECAUTIONS/ APPLICABLE REGULATIONS		
SEA DISPOSAL		B	4.5	4.2	4.4	7				
PRE-PROCESSES: A - SEPARATION B - COMPACTION C - SHREDDING										
6° HANDLING DATA			8° OFF-BASE DISPOSAL/ PROCESSING DATA				10° NOTES AND COMMENTS			
METHOD OF STORAGE/COLLECTION			DISPOSAL/PROCESSING METHOD							
			SECONDARY MATERIAL HANDLER							
7° ON-BASE DISPOSAL/ RECLAMATION DATA			9° OFF-BASE DISPOSAL/ RECYCLING DATA							
DISPOSAL/RECLAMATION METHOD			DISPOSAL/RECYCLING METHOD							
			SECONDARY MATERIAL HANDLER							
*TO BE COMPLETED BY THE COGNIZANT OFFICER										

DISPOSABILITY CHARACTERISTICS
OF MILITARY PACKAGING MATERIALS

FACT SHEETS

This volume contains Fact Sheets on the disposability characteristics of 104 commonly used military packaging materials. Although this list of materials, which includes 87 solids (papers, textiles, woods, plastics, glasses, and metals) and 17 liquids (oils and cleaning fluids), is not meant to be all inclusive, it is representative of the common materials that are used for military packaging purposes. The function of these Fact Sheets is to assist military organizations and installations in the selection of environmentally and economically sound treatment and reclamation or disposal processes.

Each fact sheet includes seven to ten sections containing the following types of information:

- . Material description
- . Chemical and physical properties
- . Treatment and disposal techniques
- . Rating of these techniques
- . Listing of special precautions
- . Other notes and comments.

Additionally, provision is made to insert applicable information that is specific to a given location.

The information contained in the Fact Sheets was extracted from a detailed limited-circulation report that was presented to U. S. Army Natick Laboratories.

To select a disposal process that will result in minimal pollution of the environment, the Fact Sheet section entitled "Disposal Rating Summary" should be used as a guide (Section 3 for liquids and Section 4

for solids). The column entitled "Total Disposal Ranking" indicates the relative order for selection of the best method of disposal on the basis of the operational and environmental analysis. The best method is given the ranking of 1.

The determination of economic feasibility, which is dependent upon such local factors as availability and efficiency of equipment, transportation costs, market for materials, etc., must be made at the installation level on the basis of life-cycle cost analysis.

APPENDIX A

WASTE MANAGEMENT TECHNOLOGY

This appendix presents a survey of the current status of technology for management of waste packaging materials. It includes all equipment and processes that have been demonstrated to operate successfully, even though some have yet to receive wide acceptance by the sanitation industry.

The general flow diagram for management of packaging waste is shown in Figure A-1. The following discussion describes each block, i. e., process shown in the flow diagram.

1. SEPARATION, STORAGE, REMOVAL AND TRANSPORTATION

The method of storage and handling of each type of packaging waste is determined by its eventual disposition. The discussion here covers source separation, storage, collection, and transportation.

(1) Source Separation

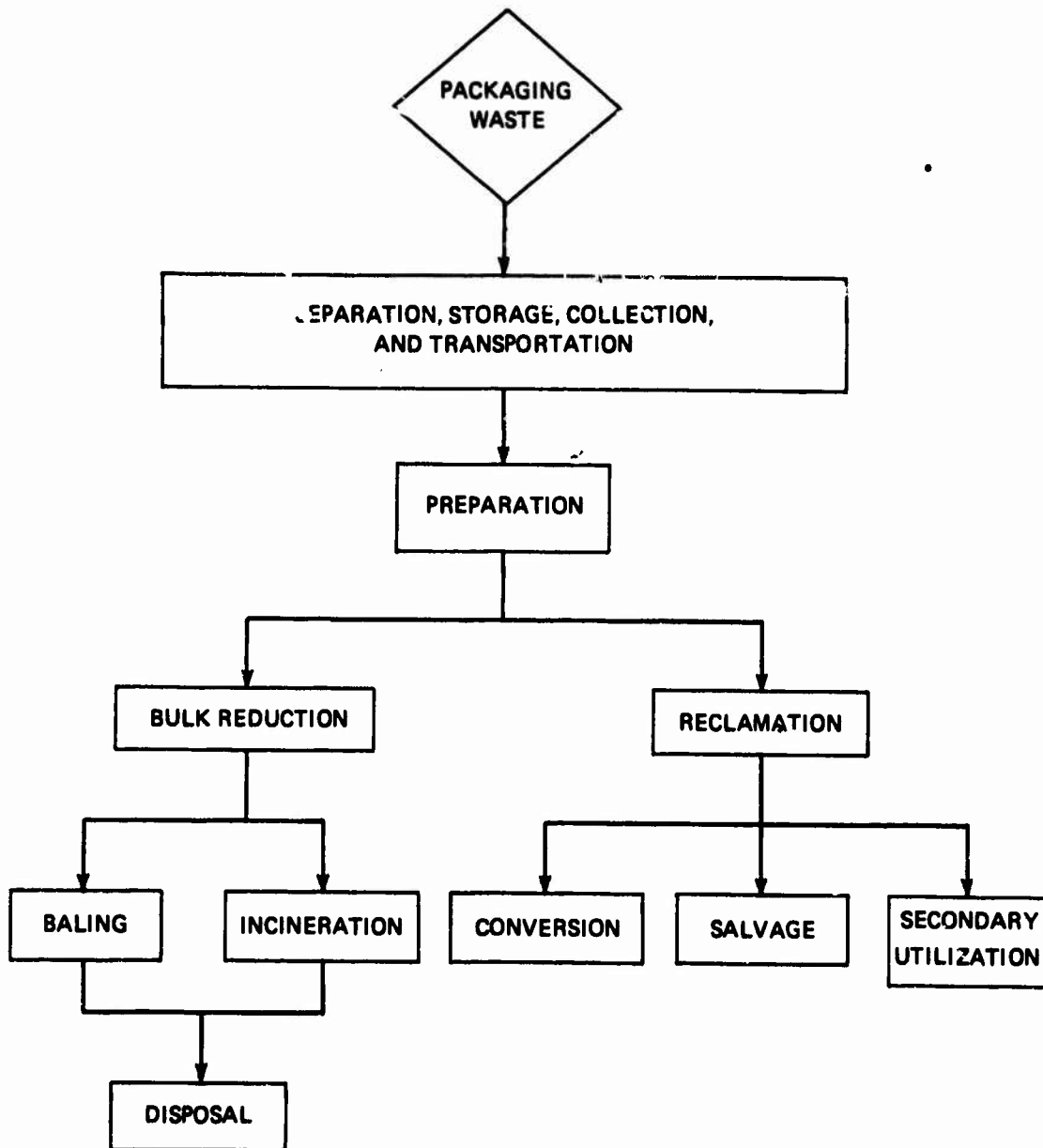
The waste source is the point at which a packaging material becomes a packaging waste which is typically upon opening a package and removing its contents. Source separation refers to the separate storage of materials, when their mixing would interfere with their subsequent disposition.

The most common reason for source separation is the need to minimize contamination of reusable or reclaimable materials. Other materials may interfere with the operation of a specific process. For example, plastics typically clog up incinerator grates, whereas metal bands are likely to jam the mechanism of a hammer mill. Finally, bulky items, such as crates and pallets, frequently must be dismantled to facilitate subsequent handling.

The requirement for source separation and the recommended storage method are indicated on the Fact Sheet for each material.

APPENDIX A(2)

FIGURE A-1
Flow Diagram for Management
of Solid Packaging Waste



APPENDIX A(3)

(2) Storage

In a warehouse, or similar facility that handles large amounts of packaging materials, the wastes are typically stored in large metal bins that are mated to collection trucks to facilitate removal. Paper stock and certain other materials slated for reclamation can be bundled for shipping.

Compaction devices designed to reduce storage space requirements are available in various shapes and sizes from some 20 manufacturers. These pack waste materials into large bags or metal containers.

(3) Removal and Transportation

Residential solid waste is usually collected by closed collection vehicles manned by a driver and two loaders. A typical vehicle consists of a closed packer body with a 12- to 20-cu yd capacity, mounted on a regular truck chassis. The body has an opening for loading at the rear, or sometimes at the side, and is equipped with one or two compacting mechanisms that increase the load intake by a factor of 2 to 3.

Collection vehicles serving commercial establishments or military bases are designed to cope with larger containers and are generally manned by a single operator. They fall into four categories:

- Semiautomatic rear loaders, similar to the household refuse collection vehicles, but equipped with a power device for lifting and tipping the containers
- Automatic front loaders that lift the container over the cab and dump its contents into the packer body behind
- Piggyback platforms that lift or pull the full container onto their chassis
- Train tractors—small, powered vehicles that hook up a string of wheeled containers.

Long-distance hauling of solid wastes is effected with the aid of stations that transfer the waste from collection vehicles onto trailer vans, railroad cars, or barges. Modern stations are equipped with a stationary compacting mechanism, and the addition of fragmentation devices is under consideration. The number of transfer stations is expected to grow rapidly as landfills move farther away from populated areas and more favorable cost factors improve their economic feasibility.

2. PREPARATION

Preparation of packaging waste for subsequent processing may take the form of fragmentation or sorting. These steps are useful precursors to a number of subsequent operations, including baling, incineration, pyrolysis, reclamation, and landfill. They are conducted typically at a central processing facility. The requirement for preparatory steps is indicated on each material data sheet.

(1) Fragmentation

Reduction in the average size of the refuse fragment, known as fragmentation, comminution, or presizing, enhances the homogeneity, packing, and handling quality of refuse. The fragmentation mechanisms for the various substances in the refuse stream vary widely and have not been characterized adequately. Hard and brittle materials, such as glass, ceramics and masonry, crush under impact; whereas such soft, elastic, and fibrous materials as metals, plastics, rubber, textiles, wood, and paper are best reduced by a cutting or shearing action. The selection of the most suitable equipment must take into consideration the amount and composition of raw refuse, requirements of subsequent operations, and economic factors.

The most common fragmentation equipment includes hammer mills, shredders, shears, and wet pulpers. Other devices with essentially similar functions are variously known as ball mills, cage disintegrators, chippers, crushers, cutters, disk mills, drum pulverizers, grinders, hoggers, and rasp mills. Hammer mills use a variety of rotating hammers that apply tensile, compressive, and shearing forces to fragmentize a wide mix of refuse. Shredders employ overlapping fingers operating at different speeds to tear and shear fibrous and

APPENDIX A(5)

ductile materials. Shears are used primarily for breaking up timber, automobile bodies, and other bulky items. Wet pulpers subject a 10 percent slurry of solids to repeated impacts of hardened high-speed members, typically in preparation for composting.

A joint demonstration project in Madison, Wisconsin, uses a hammer mill to grind municipal refuse into an inoffensive product that can be landfilled with only partial cover and in half the space of unprocessed refuse. The use of refuse fragmentation equipment in the United States is increasing gradually, particularly in conjunction with the sundry recycling schemes. The current trend is toward larger and more powerful machines capable of handling a more heterogeneous mix of refuse.

(2) Sorting

Sorting of packaging waste into its constituent materials, also known as separation or segregation, is essential in recovery operations; but it is very useful in other processing steps, where it permits the optional adjustment of operating conditions to each category of refuse. The sorting task can be aided considerably by fragmenting refuse to enhance the cleanliness of individual particles and by screening to promote dimensional uniformity. Thus, the cost of ancillary processing and handling equipment should be considered in planning a sorting installation.

Sorting relies on differences in the physical characteristics of materials, including size, shape, specific gravity, brittleness, elasticity, color, reflectance, magnetic susceptibility, electric conductivity, absorption of electromagnetic radiation, and radioactivity. Inasmuch as typical refuse materials are not sufficiently clean and unique in any one characteristic, a combination of two or more sensors may be employed.

Sorting techniques may be categorized loosely as:

- Manual
- Dimensional

APPENDIX A(6)

- Dynamic
- Optical
- Electric and magnetic.

In spite of the rising costs of labor, manual sorting from conveyors is still the most common method employed at nearly all composting plants and some incinerators. Development of mechanical methods has been rather recent and consists largely of adoption of proven techniques from the mineral processing industry.

Sorting of refuse according to particle size is a frequent prerequisite to other sorting or processing operations, where size uniformity is desirable. It can also serve to separate refuse according to differences in brittleness, on the premise that the size of particles produced by the preceding fragmentation step is inversely related to the brittleness of each material. Size separation, perhaps the simplest sorting operation, is accomplished typically by passing refuse over a series of vibrating screens.

Dynamic sorting techniques rely on combinations of characteristics that affect the motion of refuse particles (e. g., size, specific gravity, inertia, shape, and elasticity). The more popular devices are the air classification unit, the vortex classifier, the stoner, the fluidized bed separator, the ballistic separator, the secator, and the inclined conveyor.

The air classification unit consists of a series of zigzag-shaped columns and cyclone separators and relies on differences in specific gravity and aerodynamic characteristics of materials. A stream of air flowing upward through the columns carries the lighter particles to the top, where they are removed by the cyclones, while the heavier particles fall to the bottom. The zigzag configuration promotes entrainment of the refuse particles in the air stream and permits separation of materials with only slight differences in specific gravity. Adjustment of column dimensions and air speed extend the applicability of the unit to a wide range of materials.

APPENDIX A(7)

Optical sorting techniques have been used successfully in the agricultural, food processing, and mining industries and promise a flexible, efficient operation with solid wastes as well. The Sortex optical separator projects refuse particles through an optical box, where they are viewed by four photocells against a suitably selected background. Any particle that differs in color or shade from the standard background triggers a short blast of air that deflects it into a separate chute.

A sorting system developed by the Bureau of Mines Metallurgy Research Center at College Park, Maryland, separates incinerator residue into clear and colored glass fractions, ferrous and nonferrous metal fractions, and a residue of ash and sand. The equipment consists of a series of vibrating screens, magnetic separators, and an air classifier. Another process, capable of extracting paper, glass, metal, and plastics from municipal refuse at the rate of 60 tons/hr is currently under development by the Franklin Institute of Philadelphia. The system will employ vibrating screens, baffles, paddle wheels, and gravity separators.

Bulk reduction and the associated flow is discussed immediately below, while reclamation and its associated flow is discussed in heading 5.

3. BULK REDUCTION

Reduction of the bulk, or volume, of packaging waste served to decrease the handling, transportation, and disposal costs. Conventional incineration, long the favored method of bulk reduction, is now encountering competition from advanced types of incineration and from high pressure baling.

(1) Baling

Compression of packaging waste is the most direct method of bulk reduction. Its extent is governed not only by the applied pressure, but also by the manner of application, and the composition of waste. In the ideal configuration, all voids are eliminated, and the close contact between waste particles promotes adhesion and physical interlocking to form a cohesive stable structure with a density approaching that of the solid material.

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Tests conducted by the American Public Works Association in Chicago and the City of San Diego concluded that:

- Compression ratios as high as 11 to 12 are attainable with municipal waste.
- Optimum compaction of municipal wastes requires pressures in the neighborhood of 2500 psi.
- Incremental compression of distinct portions of the waste produces a less stable structure.
- Optimum moisture content is in the neighborhood of 25 to 30 percent.
- The presence of metal scrap enhances stability of the bale.
- The presence of yard trimmings and large amounts of paper degrades the stability of the bale.

The behavior of various baled wastes in a marine environment remains a major unanswered question.

Low-level compaction of solid wastes has been practiced in the United States for a number of years. Compaction ratios of 2 to 4 are attained in stationary residential and institutional compactors, as well as in packer collection vehicles mentioned in the preceding sections. Similar results are achieved by compacting tractors at a landfill. Small paper balers reach compression ratios as high as 6 to 8. Massive equipment, capable of exerting even higher pressures (in excess of 2000 psi), was restricted, until recently, to the processing of metal scrap and other industrial waste.

Large-scale, high pressure compaction and baling of municipal waste was popularized with the announcement of a process for compressing refuse into sterile bales that could be clad in asphalt or concrete and used as building blocks. Since then, well over 50 U. S. firms have entered the refuse baling field with equipment or management services.

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An American industrial firm manufactures a horizontal press with a continuous operation and a capacity of 25 tons/hr. The refuse is shredded, charged into a vertical chute, and dropped into the compression chamber. Successive charges are compressed by repeated strokes of the horizontal ram into 6- to 8-in. contiguous layers. When the desired thickness has been reached, the bale is banded and removed for storage and shipment. Typical bales measure 30 by 40 by 71 in., weigh 3000 to 2500 lb., and have a density of up to 60 lb/cu ft.

A machine presently on the market employs three rams operating consecutively along the three orthogonal directions to compress each successive batch of refuse. The system can compress 60 tons/hr and does not require shredding or banding. The bales weigh 2500 to 3000 lb and have a density of 60 lb/cu ft. Another baling machine has a capacity of 60 tons/hr and compresses refuse into 16-in. contiguous layers. The bale, formed by strapping three layers together, measures 4 by 4 by 4 ft, and weighs between 4000 to 6000 lb.

In the narrow bulk reduction role, high pressure baling offers a number of advantages over conventional incineration:

- It accepts all types of waste, including noncombustibles and plastics.
- It yields greater volume reduction on the basis of all municipal wastes (80 to 90 percent versus 65 to 75 percent).
- Its capital and operating costs are, respectively, 1/10 and between 1/3 and 1/2 of corresponding incineration costs.
- It requires less maintenance and operating skill.
- It generates no significant air or water pollution.
- It produces a residue that is easier to handle, transport, and landfill.
- It affords nearly full future recovery of waste materials.

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When incineration is combined with heat or other forms of resource recovery, the choice becomes less clear.

(2) Conventional Incineration

Conventional incineration of packaging and other solid wastes has been gradually replacing open burning as a common approach to bulk reduction. Nevertheless, burning in the open still remains the cheapest, most widely used, as well as least desirable method. The smoke and stench contribute appreciably to the local air pollution problem, and incompletely burned organic waste putrefies and attracts rats and flies.

A modern incinerator consists of a combustion chamber, where the refuse burns on moving grates at 760 to 982° C (1400 to 1800° F), a secondary combustion zone for burning off combustible gases, and flues to convey the exhaust gases to the stack and then to the atmosphere. The flues of modern incinerators are equipped with pollution control devices to minimize the amount of pollutants discharged into the atmosphere. About 10 to 35 percent of the original volume of refuse remains as sterile incombustible residue and fly ash and must be transported to a disposal site.

The major drawbacks of incineration still remain unresolved. These include the high cost of construction, maintenance, and pollution control, frequent downtime to replace refractory lining and grate elements damaged by excessive temperatures and corrosive gases, and incomplete combustion caused by heterogeneity of the waste charge. The principal development efforts designed to correct some of these problems have focused on incineration of bulky waste, suspension of the waste charge, improved emission control, high temperature incineration, and waste heat recovery.

(3) Advanced Incineration

Incineration of bulky solid wastes, such as logs, crates, furniture, mattresses, and large appliances, requires either fragmentation, followed by conventional incineration, or batch incineration in specially designed furnaces. The former method has been stymied by the lack of suitable fragmentizers, capable

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of handling the wide variety of sizes and materials encountered. Moreover, this equipment is very noisy and hazardous, and its capital and operating costs are slightly higher than those of a special furnace, equipped with an air pollution control system.

Suspension firing is a method of incineration, where waste is supported in a fluid medium rather than on the conventional metal grate. This innovation has been instrumental in promoting more uniform temperature distribution, better interaction of waste with oxygen, a higher combustion rate, and a greater heat output, and in reducing the operating temperature and the amount of excess air required. Although suspension firing has been used widely in power and heating furnaces, and even for combustion of sewage sludge and certain industrial waste, its application to packaging and other commercial waste requires further demonstrations.

Incinerator emissions control experienced perhaps the most concrete near-term advance in incineration technology because the necessary equipment has been available for some time. The principal air pollutants of incineration are fly ash and carbon monoxide. Until recently, fly ash emission was controlled by such mechanical devices as settling chambers, baffles, or cyclones, and occasionally by wet scrubbers. However, with the advent of stricter air pollution control codes, requiring cleaning efficiencies as high as 95 to 98 percent, this equipment is being replaced by high-energy scrubbers, bag filters, and ultimately electrostatic precipitators. Carbon monoxide and hydrocarbon emissions are being abated by improvements in the combustion process, such as more uniform heating of waste particles and more intimate mixing with oxygen.

(4) Waste Heat Recovery

The recovery of waste heat generated in the incineration of solid wastes, although practiced extensively in Western Europe, has only recently received well-deserved attention in the United States, as part of the overall concern with air pollution control and the impending energy crisis. The two most common designs of waste heat recovery installations involve steam generation by a boiler located immediately after the

conventional refractory furnace, or by water-bearing pipes imbedded in the furnace walls. The steam can then be used for space heating, for driving a steam turbine, including an electric generator, or for other applications. A third concept involves the burning of refuse as fuel in a power plant. A fourth experimental scheme employs a gas turbine that is driven directly by the hot, pressurized combustion gases.

The furnace and boiler combination has the advantages of simpler and cheaper construction but requires the introduction of 150 to 200 percent excess air to prevent damage to the refractory lining. The second design, commonly known as "water-wall furnace," permits the use of only 50 to 100 percent excess air by virtue of more efficient heat transfer, and thus reduces the required capacity of air pollution control equipment. Both systems obviate the need for special cooling of effluent gases to protect this equipment.

A serious problem lies in matching the incinerator's variable heat output to the customer's variable demand. This can be remedied to a large extent by maintaining adequate auxiliary sources of energy, by tying into a large utility network, or even by restricting the use of recovered heat to servicing the incinerator plant and associated facilities. Undoubtedly, more stringent air pollution control regulations, the increasing scarcity of low-sulfur fuels, and the rising heat content of municipal solid wastes will render heat recovery even more attractive in the future.

Heat recovery with the aid of boilers is practiced at U. S. incinerators in Providence, Atlanta, Miami, Boston, Chicago (Southwest), and Merrick, Oceanside, and Oyster Bay, New York. The first operational waterwall incinerator in America was constructed in 1967 at the Norfolk Naval Station at a cost of \$2.2 million. The plant generates 50,000 lb/hr of steam to heat shore facilities as well as existing ships. Subsequent installations have been completed at Chicago (Northwest), Montreal, Hamilton, Ontario, and Braintree, Massachusetts.

(5) High-Temperature Incineration

High-temperature incinerators, also known as slagging incinerators, operate at 1500 to 1700°C (2732 to 3092°F).

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above the melting point of most common substances; whereas in conventional incinerators temperature must be maintained below 1000°C (1832°F) to prevent damage to refractory lining and grate materials. Their principal advantages are:

- Acceptance of practically all types of municipal waste
- Outstanding bulk reduction of up to 97 percent
- Complete combustion of all combustible materials
- Potential utilization of solid residue
- Generally reduced air pollutant emissions.

The disadvantages include:

- Need for auxiliary fuel and fluxing agent
- More rapid deterioration of refractory material
- Higher emission of NO_x.

High temperature incineration technology has been largely borrowed from the steel industry, and the several existing designs are still in the development or demonstration stages.

4. DISPOSAL

The ultimate disposal of packaging and other solid wastes generally takes place on land, since dumping in waterways has been banned and disposal at sea is restricted. The preferred form of land disposal is sanitary landfill, though other more innovative approaches have been tried as well.

(1) Sanitary Landfill

Sanitary landfill is gradually replacing open dumping as the preferred method of land disposal, and currently accounts for nearly 10 percent of waste disposal. Under this approach, the waste is discharged into a trench, compacted by bulldozers,

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and covered with about 1/2 to 2 ft of compacted soil as a sanitary precaution.

The recent proliferation of sanitary landfills has brought an increased concern for the environmental dangers posed by land disposal. These include:

- The generation of carbon dioxide and the more noxious and flammable methane, ammonia, and hydrogen sulfide through aerobic and anaerobic decomposition
- The leaching of these and other contaminants by rainfall into nearby waterways and ground water supplies
- Eventual subsidence of the surface as a consequence of these two factors and mechanical consolidation.

Solutions to gas generation include insertion of vents, construction of gas barriers, and emplacement of impermeable covers. Efforts to prevent leaching contamination have been expanded beyond the customary sloping of the landfill cover to the provision of an impermeable lining for the site. The leachate is collected at a catchment point and purified by conventional wastewater treatment techniques. The extent of mechanical consolidation and landfill subsidence can be minimized by compaction and/or shredding of refuse.

(2) Other Land Disposal Methods

Several other land disposal methods that have yielded promising results include mine filling and topographic alteration.

The idea of using strip mines for waste disposal and subsequent land reclamation was advanced in connection with the rail haul of municipal waste, offered for several years by a number of the nation's railroads. The advantages of utilizing these abandoned mines include the existence of access roads, availability of ample overburden for cover, reclamation of otherwise useless land, and the somewhat whimsical notion of restoring a potential mine for the time when raw mineral resources become depleted. Another interesting possibility is

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presented by the blending of waste disposal into the operations of an active mine. The waste would be deposited next to an area about to be stripped and covered with the spoils removed from the ore.

Finally, solid waste disposal presents a rich opportunity for topographic engineering. An MIT study suggested the filling of the extensive rights-of-way of Federal and State highways, railroads, and power lines, listing such benefits as convenient access, improved road safety, and avoidance of jurisdictional disputes. In Wheeling, West Virginia, a gap between two hills is being bridged by deposited refuse in preparation for the construction of a major parkway. Recreational complexes designed around mounds of solid waste are in the planning or construction phase at Virginia Beach, Virginia; Riverview, Michigan; and Brookhaven, New York.

(3) Disposal at Sea

The amount of wastes discharged at sea grew rapidly after World War II, reaching 48.2 million tons (wet tonnage) in 1968, but it is now on the decline as a result of Federal and State legislation.

In theory, the oceans, which cover 71 percent of the earth's surface, offer a nearly unlimited capacity for assimilation of most wastes. This does not work out in practice primarily because of U.S. failure to control, treat, and distribute the wastes properly and because of the concentration of toxic substances in the food chain. Substantial pollution of the ocean is unacceptable, not only because of esthetic reasons but also because of the need to preserve the photoplankton that is largely responsible for generating the world's oxygen supply.

5. RECLAMATION

Reclamation of useful components from the solid waste stream can take the form of conversion, salvage, or secondary utilization. The latter involves the use of an unaltered waste material in a new role and is illustrated by the employment of municipal refuse in altering topographic features for recreational purposes, the incorporation of glass cullet and fly ash in construction materials, or the underwater

emplacement of discarded tires as fish habitats. Salvage entails the removal of a component from the waste stream and physical processing into a form suitable for reuse. The most typical salvageable packaging materials are paper, glass, and metal scrap. Finally, conversion is defined as the chemical or biochemical transformation of a waste material into a useful pyrolysis, hydrogenation, wet oxidation, and hydrolysis; the biochemical processes take in composting, anaerobic digestion, and biological fractionation. Waste heat recovery, a special form of conversion, was reviewed earlier.

(1) Pyrolysis

Pyrolysis, or destructive distillation, is a time-tested process for breaking down organic substances into a carbonaceous char; an oil fraction containing acetic acid, acetone, and methanol; and a gas fraction consisting primarily of carbon monoxide, hydrogen, methane, and carbon dioxide, by heating the materials at 600 to 1000°C (1112 to 1832°F) in the absence of oxygen. These products can then be separated and sold individually or used as fuel.

During the past decade, a number of successful developmental efforts have been undertaken by the Bureau of Mines Energy Research Center in Pittsburgh and other research institutions to adapt pyrolysis to the treatment of packaging and other municipal wastes. In light of the favorable technical and economic outlook indicated by pilot plant results and limited commercial experience, as well as freedom from the major problems plaguing municipal incinerators, a number of commercial enterprises have attempted to market their own pyrolysis systems. Thus far, no major municipal facilities have been built, but several are under serious consideration.

(2) Composting

Composting, or aerobic digestion, is a controlled process, in which aerobic bacteria convert cellulose waste into a relatively inert humus-like material. The procedure generally requires shredding of the waste materials, removal of the 25 percent non-compostable fraction (metals, glass, plastics, and rubber), addition of water or sewage sludge, digestion for 4 to 6 days at

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50 to 75°C (122 to 167°F), and curing to reduce the moisture content. The microbiological activity, and consequently the duration of the digestion phase, is a function of the particle size, moisture, oxygen access, temperature, pH, and carbon/nitrogen ratio of the waste material. Bulk reduction is between 30 to 50 percent, and the product is suitable for use as a soil conditioner, as a base for fertilizer, or even in the manufacture of wallboard.

The 20-year history of composting ventures in the United States has been less than an unqualified success principally because of the lack of ready markets for the product, but it also is a result of some technical difficulties. Of the 20-plus composting plants built in this country since 1951, only two or three are still functioning, with varying degrees of success. In Europe, India, and other parts of the world, composting has proved more successful, reflecting a greater demand for natural fertilizers and soil conditioners.

(S) Other Reclamation

A number of other chemical and biochemical conversion processes for cellulosic waste have been investigated in the laboratory and pilot plant. Those showing the most promise thus far are:

- Hydrogenation
- Wet Oxidation
- Hydrolysis
- Anaerobic Digestion
- Biological Fractionation.

Hydrogenation is a chemical process that converts cellulose waste into low-sulfur fuel oil by heating the material under pressure with water and carbon monoxide. Wet oxidation heats the waste material under pressure with water and oxygen to produce carbon monoxide, carbon dioxide, a mixture of organic acids, and a solid fibrous sludge. Hydrolysis converts cellulosic waste into fermentable sugars by heating with an acid.

Then the sugars can be fermented to produce ethyl alcohol, citric acid, animal fodder, and other useful substances.

Anaerobic digestion employs anaerobic bacteria to convert cellulosic waste at an elevated temperature and in the absence of oxygen into methane, carbon dioxide, hydrogen sulfide, and a solid residue. Biological fractionation is a generic term for a number of biochemical processes that employ microorganisms to convert cellulosic waste into glucose and other even more useful products, such as single cell protein.

(4) Salvage

Salvage is defined in this report as the restoring of waste materials to their original utility. It can take the form of direct reuse, recycling, or reprocessing. Direct reuse is best illustrated by returnable containers or pallets; recycling refers to the reuse of process waste at the manufacturing plant; reprocessing involves the cleaning and processing of consumer, or secondary, waste by recycling by the manufacturer.

1. Problems and Opportunities

The major factors affecting widespread salvage of packaging waste are the cost effectiveness of salvaged materials and their public acceptance.

Cost effectiveness of the salvaged materials is frequently unfavorable because of the low cost of virgin packaging materials; the high cost of sorting, cleaning, and reprocessing of salvaged materials; and the relatively high freight rates established by the Interstate Commerce Commission for scrap materials. Packaging manufacturers compound the problem through the use of such complex materials as coated papers and bimetallic cans.

Public acceptance of products made with reclaimed materials has increased greatly with the recent swell of interest in environmental enhancement. However, many procurement regulations still discriminate in favor of virgin materials.

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Packaging materials most likely to be reclaimed include paper, glass, and aluminum.

2. Paper and Textiles

Paper products constitute by far the largest component (45 to 50 percent) of municipal waste. Of the 53.5 million tons of paper products manufactured in the U. S. in 1969, 10.4 million tons, or 19.5 percent, were accounted for by paper scrap, mostly from paper jobbers, publishers, container fabricators, and similar commercial sources. In addition, most paper mills recycle their own waste, or "broke," so that the concept of paper recycling is subject to considerable interpretation. Over 70 percent of the scrap went into the production of paperboard, over 15 percent went into building products (including wall board, roofing, and insulation), and the remainder was fairly evenly divided among newsprint, coated printing paper, uncoated printing paper, and writing paper.

The National Academy of Engineering has estimated that U. S. consumption of paper products will double by 1985, requiring a 35 percent reclamation rate in order to balance the nation's wood and fiber resources. Nevertheless, the current rate is part of a trend that began at 35 percent during World War II and has been going downhill ever since.

Some 17 percent of the 1.2 million tons of textile waste generated annually in the United States is reclaimed, mostly as wiping rags for industrial use. Cotton waste is used in the manufacture of fine writing and roofing papers. Reclamation of textile scrap from residential waste is practically nonexistent.

3. Glass and Plastics

The glass content of packaging and other municipal waste has grown in recent years as a result of the increasing popularity of nonreturnable containers, whereas collections at reclamation centers account for only 2 to 3 percent

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of the annual production. At the same time, the demand for glass scrap, or "cullet," in the manufacture of new containers has been reduced by the increased cost of processing and the advent of new and more efficient glass-making equipment, which no longer requires the use of cullet. The clean, uniform, and readily available trimmings from sheet and plate glass fabrication are more than sufficient to meet the demand for glass powder in the manufacture of reflective paints, abrasives, refractory materials, and similar products.

More efficient sorting and cleaning techniques and new applications for glass scrap are being sought by the Bureau of Mines and the Glass Container Manufacturers' Institute. Numerous attempts at incorporation of cullet in road pavement and construction materials, including bricks, facing panels, and tiles, have yielded very encouraging results. Production of glass fiber is more problematic because the quality and composition of the melt prior to fiberizing must be controlled very closely.

The growing use of plastics in packaging materials presents a troublesome disposal problem. In landfills, the unbreakable plastic containers occupy a disproportionate amount of space. During incineration, most plastics produce heat at a rate three times that of other refuse materials; thermoplastic materials tend to melt and clog incinerator grates; plastic film flies in the air stream and interferes with normal operations; and polyvinyl chloride releases hydrogen chloride gas that can corrode metal parts, including boiler and air pollution control equipment.

A number of institutions and firms have developed plastic materials that degrade upon exposure to solar ultraviolet radiation by incorporating photosensitive groups in the polymer chain.

Reclamation of plastic waste is minimal and consists almost entirely of reprocessing industrial thermoplastic waste including polyethylene, polyvinyl chloride, and polystyrene. At present there are no commercial techniques for reclaiming mixed plastic waste from the municipal solid waste stream.

4. Systems

Several major solid waste salvage systems have been proposed during the past few years. They use different combinations of fragmenting, sorting, conversion, and reclamation techniques and are currently in various stages of design, development, construction, and actual operation.

One of the earliest has been an effort by the Bureau of Mines Metallurgy Research Center at College Park, Maryland, to separate and extract useful substances from incineration residue. The 300 municipal incinerators operating in the United States process in the neighborhood of 35 million tons of refuse per year, and generate some 5 million tons of residue. Each of these can yield on the average 1000 lb of glass, 700 lb of iron, 40 lb of nonferrous metals, and an ash that can serve as fill.

One research firm has looked into the reclamation of residue from high-temperature incineration. The molten residue is separated into a metallic and a ceramic fraction on standing at temperatures above 1500°C (2732°F). The ceramic fraction can be processed into glass wool, sewer pipe, tiles, and structural blocks, whereas the metallic fraction can serve for the manufacture of assorted metal objects, where material characteristics are not of critical importance.

One of the most complete solid waste processing systems went into operation 2 years ago as a joint commercial/governmental venture in the city of Franklin, Ohio. The system accepts mixed municipal waste, with the exception of bulky items, and yields paper fiber, ferrous and nonferrous metals, a mixed glass fraction, and a combustible fraction, which provides waste heat recovery.

Raw waste is fed into a wet pulping machine, where pulpable and friable components are fragmentized and converted into a 3-1/2 percent water slurry. Other components, primarily metal objects, are ejected, washed, and separated for reclamation. Heavy particles (primarily glass) are removed from the slurry by centrifugal action.

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A series of steps follow, designed ultimately to reclaim paper fibers. The residual slurry is dewatered and burned in a fluidized bed furnace, and the ash residue is landfilled. An auxiliary system to sort and reclaim the mixed glass fraction is under development.

A 500-ton/day facility using composting, pyrolysis, and reclamation techniques has been designed for Newcastle County, Delaware. Residential refuse will be mixed with sewage sludge and composted in a Fairfield digestion unit. Noncompostable organic components, including plastics, rubber, and rags, will be pyrolyzed. Inorganic residues, such as nonferrous metals, glass, grit, and sand, will be sorted by screens and gravity tables and reclaimed. Industrial and commercial wastes will be handled in similar fashion, following a preliminary reclamation stage.

APPENDIX B

SPECIFIC CRITERIA DEVELOPMENT AND METHODOLOGY

This appendix is a comprehensive presentation of:

- The development of the criteria for both solid and chemical packaging wastes
- The methodology employed to determine the total disposal rating for both solid and chemical packaging wastes

A summary of this appendix may be found in Chapter II, Section 4, pages II-39 through II-47.

1. SOLID WASTE CRITERIA DEVELOPMENT

The disposability of solid packaging materials was evaluated by examining each of the following possible processes:

- Reuse
- Recycle
- Pyrolysis
- Composting
- Baling
- Incineration
- Sanitary landfill
- Sea disposal.

The applicability of each of these processes was analyzed to establish an operational rating and an environmental rating for each material.

(1) Operational Rating System

In designing the operational rating system, it was necessary first to determine mutually exclusive material characteristics that have a direct bearing upon the operation of each process. For example, in the process of incineration, material characteristics that bear upon the process are: (1) fragmentability, (2) separability, (3) combustibility, and (4) potential damage to the equipment.

Secondly, for each process, it was necessary to enumerate the relative importance of each characteristic; that is, by comparing all the material characteristics related to each process, those characteristics that are more, equal, or less important than others were determined. Once the qualitative decisions were made, they were quantified as portions of unity (1.0). Using the incineration example, it was determined that combustibility was the most important and therefore a relative importance of 0.5 was assigned. Fragmentability and potential damage to the equipment were determined to be equally weighted and were each assigned a relative importance of 0.2. Lastly, separability had the least effect on the operation and was assigned a relative importance of 0.1. This rationale is depicted in Table B-1.

(2) Environmental Rating System

The environmental rating system was devised to measure the environmental impact of processing the solid waste material through each disposal alternative. Using this system, the major environmental disruptions were analyzed, that is, the potentials for air pollution, water pollution, land pollution, and resource depletion. As in the operational rating system, relative importance factors based upon portions of unity (1.0) were assigned to each environmental impact. But, unlike the operational rating system, the relative importance factors were equally weighted for each disposal alternative. The rationale for this weighting is that it would not be adequate to just measure what is environmentally good or bad, for this would indicate a qualitative or quantitative bias. Rather, one must take into account the total environmental impact of each process. The exceptions to this rationale are in (1) direct reuse and (2) recycle. In the case of direct reuse, the material would

TABLE B-1
 RELATIVE IMPORTANCE OF
 OPERATIONAL DISPOSABILITY CHARACTERISTICS

Characteristics	Direct Reuse	Recycle	Pyrolysis	Compost	Baling	Incineration	Sanitary Landfill	Sea Disposal
Fragmentability	--	--	0.2	0.2	--	0.2	0.1	--
Separability	0.5	0.4	0.2	0.2	--	0.1	--	--
Material Density	--	--	--	--	--	--	0.2	0.2
Compactibility	--	--	--	--	0.4	--	0.4	0.3
Baleability	--	--	--	--	0.6	--	--	--
Combustibility	--	--	--	--	--	0.5	--	--
Chemical and /or Biological Degradability	--	--	0.4	0.4	--	--	0.3	0.3
Market for Commodity	0.5	--	--	--	--	--	--	--
Potential Damage to Equipment	--	--	--	--	--	0.2	--	--
Regulatory or Technical Operating Restrictions	--	0.6	0.2	0.2	--	--	--	0.2
Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

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be precluded from entering the solid waste stream and, therefore, at the present time would not be disposed of. In the case of recycle, the material most probably would be transported to the issuing industry or secondary industry for recycling. The environmental impact of a disposal process rather than an industry was to be determined and, therefore, recycling was excluded from the above rationale. Yet, direct reuse and recycling were environmentally analyzed, but only in terms of resource depletion potential. The environmental rating system is disclosed in Table B-2.

(3) Operational and Environmental Rating Definitions

To utilize the aforementioned rating systems, rating and rating code scales ranging in numerical value from 0 to 10 were employed as follows:

<u>Rating</u>	<u>Rating Code</u>
Excellent	9-10
Good	7-8
Fair	5-6
Poor	3-4
Unsatisfactory	0-2

Moreover, for each characteristic and environmental impact, definitions corresponding to each rating and rating code were developed to apply the rating system consistently. Basically, these definitions were used as a guide for classifying the solid waste packaging material on the basis of either a numerically measurable or clearly defined characteristic.

Tables B-3 to B-14 enumerate the rating, rating code, and rating definitions for both operational and environmental considerations for each process.

For example, referring to Table B-5 under the operational rating definition of fragmentability, excelsior, in the form of shreds, would be considered "excellent" because it needs no process for reduction; veneer crate would be considered "good" because it would need only very light equipment for

TABLE B-2
RELATIVE IMPORTANCE OF ENVIRONMENTAL IMPACT

Environmental Impact	Direct Reuse	Recycle	Pyrolysis	Compost	Baling	Incineration	Sanitary Landfill	Sea Disposal
Air Pollution Potential	-	-	0.2	0.2	0.2	0.2	0.2	0.2
Water Pollution Potential	-	-	0.2	0.2	0.2	0.2	0.2	0.2
Land Pollution Potential	-	-	0.2	0.2	0.2	0.2	0.2	0.2
Resource Depletion Potential	1.0	1.0	0.4	0.4	0.4	0.4	0.4	0.4
Total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

TABLE B-3
OPERATIONAL RATING DEFINITIONS OF DIRECT REUSE

Rating	Rating Code	Separability	Market for Commodity*
Excellent	9-10	Sorting is possible by mechanical means	Market for the commodity exists and may be supplied with little or no re-processing of the commodity
Good	7-8	Mechanical sorting is possible but must be supplemented by manual sorting	Market exists for the commodity, but seller must sort commodity into grades or types before it is salable
Fair	5-6	Mechanical sorting is impracticable; can be easily sorted by manual means	Market exists, but seller must process the commodity by cleaning, renovating, etc.
Poor	3-4	Mechanical sorting is impracticable; cannot be easily sorted by manual means	Market does not exist for the commodity but may be a possibility via extensive processing
Unsatisfactory	0-2	Mechanical and manual sorting is impracticable	Market does not exist for the commodity and is unlikely to develop

* Distribution of commodity into marketplace would not alter local, regional, or national markets.

TABLE B-7
OPERATIONAL RATING DEFINITIONS OF RECYCLE

Rating	Rating Code	Separability	Technical Operating Restrictions
Excellent	9-10	Sorting is possible by mechanical means	The waste material can be used directly in place of virgin material or feedstock in existing production process; the new product is of high quality
Good	7-8	Mechanical sorting is possible but must be supplemented by manual sorting	The waste material can be used with preprocessing along with virgin material or feedstock in existing production process; the new product is of high quality
Fair	5-6	Mechanical sorting is impracticable; can be easily sorted by manual means	The waste material can be used with preprocessing along with virgin material or feedstock in existing production process; the new product is of low quality
Poor	3-4	Mechanical sorting is impracticable; cannot be easily sorted by manual means	The waste material can be used with preprocessing along with virgin material or feedstock in a process that is not currently used in the industry
Unsatisfactory	0-2	Mechanical and manual sorting is impracticable	The waste material cannot be used as any kind of feedstock

TABLE B-5
OPERATIONAL RATING DEFINITIONS OF PYROLYSIS

Rating	Rating Code	Fragmentability	Separability	Chemical Degradability	Technical Operating Restrictions
Excellent	9-10	Material needs no process for reduction	Sorting is possible by mechanical means	Material will easily decompose by chemical action	Process is widely used for solid waste application
Good	7-8	Material needs very light equipment or manual shredding for reduction	Mechanical sorting is possible but must be supplemented by manual sorting	Material will slowly decompose by chemical action	Process requires modification of off-the-shelf equipment to be used for solid waste application
Fair	5-6	Material must be reduced by light equipment	Mechanical sorting is impracticable; can be easily sorted by manual means	Material is partially degradable by chemical action	Process is a pilot scale model for general solid waste application
Poor	3-4	Material requires heavy equipment for reduction	Mechanical sorting is impracticable; cannot be easily sorted by manual means	Material is highly resistant to chemical degradability	Process is a pilot scale model for specialized solid waste application
Unsatisfactory	0-2	Material requires specialized equipment for reduction	Mechanical and manual sorting is impracticable	Material is virtually indestructible; will not degrade	Process is a laboratory scale model

TABLE B-6
OPERATIONAL RATING DEFINITIONS OF COMPOST

Rating	Rating Code	Fragmentability	Separability	Biological Degradability	Technical Operating Restrictions
Excellent	9-10	Needs no process for material reduction	Sorting is possible by mechanical means	Material will degrade easily by biological action	Process is widely used for solid waste application
Good	7-8	Needs very light equipment or manual shredding for material reduction	Mechanical sorting is possible but must be supplemented by hand sorting	Material will slowly decompose by biological action	Process requires modification to off-the-shelf equipment to be used for solid waste application
Fair	5-6	Material must be reduced by light equipment	Mechanical sorting is impracticable; can be easily sorted by manual means	Material will partially decompose by the addition of chemicals	Process is a pilot scale model for general solid waste application
Poor	3-4	Requires heavy equipment for material reduction	Mechanical sorting is impracticable; cannot be easily sorted by manual means	Material will not decompose but may be left in the compost	Process is a pilot scale model for specialized solid waste application
Unsatisfactory	0-2	Requires specialized equipment for material reduction	Mechanical and manual sorting is impracticable	Material will not degrade and is an undesirable component of compost	Process is a laboratory scale model

TABLE B-7
OPERATIONAL RATING DEFINITIONS OF BALING

Rating	Rating Code	Compactibility	Baleability
Excellent	9-10	10 and above	Deforms easily under pressure and retains compacted form after pressure is released
Good	7-8	8-10	Deforms with some difficulty and retains compacted form after pressure is released
Fair	5-6	5-7	Deforms easily but springs back when pressure is released
Poor	3-4	3-4	Deforms with some difficulty but springs back when pressure is released
Unsatisfactory	0-2	1-2	Cannot effectively be compacted

TABLE B-8
OPERATIONAL RATING DEFINITIONS OF INCINERATION

Rating	Rating Code	Fragmentability	Separability	Burning Rate (Combustibility)	Potential Damage to Equipment From Materials
Excellent	9-10	Material needs no process for reduction	Sorting is possible by mechanical means	Very high	None
Good	7-8	Material needs very light equipment or manual shredding for reduction	Mechanical sorting is possible but must be supplemented by manual sorting	High	None when incinerator is operated properly
Fair	5-6	Material may be reduced by light equipment	Mechanical sorting is impracticable; can be easily sorted by manual means	Low	Can sometimes disturb system operations
Poor	3-4	Material requires heavy equipment for reduction	Mechanical sorting is impracticable; cannot be easily sorted by manual means	Self-extinguishing	Seriously disturbs systems operations
Unsatisfactory	0-2	Material requires specialized equipment for reduction	Mechanical and manual sorting is impracticable	Nil	Damage is catastrophic and causes plant shutdown.

TABLE B-9
OPERATIONAL RATING DEFINITIONS OF SANITARY LANDFILL

Rating	Rating Code	Fragmentability	Material Density (lb/ft ³)	Compactionability	Biological Degradability
Excellent	3-10	Materials need no processes for reduction	100 or above	Deforms or crushes easily under pressure and retains compacted form after pressure is released	Material will easily disintegrate in soil by bacterial action
Good	7-8	Material needs very light equipment or manual shredding for reduction	70 to 100	Deforms easily but springs back when pressure is released	Material will slowly degrade by bacterial action
Fair	5-6	Material may be reduced by light equipment	50 to 70	Deforms with difficulty	Material will decompose by chemical action
Poor	3-4	Material requires heavy equipment for reduction	31 to 50	Deforms but requires special handling	Material is highly resistant to both bacterial and chemical action in the soil
Unsatisfactory	0-2	Material requires specialized equipment for reduction	30 or less	Cannot effectively be compacted	Material is virtually indestructible; will not degrade

TABLE B-10
OPERATIONAL RATING DEFINITIONS OF SEA DISPOSAL

Rating	Rating Code	Material Density (lb/ft ³)	Compressibility	Biological Degradability	Regulatory (Operational) Restrictions
Excellent	9-10	100 and above	Deforms or crushes easily under pressure and retains compacted form after pressure is released	Material will easily degrade and disintegrate by bacterial action	There are no local, regional, and/or national regulatory agencies prohibiting the use of the process
Good	7-8	70 to 100	Deforms easily but springs back when pressure is released	Material will slowly degrade by bacterial action	
Fair	5-6	50 to 70	Deforms with difficulty	Material will decompose by chemical action	
Poor	3-4	30 to 50	Deforms but requires special handling	Material is highly resistant to both bacterial and chemical action	
Unsatisfactory	0-2	30 or less	Does not effectively be compacted	Material is virtually indestructible; will not degrade	Local, regional and/or national regulatory agencies prohibit the use of the process

TABLE B-11
ENVIRONMENTAL RATING DEFINITIONS OF AIR POLLUTION POTENTIAL

Rating	Rating Code	Harmful Gases	Particulate Emissions	Offensive Odors
Excellent	9-10	No harmful constituents	No particulate emissions	No offensive odors
Good	7-8	Prevailing emissions well below applicable standards	Prevailing particulate emissions well below applicable standards	A miniscule amount of offensive odors
Fair	5-6	Prevailing emissions below applicable standards	Prevailing particulate emissions within applicable standards	An amount of offensive odors such that aesthetic enjoyment is dampened
Poor	3-4	Prevailing emissions just above applicable standards	Prevailing particulate emissions just above applicable standards	An amount of offensive odors such that aesthetic enjoyment is hampered
Unsatisfactory	0-2	Prevailing emissions well in excess of applicable standards	Prevailing particulate emissions well in excess of applicable standards	An amount of offensive odors such that aesthetic enjoyment is totally deprived

TABLE B-12
 ENVIRONMENTAL RATING DEFINITIONS OF
 WATER POLLUTION POTENTIAL

Rating	Rating Code	Toxicity	BOD/COD	Thermal and/or Aesthetics
Excellent	9-10	The material or the material's by-product(s) is (are): Insoluble in water and contain (s) no toxic constituents	The material or the material's by-product(s)'s biological oxygen demand is: Nil	The process causes: No thermal or aesthetics pollution
Good	7-8	Insoluble in water and contain (s) an amount of toxic constituents well below applicable standards	Minuscule	Acceptable thermal pollution and/or no aesthetic pollution
Fair	5-6	Insoluble in water and contain (s) an amount of toxic constituents within applicable standards	Low	Acceptable thermal and/or aesthetic pollution
Poor	3-4	Soluble in water and contain (s) an amount of toxic constituents just above applicable standards	Average	Moderately nonacceptable thermal and/or aesthetic pollution
Unsatisfactory	0-2	Soluble in water and contain (s) an amount of toxic constituents well in excess of applicable standards.	High	Nonacceptable thermal and/or aesthetic pollution

TABLE B-13

ENVIRONMENTAL RATING DEFINITIONS
OF LAND POLLUTION POTENTIAL

Rating	Rating Code	Aesthetics
Excellent	9-10	Aesthetic enjoyment is heightened
Good	7- 8	Aesthetic enjoyment remains the same
Fair	5- 6	Aesthetic enjoyment is partially dampened
Poor	3- 4	Aesthetic enjoyment is hampered
Unsatisfactory	0- 2	Aesthetic enjoyment is totally deprived

TABLE B-14
 ENVIRONMENTAL RATING DEFINITIONS
 OF RESOURCE DEPLETION POTENTIAL

Rating	Rating Code	Scarcity	Depletion/Recovery
Excellent	9-10	There is an abundant supply of the material and its substitutes	The material can be reintroduced as a commodity without any change
Good	7-8	There is an adequate supply of the material and its substitutes	The material is transformed into new products in such a manner that the original products may lose their identity
Fair	5-6	There is a diminishing or limited supply of the material but an adequate supply of its substitutes	Basic materials are reclaimed or retained
Poor	3-4	There is a diminishing or limited supply of the material and its substitutes	Basic materials are destroyed with recovery of waste heat
Unsatisfactory	0-2	There is a diminishing or limited supply of the material and it has no substitutes	Basic material is destroyed

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reduction; a wirebound wood crate would be "unsatisfactory" because, owing to the mechanical difficulty encountered by the presence of the steel wire, the crate would require specialized equipment for reduction.

2. SOLID WASTE METHODOLOGY

In this analysis, six separate material categories consisting of 87 separate material subcategories were rated: 18 papers, eight textiles, six woods, four glass, nine metals, and 42 plastics. These were rated in 46 areas; namely, three for reuse, three for recycle, and eight each for pyrolysis, composting, incineration, sanitary land-fill, and sea disposal. Altogether, 3256 separate rating judgments were made and 6512 numbers calculated in order to determine the relative disposability ranking for the 87 solid military packaging materials. A corrugated fiberboard box will be used to illustrate the numerical procedure.

(1) Step 1: Rating

The fiberboard box was first rated in accordance with the criteria developed in the rating definitions for the operational characteristics and environmental impacts (Tables B-3 to B-14). These values are shown in Table B-15, the Numerical Process Evaluation Matrix, under the headings of operational rating and environmental rating.

(2) Step 2: Relative Rating

Using the aforementioned operational and environmental values and the relative importance of each characteristic and impact, a relative rating was calculated. This rating is the product of the relative importance multiplied by the rating code value.

For example, in direct reuse, the corrugated fiberboard box is rated 7 for separability, 10 for market for the commodity, and 10 for the resource depletion potential. Weighting these by the relative importance factors assigned to each of these process

TABLE B-15
NUMERICAL PROCESS EVALUATION MATRIX
FOR CORRUGATED CONTAINER
MATERIAL NUMBER 32

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	8.5	9.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	7		2.8	7.0	8.00
	Technical Operating Restrictions	0.6	7		4.2		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	7		1.4	7.8	7.80
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.2		8	2.4			
Composting	Fragmentability	0.2	7		1.4	8.8	7.20
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	8		3.2		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	10		4.0	9.4	8.60
	Balability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		8	2.4		
	Fragmentability	0.2	7		1.4		
Separability	0.1	7		0.7			
Combustibility	0.5	10		5.0			
Potential Damage to Equipment	0.3	10		2.0			
Incineration	Air Pollution Potential	0.2		7	1.4	8.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		4	1.6		
	Fragmentability	0.1	7		0.7	6.9	6.95
	Material Density	0.2	1		0.2		
	Compactibility	0.4	9		3.6		
Biological Degradability	0.3	8		2.4	7.0		
Air Pollution Potential	0.2		10	2.0			
Water Pollution Potential	0.2		6	1.6			
Land Pollution Potential	0.2		5	1.0			
Sea Disposal	Resource Depletion Potential	0.4		6	2.4	5.0	4.60
	Material Density	0.2	1		0.2		
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	7		2.1	4.2	
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		0	0.0		
Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		2	0.8			

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subcategories yields the following:

Relative Importance x Operational Rating = Relative Rating

$$.5 \quad \quad \quad x \quad \quad \quad 7 \quad \quad \quad = \quad \quad \quad 3.5$$

$$.5 \quad \quad \quad x \quad \quad \quad 10 \quad \quad \quad = \quad \quad \quad 5.0$$

Relative Importance x Environmental Rating = Relative Rating
Value

$$1.0 \quad \quad \quad x \quad \quad \quad 10 \quad \quad \quad = \quad \quad \quad 10.0$$

where the 2.5 and the 5.0 are operational rating considerations and the 10.0 is the environmental impact.

(3) Step 3: Subtotal

All the relative rating values particular to the operational and environmental considerations are added. The sum of all the respective relative rating is termed the subtotal. In this instance, the operational subtotal is 8.5 and the environmental subtotal is 10.0.

(4) Step 4: Total Disposal Rating

The total disposal rating, for the environmental and operational process rating, is expressed by the mathematical equation:

$$(C_1 \times OST) + (C_2 \times EST) = TDR$$

where: C_1 and C_2 are constants

$$C_1 + C_2 = 1.0$$

OST = Operational Subtotal

EST = Environmental Subtotal

TDR = Total Disposal Rating.

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For the purpose of this analysis, C_1 and C_2 were chosen to be equally weighted or equally evaluated at 0.5.

Therefore, the total disposal rating is:

$$(.5 \times 8.5) + (.5 \times 10.0) = 9.25$$

The total disposal rating as noted on the Summary Fact Sheet has been rounded to the nearest tenth. It is instructive to note that C_1 and C_2 , which are again relative importance weights, can be modified in order to evaluate the material being processed under current criteria.

(5) Step 5: Disposal Ranking

The disposal ranking is the assignment of sequential numbers starting with the highest disposal rating and ending with the lowest disposal rating. In this illustration, the following ranking occurs:

<u>Disposal Method</u>	<u>Total Disposal Rating</u>	<u>Disposal Ranking</u>
Reuse	9.25	1
Recycle	8.00	3
Pyrolysis	7.80	4
Composting	7.20	5
Baling	8.60	2
Incineration	7.75	4
Sanitary Landfill	6.95	6
Sea Disposal	4.60	7

This ranking shows the facility officer the order in which disposal alternatives should be utilized. The method of analysis determines the best possible disposal process to be used subject to the constraint of the minimization of environmental pollution and the maximization of process utility.

3. CHEMICAL (LIQUID) WASTE CRITERIA DEVELOPMENT

The disposability of chemical packaging materials was evaluated by examining the following characteristics:

- Ability to recover and reuse all or portions of the liquid waste
- Suitability of the waste material or recovery residue for ultimate disposal by:
 - Sanitary landfill
 - Incineration
 - Sea disposal
 - Microbial treatment (sanitary sewage treatment).

Pyrolysis is considered as a method of recovery of portions of the liquid waste which have some value rather than as a method of ultimate disposal. As in pyrolysis of solid materials, the gases and liquids given off by pyrolysis of certain liquid materials contain value as a fuel. However, pyrolysis of the materials such as chlorinated hydrocarbons or petroleum derivatives, which were surveyed in this study, would yield only broken fractions of unknown content and questionable value; whereas the liquid itself, prior to pyrolysis, may have a greater value and be easier to recover through other means such as distillation. Consequently, pyrolysis has not been extensively investigated as a means of liquid waste disposal.

Each of the process alternatives, such as recovery and reuse or incineration, exhibit similar operational and environmental characteristics. For example, the processing equipment may be integral to the equipment in which the liquid is used, such as a small distillation unit used in dry cleaning machines to purify the dry cleaning fluid, or the processing equipment may be suitable only for large-scale applications such as large distillation columns used to fractionate liquid wastes. The operational characteristics that were considered were:

- Recovery
- Processing
- Safety

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- Residue
- Reusability
- Degradability
- Combustibility.

The environmental impact of recovery or disposal affects the air, water, and land. An additional overall factor that affects the environment is the depletion of resources. Since many of the chemical packaging and preservative materials used by the U.S. Army are based on petroleum derivatives and limited amounts or shortages of petroleum products do exist, resource depletion is considered an important criterion. As a result, the environmental criteria evaluated in this study include:

- Air pollution potential
- Water pollution potential
- Land pollution potential
- Resource depletion potential.

Environmental criteria for recovery and reuse have been included in the chemical waste section of this report since both the recovery process and the disposal of the residue may affect the environment.

As in the environmental analysis of the solid waste materials, the relative importance factors were equally weighted for each disposal alternative. The rationale for this weighting is the same; namely, one cannot just measure what is environmentally good or bad for this would indicate a qualitative or quantitative bias. Rather, one must take into account, the total environmental impact of each process. The weighted values are normalized as fractions of unity (1.0) to enable comparison of the various processes. The relative importance of values for operational and environmental criteria for each process are shown in Tables B-16 and B-17 respectively.

The numerical rating system used in the chemical waste analysis is the same as that used for solid wastes. The rating code is as follows:

<u>Rating</u>	<u>Rating Code</u>
Excellent	9-10
Good	7-8

TABLE B-16
 RELATIVE IMPORTANCE OF
 OPERATIONAL DISPOSABILITY CHARACTERISTICS

Characteristics	Process					
	Recovery and Reuse	Sanitary Landfill	Incineration	Sea Disposal	Microbial Treatment	
<u>Operational</u>						
Recovery	0.4	--	--	--	--	--
Processing	--	0.3	0.3	0.3	0.1	0.1
Safety	0.1	--	0.1	--	--	--
Residue	0.1	--	0.1	0.3	0.2	0.2
Reusability	0.4	--	--	--	--	--
Degradability	--	0.7	--	0.4	0.7	0.7
Combustibility	--	--	0.5	--	--	--
Total	1.0	1.0	1.0	1.0	1.0	1.0

TABLE B-17
RELATIVE IMPORTANCE OF ENVIRONMENTAL IMPACT

Impacts	Process				
	Recovery and Reuse*	Sanitary Landfill	Incineration	Sea Disposal	Microbial Treatment
Air Pollution Potential	0.2	0.2	0.2	0.2	0.2
Water Pollution Potential	0.2	0.2	0.2	0.2	0.2
Land Pollution Potential	0.2	0.2	0.2	0.2	0.2
Resource Depletion Potential	0.4	0.4	0.4	0.4	0.4
Total	1.0	1.0	1.0	1.0	1.0

* Includes residue disposal.

<u>Rating</u>	<u>Rating Code</u>
Fair	5-6
Poor	3-4
Unsatisfactory	0-2

As in the solid waste criteria development, definitions were used as a guide for classifying the liquid waste on a quantified basis. Tables B-18 to B-26 contain the operational and environmental rating definitions of each characteristic for each process.

4. CHEMICAL (LIQUID) WASTE METHODOLOGY

In this analysis 17 chemical packaging materials were rated, including chlorinated hydrocarbons, petroleum distillates, detergents, cleaning compounds, greases, and oils. These liquid materials were rated according to criteria in 36 areas, including eight for recovery and reuse, six for sanitary landfill, eight for incineration, seven for sea disposal, and seven for microbial treatment. Altogether 459 separate rating judgments were made and 867 numbers calculated to determine the relative disposability ranking for the 17 chemical packaging materials. A liquid waste containing tetrachloroethylene, which is used as a dry cleaning solvent, is used in the following paragraphs to illustrate the numerical procedure.

(1) Step 1: Rating

The liquid waste containing tetrachloroethylene was first rated in accordance with the criteria developed in the rating definitions for the operational characteristics and environmental impacts. (Tables B-18 to B-26). These values are shown in Table B-27, the Numerical Process Evaluation Matrix, under the headings of operational and environmental rating.

(2) Step 2: Relative Rating

Using the values developed in Step 1, the relative rating is calculated. The relative rating is the product of the operational rating or environmental impact rating multiplied by the relative importance.

TABLE B-18
OPERATIONAL RATING DEFINITIONS OF RECOVERY AND REUSE

Rating	Rating Code	Recovery	Safety	Residue	Reusability
Excellent	9-10	Portions of the liquid waste may be recycled; recovery equipment is integral to process	Normal fluid handling procedures	0-10%	Portions or all of the waste may be reused in the same process; integrity of product is not destroyed
Good	7-8	Portions of the liquid waste may be recycled, separate recovery equipment	Some special precautions	11-30%	Portions or all of the waste may be used in another process; integrity of product is not destroyed
Fair	5-6	Value may be recovered from the waste stream in separate equipment	Extensive precautions	31-50%	Portions or all of the waste may be used in another process but use modifies integrity of product; reprocessing is required for reuse
Poor	3-4	Value may be recovered from the waste stream in separate equipment; re-processing is required	Specialized equipment required	51-70%	Portions or all of the waste may be used but integrity of product is destroyed
Unsatisfactory	0-2	Practically not possible to reclaim portions or all of waste	Extremely unsafe (may explode, release highly toxic substances, etc.); recovery not recommended	Greater than 70%	The waste cannot be reused even if processed and should be disposed

TABLE B-19
OPERATIONAL RATING DEFINITIONS OF SANITARY LANDFILL

Rating	Rating Code	Processing	Degradability
Excellent	9-10	Material requires no processing for sanitary landfill disposal	Material will easily degrade by bacterial action
Good	7-8	Material requires minor or occasional processing (by light equipment) for sanitary landfill disposal	Material will slowly degrade by bacterial action
Fair	5-6	Material requires constant processing for sanitary landfill disposal	Material will decompose by chemical action
Poor	3-4	Material requires heavy or a variety of equipment for sanitary landfill disposal	Material is resistant to bacterial and chemical action
Unsatisfactory	0-2	Material requires specialized equipment for sanitary landfill disposal	Material is virtually indestructible; will not degrade

TABLE B-20
OPERATIONAL RATING DEFINITIONS OF INCINERATION

Rating	Rating Code	Processing	Combustibility	Safety	Residue
Excellent	9-10	Material requires no processing for incineration	Very high	Normal fluid handling procedures	0-10%
Good	7-8	Material requires minor or occasional processing by light equipment for incineration	High	Some special precautions	11-30%
Fair	5-6	Material requires constant processing for incineration.	Low	Extensive precautions	31-50%
Poor	3-4	Material requires heavy or a variety of equipment for incineration	Self-extinguishing	Specialized equipment required	51-70%
Unsatisfactory	0-2	Material requires specialized equipment for incineration	Inflammable	Extremely unsafe; may explode; incineration not recommended	Greater than 70%

TABLE B-21
OPERATIONAL RATING DEFINITIONS OF SEA DISPOSAL

Rating	Rating Code	Processing	Degradability	Residue
Excellent	9-10	Material requires no processing for sea disposal	Material will easily degrade in water by bacterial action	0-10%
Good	7-8	Material requires minor or occasional processing by light equipment for sea disposal	Material will slowly degrade in water by bacterial action	11-30%
Fair	5-6	Material requires constant processing for sea disposal	Material will decompose by chemical action	31-50%
Poor	3-4	Material requires heavy or a variety of equipment for sea disposal	Material is resistant to bacterial and chemical action	51-70%
Unsatisfactory	0-2	Material requires specialized equipment for sea disposal	Material is virtually indestructible; will not degrade	Greater than 70%

TABLE B-22
OPERATIONAL RATING DEFINITIONS OF MICROBIAL TREATMENT

Rating	Rating Code	Processing	Degradability	Residue
Excellent	9-10	Material requires no processing for microbial treatment and disposal	Material will easily degrade by bacterial action	0-10%
Good	7-8	Material requires minor or occasional processing by light equipment for microbial treatment and disposal	Material will slowly degrade by bacterial action	11-30%
Fair	5-6	Material requires constant processing for microbial treatment and disposal	Material will decompose by chemical action	31-50%
Poor	3-4	Material requires heavy or a variety of equipment for microbial treatment and disposal	Material is resistant to bacterial and chemical action	51-70%
Unsatisfactory	0-2	Material requires specialized equipment for bacteriological treatment and disposal	Material is virtually indestructible; will not degrade	Greater than 70%

TABLE B-23
ENVIRONMENTAL RATING DEFINITIONS OF AIR POLLUTION POTENTIAL

Rating	Rating Code	Harmful Gases	Particulate Emissions	Offensive Odors
Excellent	9-10	No harmful constituents.	No particulate emissions	No offensive odors
Good	7-8	Prevailing emissions well below applicable standards	Prevailing particulate emissions well below applicable standards	A minuscule amount of offensive odors
Fair	5-6	Prevailing emissions below applicable standards	Prevailing particulate emissions within applicable standards	An amount of offensive odors such that aesthetic enjoyment is dampened
Poor	3-4	Prevailing emissions above applicable standards	Prevailing particulate emissions just above applicable standards	An amount of offensive odors such that aesthetic enjoyment is hampered
Unsatisfactory	0-2	Prevailing emissions in excess of applicable standards	Prevailing particulate emissions well in excess of applicable standards	An amount of offensive odors such that aesthetic enjoyment is totally deprived

TABLE 3-24
 ENVIRONMENTAL RATING DEFINITIONS
 OF WATER POLLUTION POTENTIAL

Rating	Rating Code	Toxicity		BOD/COD	Thermal and/or Aesthetics
		The material or the material's by-product(s) is (are):	The material or the material's by-product(s)' biological oxygen demand is:		
Excellent	9-10	Insoluble in water and contain (s) no toxic constituents	Nil	No thermal or aesthetic pollution	The process causes:
Good	7-8	Insoluble in water and contain (s) an amount of toxic constituents well below applicable standards	Minuscule	Acceptable thermal pollution and/or no aesthetic pollution	
Fair	5-6	Insoluble in water and contain (s) an amount of toxic constituents within applicable standards	Low	Acceptable thermal and/or aesthetic pollution	
Poor	3-4	Soluble in water and contain (s) an amount of toxic constituents just above applicable standards	Average	Moderately nonacceptable thermal and/or aesthetic pollution	
Unsatisfactory	0-2	Soluble in water and contain (s) an amount of toxic constituents well in excess of applicable standards.	High	Nonacceptable thermal and/or aesthetic pollution	

TABLE B-25
 ENVIRONMENTAL RATING DEFINITION
 OF LAND POLLUTION POTENTIAL

Rating	Rating Code	Land Pollution
Excellent	9-10	Disposal will improve land use
Good	7-8	Disposal has no effect on land use
Fair	5-6	Disposal has minimal or temporary effect on land use
Poor	3-4	Disposal has major or permanent effect on land use. Land is suitable only for restricted purposes
Unsatisfactory	0-2	Disposal has major, permanent effect on land use. Land may not be used following disposal

TABLE B-26
 ENVIRONMENTAL RATING DEFINITIONS
 OF RESOURCE DEPLETION POTENTIAL

Rating	Rating Code	Scarcity	Depletion
Excellent	9-10	There is an abundant supply of the material and its substitutes	Integrity of the product is not destroyed; product is reusable in the same process
Good	7-8	There is an adequate supply of the material and its substitutes	Integrity of product is not destroyed but product must be reused in another process
Fair	5-6	There is a diminishing or limited supply of the material but an adequate supply of its substitutes	Product may be converted into new products and used in other processes
Poor	3-4	There is a diminishing or limited supply of the material and its substitutes	The basic material is destroyed but some value (waste heat recovery, for example) is recovered
Unsatisfactory	0-2	There is diminishing or limited supply of the material and it has no substitutes	The basic material is destroyed and no value is recovered

TABLE B-27
 NUMERICAL PROCESS EVALUATION MATRIX FOR TETRACHLOROETHYLENE
 MATERIAL NUMBER 16

Process	Characteristics	Relative Importance	Operational Rating	Determined			Subtotal	Total Disposal Rating
				Environmental Rating	Relative Rating	Environmental Rating		
Recovery/Reuse	Recovery	0.4	9		3.6	8.7	8.35	
	Safety	0.1	7		0.7			
	Residue	0.1	8		0.8			
	Reusability	0.4	9		3.6			
	Air Pollution Potential	0.2		8	1.6	8.0		
	Water Pollution Potential	0.2		8	1.6			
	Land Pollution Potential	0.2		8	1.6			
	Resource Depletion Potential	0.4		8	3.2			
Sanitary Landfill	Processing	0.3	8		2.4	4.5		
	Degradability	0.7	3		2.1			
	Air Pollution Potential	0.2		3	0.6	2.6	3.55	
	Water Pollution Potential	0.2		0	0.0			
	Land Pollution Potential	0.2		0	0.0			
	Resource Depletion Potential	0.4		5	2.0			
Incineration	Processing	0.3	5		1.5	5.4	5.60	
	Safety	0.1	5		0.5			
	Residue	0.1	9		0.9			
	Combustibility	0.5	5		2.5			
	Air Pollution Potential	0.2		7	1.4	5.8		
	Water Pollution Potential	0.2		6	1.2			
	Land Pollution Potential	0.2		6	1.2			
	Resource Depletion Potential	0.4		5	2.0			
Sea Disposal	Processing	0.3	7		2.1	5.7	4.35	
	Residue	0.3	8		2.4			
	Degradability	0.4	3		1.2			
	Air Pollution Potential	0.2		0	0.0	3.0		
	Water Pollution Potential	0.2		0	0.0			
	Land Pollution Potential	0.2		5	1.0			
	Resource Depletion Potential	0.4		5	2.0			
Microbial Treatment	Processing	0.1	7		0.7	2.7	2.75	
	Residue	0.2	3		0.6			
	Degradability	0.7	2		1.4			
	Air Pollution Potential	0.2		0	0.0	2.8		
	Water Pollution Potential	0.2		0	0.0			
	Land Pollution Potential	0.2		4	0.8			
	Resource Depletion Potential	0.4		5	2.0			

APPENDIX B(37)

For example, in the operating rating for recovery and reuse, the liquid waste containing tetrachloroethylene is rated 9 for recovery potential (a small still is usually integral to dry cleaning equipment); 7 for safety, since the vapors may be toxic and special procedures are required; 8 for residues, since up to 30 percent waste material, usually dirt, can be found in still bottoms; and 9 for reusability, since the material, less a small amount left in the still bottom, may be reused in the same process. Weighting these values by their relative importance yields the following:

<u>Relative Importance</u>	x	<u>Operational Rating Value</u>	=	<u>Relative Rating</u>
0.4	x	9	=	3.6
0.1	x	7	=	0.7
0.1	x	8	=	0.8
0.4	x	9	=	3.6

(3) Step 3: Subtotal

When the relative ratings for the operational and environmental criteria are summed, it yields the subtotal for each respective relative rating. In this example, the operational relative rating subtotal is 8.7, the corresponding environmental rating subtotal for recovery and reuse of tetrachloroethylene is 8.0.

(4) Step 4: Total Disposal Rating

The total disposal rating for liquid wastes is estimated in the same manner as for solid wastes, which is expressed by the mathematical equation:

$$(C_1 \times OST) + (C_2 \times EST) = TDR$$

APPENDIX B(38)

where: C_1 and C_2 are constants
 $C_1 + C_2 = 1$
 OST = Operational Subtotal
 EST = Environmental Subtotal
 TDR = Total Disposal Rating.

Therefore, the total disposal rating for the example is:

$$(0.5 \times 8.7) + (0.5 \times 8.0) = 8.35$$

For the purpose of this analysis, C_1 and C_2 were chosen to be equally weighted or equally evaluated at 0.5. As in the formula for solid wastes, the values of C_1 and C_2 may be modified to change the importance of one of the criteria. The total disposal rating, as noted on the Summary Fact Sheet, has been rounded to the nearest tenth.

(5) Step 5: Disposal Ranking

As for solid wastes, the recovery or disposal alternatives for liquid wastes are ranked according to the total disposal ratings. The highest total disposal rating (TDR) is the first choice and the other methods follow. Where two or more steps have the same TDR, the processes are given equal ranking. In the illustration the disposal ranking for tetrachloroethylene is as follows:

<u>Recovery/Reuse or Disposal Method</u>	<u>TDR</u>	<u>Disposal Ranking</u>
Recovery/Reuse (Distillation with incineration and landfill or residue)	8.35	1
Sanitary Landfill	3.60	4
Incineration	5.60	2
Sea Disposal	4.40	3
Microbial Treatment (Sewage)	2.75	5

APPENDIX B(39)

The ranking provides the facility with a variety of means for treatment of the waste with respect to operational and environmental criteria.

APPENDIX C (1)

NUMERICAL PROCESS EVALUATION MATRICES

As mentioned earlier in Chapter I, Section 4 and Appendix B of this report, Numerical Process Evaluation Matrices were constructed to standardize the numerical procedures in evaluating the operational and environmental ratings. This appendix details the determined operational and environmental ratings, and the calculations performed to determine the relative ratings, subtotals, and total disposal ratings for each of the 104 military packaging materials. The results of each matrix, namely, the total disposal rating, have been rounded off to the nearest tenth and transferred to the respective Summary Fact Sheets.

NUMERICAL PROCESS EVALUATION MATRIX FOR ACETONE
MATERIAL NUMBER 1

Process	Characteristics	Relative Importance	Determined				Subtotal	Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating			
Recovery /Reuse	Recovery	0.4	8		3.2	8.5	8.25	
	Safety	0.1	6		0.6			
	Residue	0.1	7		0.7			
	Reusability	0.4	10		4.0			
Sanitary Landfill	Air Pollution Potential	0.2		8	1.6	8.0	4.75	
	Water Pollution Potential	0.2		6	1.2			
	Land Pollution Potential	0.2		6	1.2			
	Resource Depletion Potential	0.4		10	4.0			
Incineration	Processing	0.3	5		1.5	8.0	7.20	
	Degradability	0.7	4		2.8			
	Air Pollution Potential	0.2		8	1.6			
	Water Pollution Potential	0.2		2	0.4			
Sea Disposal	Land Pollution Potential	0.2		4	0.8	6.4	3.40	
	Resource Depletion Potential	0.4		6	2.4			
	Processing	0.3	8		2.4			
	Safety	0.1	8		0.8			
Microbial Treatment	Residue	0.1	8		0.8	5.1	3.65	
	Combustibility	0.5	8		4.0			
	Air Pollution Potential	0.2		8	1.6			
	Water Pollution Potential	0.2		8	1.6			
Microbial Treatment	Land Pollution Potential	0.2		8	1.6	2.2	2.2	
	Resource Depletion Potential	0.4		4	1.6			
	Processing	0.3	2		0.6			
	Residue	0.3	3		2.4			
Microbial Treatment	Degradability	0.4	4		1.6	5.1	3.65	
	Air Pollution Potential	0.2		2	0.4			
	Water Pollution Potential	0.2		2	0.4			
	Land Pollution Potential	0.2		3	0.6			
Microbial Treatment	Resource Depletion Potential	0.4		2	0.8	2.2	2.2	
	Processing	0.1	0		0.0			
	Residue	0.2	8		1.6			
	Degradability	0.7	5		3.5			

NUMERICAL PROCESS EVALUATION MATRIX FOR BENZENE
MATERIAL NUMBER 2

Process	Characteristics	Relative Importance	Determined				Subtotal	Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Relative Rating		
Recovery/Reuse	Recovery	0.4	8		3.2	8.2	7.90	
	Safety	0.1	9		0.9			
	Residue	0.1	9		0.9			
	Reusability	0.4	8		3.2			
	Air Pollution Potential	0.2		8	1.6	7.6		
	Water Pollution Potential	0.2		5	1.0			
	Land Pollution Potential	0.2		5	1.0			
	Resource Depletion Potential	0.4		10	4.0			
Sanitary Landfill	Processing	0.3	8		2.4	5.2		
	Degradability	0.7	4		2.8			
	Air Pollution Potential	0.2		2	0.4			
	Water Pollution Potential	0.2		4	0.8			
	Land Pollution Potential	0.2		4	0.8	2.8		
	Resource Depletion Potential	0.4		2	0.8			
	Processing	0.3	8		2.4			
	Safety	0.1	9		0.9			
Incineration	Residue	0.1	9		0.9	8.2		
	Combustibility	0.5	8		4.0			
	Air Pollution Potential	0.2		8	1.6			
	Water Pollution Potential	0.2		5	1.0			
	Land Pollution Potential	0.2		6	1.2	4.6		
	Resource Depletion Potential	0.4		2	0.8			
	Processing	0.3	8		2.4			
	Residue	0.3	8		2.4			
Sea Disposal	Degradability	0.4	4		1.6	6.4	4.60	
	Air Pollution Potential	0.2		2	0.4			
	Water Pollution Potential	0.2		4	0.8			
	Land Pollution Potential	0.2		4	0.8			
	Resource Depletion Potential	0.4		2	0.8	2.8		
	Processing	0.1	7		0.7			
	Residue	0.2	8		1.6			
	Degradability	0.7	4		2.8			
Microbial Treatment	Air Pollution Potential	0.2		4	0.8	5.1	3.95	
	Water Pollution Potential	0.2		2	0.4			
	Land Pollution Potential	0.2		4	0.8			
	Resource Depletion Potential	0.4		2	0.8			

NUMERICAL PROCESS EVALUATION MATRIX FOR CARBON TETRACHLORIDE MATERIAL NUMBER 3

Process	Characteristics	Relative Importance	Determined				Subtotal	Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Relative Rating		
Recovery/Reuse	Recovery	0.4	7		3.6	8.7	6.55	
	Safety	0.1	7		0.7			
	Residue	0.1	8		0.8			
	Reusability	0.4	9		3.6			
Sanitary Landfill	Air Pollution Potential	0.2		8	1.5	8.4	3.55	
	Water Pollution Potential	0.2		8	1.6			
	Land Pollution Potential	0.2		6	1.2			
	Resource Depletion Potential	0.4		10	4.0			
Incineration	Processing	0.3	8		2.4	5.4	5.80	
	Degradability	0.7	3		2.1			
	Air Pollution Potential	0.2		0	0.0			
	Water Pollution Potential	0.2		0	0.0			
Sea Disposal	Land Pollution Potential	0.2		3	0.6	6.2	4.35	
	Resource Depletion Potential	0.4		5	2.0			
	Processing	0.3	7		2.1			
	Residue	0.3	8		2.4			
Microbial Treatment	Degradability	0.4	3		1.2	3.0	2.75	
	Air Pollution Potential	0.2		0	0.0			
	Water Pollution Potential	0.2		0	0.0			
	Land Pollution Potential	0.2		5	1.0			
Microbial Treatment	Resource Depletion Potential	0.4		5	2.0	2.7	2.8	
	Processing	0.1	7		0.7			
	Residue	0.2	3		0.6			
	Degradability	0.7	2		1.4			
Microbial Treatment	Air Pollution Potential	0.2		0	0.0	2.8	2.75	
	Water Pollution Potential	0.2		0	0.0			
	Land Pollution Potential	0.2		4	0.8			
	Resource Depletion Potential	0.4		5	2.0			

NUMERICAL PROCESS EVALUATION MATRIX FOR CORROSION PREVENTIVE MATERIAL NUMBER 4

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Subtotal	
Recovery/Reuse	Recovery	0.4	4		1.6	5.5	6.55
	Safety	0.1	8		0.8		
	Residue	0.1	7		0.7		
	Reusability	0.4	6		2.4		
	Air Pollution Potential	0.2		7	1.4	7.6	
	Water Pollution Potential	0.2		7	1.4		
	Land Pollution Potential	0.2		4	0.8		
	Resource Depletion Potential	0.4		10	4.0		
	Processing	0.3	8		2.4	3.8	
	Degradability	0.7	2		1.4		
Sanitary Landfill	Air Pollution Potential	0.2		2	0.4	2.8	3.30
	Water Pollution Potential	0.2		2	0.4		
	Land Pollution Potential	0.2		2	0.4		
	Resource Depletion Potential	0.4		4	1.6		
	Processing	0.3	8		2.4	8.1	
	Safety	0.1	8		0.8		
	Residue	0.1	9		0.9		
	Combustibility	0.5	8		4.0		
Incineration	Air Pollution Potential	0.2		7	1.4	7.0	7.55
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		8	1.6		
	Resource Depletion Potential	0.4		6	2.4		
	Processing	0.3	7		2.1	5.0	
	Residue	0.3	7		2.1		
	Degradability	0.4	2		0.8		
Sea Disposal	Air Pollution Potential	0.2		3	0.6	3.0	4.00
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		4	0.8		
	Resource Depletion Potential	0.4		4	1.6		
	Processing	0.1	7		0.7	3.5	
	Residue	0.2	7		1.4		
	Degradability	0.7	2		1.4		
Microbial Treatment	Air Pollution Potential	0.2		2	0.4	3.2	3.35
	Water Pollution Potential	0.2		2	0.4		
	Land Pollution Potential	0.2		4	0.8		
	Resource Depletion Potential	0.4		4	1.6		

NUMERICAL PROCESS EVALUATION MATRIX FOR CORROSION PREVENTIVE—DESSICANT (POWDER)
MATERIAL NUMBER 5

Process	Characteristics	Relative Importance	Determined				Subtotal	Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating			
Recovery/Reuse	Recovery	0.4	8		3.2	8.5	8.45	
	Safety	0.1	8		0.8			
	Residue	0.1	9		0.9			
	Reusability	0.4	9		3.6			
	Air Pollution Potential	0.2		8	1.6	8.4		
	Water Pollution Potential	0.2		8	1.6			
	Land Pollution Potential	0.2		8	1.6			
	Resource Depletion Potential	0.4		9	3.6			
Sanitary Landfill	Processing	0.3	9		2.7	6.9		
	Degradability	0.7	6		4.2			
	Air Pollution Potential	0.2		8	1.6			
	Water Pollution Potential	0.2		6	1.2			
	Land Pollution Potential	0.2		6	1.2	7.6	7.25	
	Resource Depletion Potential	0.4		9	3.6			
	Processing	0.3	9		2.7			
	Safety	0.1	8		0.8			
Incineration	Residue	0.1	1		0.1	4.1		
	Combustibility	0.5	1		0.5			
	Air Pollution Potential	0.2		6	1.2			
	Water Pollution Potential	0.2		6	1.2			
	Land Pollution Potential	0.2		6	1.2	7.2	5.65	
	Resource Depletion Potential	0.4		9	3.6			
	Processing	0.3	8		2.4			
	Residue	0.3	4		1.2			
Sea Disposal	Degradability	0.4	6		2.4	6.0		
	Air Pollution Potential	0.2		8	1.6			
	Water Pollution Potential	0.2		6	1.2			
	Land Pollution Potential	0.2		6	1.2			
	Resource Depletion Potential	0.4		9	3.6	7.6	6.80	
	Processing	0.1	6		0.6			
	Residue	0.2	4		0.8			
	Degradability	0.7	6		4.2			
Microbial Treatment	Air Pollution Potential	0.2		8	1.6	5.6	6.60	
	Water Pollution Potential	0.2		6	1.2			
	Land Pollution Potential	0.2		6	1.2			
	Resource Depletion Potential	0.4		9	3.6			

NUMERICAL PROCESS EVALUATION MATRIX FOR CORROSION PREVENTIVE OIL TYPE VCI (FLUID)
MATERIAL NUMBER 6

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Subtotal	
Recovery/Reuse	Recovery	0.4	4		1.6	5.5	6.35
	Safety	0.1	8		0.8		
	Residue	0.1	7		0.7		
	Reusability	0.4	6		2.4		
	Air Pollution Potential	0.2		7	1.4	7.2	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		7	2.8		
Sanitary Landfill	Processing	0.3	6		1.8	4.6	
	Degradability	0.7	4		2.8		
	Air Pollution Potential	0.2		7	1.4		
	Water Pollution Potential	0.2		7	1.4		
	Land Pollution Potential	0.2		4	0.8	6.0	5.3
	Resource Depletion Potential	0.4		6	2.4		
	Processing	0.3	8		2.4		
	Safety	0.1	8		0.8		
Incineration	Residue	0.1	7		0.7	7.9	
	Combustibility	0.5	8		4.0		
	Air Pollution Potential	0.2		6	1.2		
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		6	1.2	6.4	
	Resource Depletion Potential	0.4		6	2.4		
	Processing	0.3	6		1.8		
	Residue	0.3	6		1.8		
Sea Disposal	Degradability	0.4	4		1.6	3.2	5.60
	Air Pollution Potential	0.2		7	1.4		
	Water Pollution Potential	0.2		7	1.4		
	Land Pollution Potential	0.2		4	0.8		
	Resource Depletion Potential	0.4		6	2.4	6.0	
	Processing	0.1	6		0.6		
	Residue	0.2	6		1.2		
	Degradability	0.7	4		2.8		
Microbial Treatment	Air Pollution Potential	0.2		7	1.4	4.6	5.40
	Water Pollution Potential	0.2		7	1.4		
	Land Pollution Potential	0.2		5	1.0		
	Resource Depletion Potential	0.4		6	2.4		

NUMERICAL PROCESS EVALUATION MATRIX FOR CORROSION PREVENTIVE VCI (SOLID)
MATERIAL NUMBER 7

Process	Characteristics	Relative Importance	Operational Rating	Determined			Subtotal	Total Disposal Rating
				Environmental Rating	Relative Rating	Environmental Rating		
Recovery/Reuse	Recovery	0.4	4		1.6	5.5	6.25	
	Safety	0.1	8		0.8			
	Residue	0.1	7		0.7			
	Reusability	0.4	6		2.4			
Sanitary Landfill	Air Pollution Potential	0.2		6	1.2	6.0	5.30	
	Water Pollution Potential	0.2		8	1.6			
	Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		5	1.0			
Incineration	Processing	0.3	6		1.8	7.9	7.25	
	Residue	0.7	4		2.8			
	Safety	0.1	8		0.8			
	Combustibility	0.5	8		4.0			
Sea Disposal	Air Pollution Potential	0.2		6	1.2	4.6	5.40	
	Water Pollution Potential	0.2		8	1.6			
	Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		6	2.4			
Microbial Treatment	Processing	0.3	6		1.8	6.2	5.35	
	Residue	0.3	4		1.2			
	Degradability	0.4	4		1.6			
	Air Pollution Potential	0.2		7	1.4			
Microbial Treatment	Water Pollution Potential	0.2		7	1.4	4.3	5.35	
	Land Pollution Potential	0.2		5	1.0			
	Resource Depletion Potential	0.4		6	2.4			
	Processing	0.1	7		0.7			
Microbial Treatment	Residue	0.2	4		0.8	6.4	5.35	
	Degradability	0.7	4		2.8			
	Air Pollution Potential	0.2		7	1.4			
	Water Pollution Potential	0.2		7	1.4			
Microbial Treatment	Land Pollution Potential	0.2		6	1.2	6.4	5.35	
	Resource Depletion Potential	0.4		6	2.4			

NUMERICAL PROCESS EVALUATION MATRIX FOR DETERGENT, ALKALI CLEANING COMPOUND (LIQUID)
MATERIAL NUMBER 8

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Subtotal	
Recovery/Reuse	Recovery	0.4	8		3.2	8.5	8.05
	Safety	0.1	8		0.8		
	Residue	0.1	9		0.9		
	Reusability	0.4	9		3.6		
Sanitary Landfill	Air Pollution Potential	0.2		8	1.6	7.6	6.95
	Water Pollution Potential	0.2		4	0.8		
	Land Pollution Potential	0.2		6	1.2		
	Resource Depletion Potential	0.4		10	4.0		
Incineration	Processing	0.3	8		2.4	7.3	5.15
	Degradability	0.7	7		4.9		
	Air Pollution Potential	0.2		8	1.6		
	Water Pollution Potential	0.2		4	0.8		
Sea Disposal	Land Pollution Potential	0.2		5	1.0	6.6	5.80
	Resource Depletion Potential	0.4		8	3.2		
	Processing	0.3	7		2.1		
	Safety	0.1	9		0.9		
Microbial Treatment	Residue	0.1	8		0.8	6.6	6.30
	Combustibility	0.5	3		1.5		
	Air Pollution Potential	0.2		5	1.0		
	Water Pollution Potential	0.2		7	1.4		
Sea Disposal	Land Pollution Potential	0.2		7	1.4	7.2	5.80
	Resource Depletion Potential	0.4		3	1.2		
	Processing	0.3	8		2.4		
	Residue	0.3	8		2.4		
Microbial Treatment	Degradability	0.4	6		2.4	6.6	6.30
	Air Pollution Potential	0.2		7	1.4		
	Water Pollution Potential	0.2		3	0.6		
	Land Pollution Potential	0.2		6	1.2		
Microbial Treatment	Resource Depletion Potential	0.4		3	1.2	6.0	6.30
	Processing	0.1	8		0.8		
	Residue	0.2	8		1.6		
	Degradability	0.7	6		4.2		
Microbial Treatment	Air Pollution Potential	0.2		6	1.2	6.0	6.30
	Water Pollution Potential	0.2		4	0.8		
	Land Pollution Potential	0.2		8	1.6		
	Resource Depletion Potential	0.4		6	2.4		

NUMERICAL PROCESS EVALUATION MATRIX FOR DETERGENT MATERIAL NUMBER 9

Process	Characteristics	Relative Importance	Determined				Subtotal	Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating			
Recovery/Reuse	Recovery	0.4	6		2.4	6.5	6.95	
	Safety	0.1	10		1.0			
	Residue	0.1	7		0.7			
	Reusability	0.4	6		2.4			
Sanitary Landfill	Air Pollution Potential	0.2		8	1.6	7.4	6.60	
	Water Pollution Potential	0.2		4	0.8			
	Land Pollution Potential	0.2		5	1.0			
	Resource Depletion Potential	0.4		10	4.0			
Incineration	Processing	0.3	8		2.4	5.3	5.15	
	Degradability	0.7	8		5.6			
	Air Pollution Potential	0.2		8	1.6			
	Water Pollution Potential	0.2		4	0.8			
Sea Disposal	Land Pollution Potential	0.2		6	1.2	7.6	6.20	
	Resource Depletion Potential	0.4		4	1.6			
	Processing	0.3	8		2.4			
	Residue	0.3	8		2.4			
Microbial Treatment	Degradability	0.4	7		2.8	8.0	7.20	
	Air Pollution Potential	0.2		7	1.4			
	Water Pollution Potential	0.2		3	0.6			
	Land Pollution Potential	0.2		6	1.2			
Microbial Treatment	Resource Depletion Potential	0.4		4	1.6	6.4	7.20	
	Processing	0.1	8		0.8			
	Residue	0.2	8		1.6			
	Degradability	0.7	8		5.6			
Microbial Treatment	Air Pollution Potential	0.2		8	1.6	6.4	7.20	
	Water Pollution Potential	0.2		4	0.8			
	Land Pollution Potential	0.2		8	1.6			
	Resource Depletion Potential	0.4		6	2.4			

NUMERICAL PROCESS EVALUATION MATRIX FOR GREASE MATERIAL NUMBER 10

Process	Characteristics	Relative Importance	Determined				Subtotal	Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating			
Recovery/Reuse	Recovery	0.4	3		1.2	5.0	6.40	
	Safety	0.1	7		0.7			
	Residue	0.1	7		0.7			
	Reusability	0.4	6		2.4			
	Air Pollution Potential	0.2		7	1.4	7.8		
	Water Pollution Potential	0.2		5	1.0			
	Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		10	4.0			
Sanitary Landfill	Processing	0.3	7		2.1	4.2		
	Degradability	0.7	3		2.1			
	Air Pollution Potential	0.2		2	0.4			
	Water Pollution Potential	0.2		5	1.0			
	Land Pollution Potential	0.2		3	0.6	3.2	3.70	
	Resource Depletion Potential	0.4		3	1.2			
	Processing	0.3	8		2.4			
	Safety	0.1	8		0.8			
Incineration	Residue	0.1	9		0.9	8.6		
	Combustibility	0.5	9		4.5			
	Air Pollution Potential	0.2		8	1.6			
	Water Pollution Potential	0.2		6	1.2			
	Land Pollution Potential	0.2		5	1.0	5.4	7.00	
	Resource Depletion Potential	0.4		4	1.6			
	Processing	0.3	7		2.1			
	Residue	0.3	7		2.1			
Sea Disposal	Degradability	0.4	4		1.6	5.8	3.90	
	Air Pollution Potential	0.2		0	0.0			
	Water Pollution Potential	0.2		2	0.4			
	Land Pollution Potential	0.2		4	0.8			
	Resource Depletion Potential	0.4		2	0.8	2.0		
	Processing	0.1	5		0.5			
	Residue	0.2	8		1.6			
	Degradability	0.7	4		2.8			
Microbial Treatment	Air Pollution Potential	0.2		0	0.0	4.9	3.45	
	Water Pollution Potential	0.2		2	0.4			
	Land Pollution Potential	0.2		4	0.8			
	Resource Depletion Potential	0.4		2	0.8			

NUMERICAL PROCESS EVALUATION MATRIX FOR LUBRICATING OIL MATERIAL NUMBER 11

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Subtotal	
Recovery/Reuse	Recovery	0.4	3		1.2	5.0	6.40
	Safety	0.1	7		0.7		
	Residue	0.1	7		0.7		
	Reusability	0.4	6		2.4		
	Air Pollution Potential	0.2		7	1.4	7.8	
	Water Pollution Potential	0.2		5	1.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		10	4.0		
Sanitary Landfill	Processing	0.3	7		2.1	4.2	
	Degradability	0.7	3		2.1		
	Air Pollution Potential	0.2		2	0.4		
	Water Pollution Potential	0.2		5	1.0		
	Land Pollution Potential	0.2		3	0.6	3.2	3.70
	Resource Depletion Potential	0.4		3	1.2		
	Processing	0.3	8		2.4		
	Safety	0.1	8		0.8		
Incineration	Residue	0.1	9		0.9	8.6	7.00
	Combustibility	0.5	9		4.5		
	Air Pollution Potential	0.2		8	1.6		
	Water Pollution Potential	0.2		6	1.2		
	Land Pollution Potential	0.2		5	1.0	5.4	
	Resource Depletion Potential	0.4		4	1.6		
	Processing	0.3	7		2.1		
	Residue	0.3	7		2.1		
Sea Disposal	Degradability	0.4	4		1.6	2.0	3.90
	Air Pollution Potential	0.2		0	0.0		
	Water Pollution Potential	0.2		2	0.4		
	Land Pollution Potential	0.2		4	0.8		
	Resource Depletion Potential	0.4		2	0.8	4.9	3.45
	Processing	0.1	5		0.5		
	Residue	0.2	8		1.6		
	Degradability	0.7	4		2.8		
Microbial Treatment	Air Pollution Potential	0.2		0	0.0	2.0	
	Water Pollution Potential	0.2		2	0.4		
	Land Pollution Potential	0.2		4	0.8		
	Resource Depletion Potential	0.4		2	0.8		

NUMERICAL PROCESS EVALUATION MATRIX FOR METHANOL
MATERIAL NUMBER 12

Process	Characteristics	Relative Importance	Determined				Subtotal	Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Relative Rating		
Recovery/Reuse	Recovery	0.4	6		2.4	6.6	7.50	
	Safety	0.1	7		0.7			
	Residue	0.1	7		0.7			
	Reusability	0.4	7		2.8			
	Air Pollution Potential	0.2		8	1.6	3.4		
	Water Pollution Potential	0.2		8	1.6			
	Land Pollution Potential	0.2		6	1.2			
	Resource Depletion Potential	0.4		10	4.0			
Sanitary Landfill	Processing	0.3	8		2.4	5.2		
	Degradability	0.7	4		2.8			
	Air Pollution Potential	0.2		2	0.4			4.40
	Water Pollution Potential	0.2		2	0.4			
Land Pollution Potential	0.2		4	0.8				
Resource Depletion Potential	0.4		5	2.0				
Incineration	Processing	0.3	8		2.4	8.0		
	Safety	0.1	8		0.8			
	Residue	0.1	8		0.8			
	Combustibility	0.5	8		4.0			
	Air Pollution Potential	0.2		8	1.6	6.2	7.10	
	Water Pollution Potential	0.2		6	1.2			
	Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		5	2.0			
Sca Disposal	Processing	0.3	8		2.4	6.7	4.75	
	Residue	0.3	9		2.7			
	Degradability	0.4	4		1.6			
	Air Pollution Potential	0.2		0	0.0			2.8
Water Pollution Potential	0.2		0	0.0				
Land Pollution Potential	0.2		4	0.8				
Resource Depletion Potential	0.4		5	2.0				
Microbial Treatment	Processing	0.1	8		0.8	3.6	3.20	
	Residue	0.2	0		0.0			
	Degradability	0.7	4		2.8			
	Air Pollution Potential	0.2		0	0.0			2.8
Water Pollution Potential	0.2		0	0.0				
Land Pollution Potential	0.2		4	0.8				
Resource Depletion Potential	0.4		5	2.0				

NUMERICAL PROCESS EVALUATION MATRIX FOR PETROLATUM
MATERIAL NUMBER 13

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Subtotal	
Recovery/Reuse	Recovery	0.4	3		1.2	5.0	6.40
	Safety	0.1	7		0.7		
	Residue	0.1	7		0.7		
	Reusability	0.4	6		2.4		
Sanitary Landfill	Air Pollution Potential	0.2		7	1.4	7.8	3.70
	Water Pollution Potential	0.2		5	1.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		10	4.0		
Incineration	Processing	0.3	7		2.1	8.6	7.00
	Degradability	0.7	3		2.1		
	Air Pollution Potential	0.2		2	0.4		
	Water Pollution Potential	0.2		5	1.0		
Sea Disposal	Land Pollution Potential	0.2		3	0.6	5.4	3.90
	Resource Depletion Potential	0.4		3	1.2		
	Processing	0.3	8		2.4		
	Safety	0.1	8		0.8		
Microbial Treatment	Residue	0.1	9		0.9	2.0	3.45
	Degradability	0.7	4		2.8		
	Combustibility	0.5	9		4.5		
	Air Pollution Potential	0.2		8	1.6		
Sea Disposal	Water Pollution Potential	0.2		6	1.2	5.8	3.90
	Land Pollution Potential	0.2		5	1.0		
	Resource Depletion Potential	0.4		4	1.6		
	Processing	0.3	7		2.1		
Microbial Treatment	Residue	0.3	7		2.1	4.9	3.45
	Degradability	0.4	4		1.6		
	Air Pollution Potential	0.2		0	0.0		
	Water Pollution Potential	0.2		2	0.4		
Microbial Treatment	Land Pollution Potential	0.2		4	0.8	2.0	3.45
	Resource Depletion Potential	0.4		2	0.8		
	Processing	0.1	5		0.5		
	Residue	0.2	8		1.6		
Microbial Treatment	Degradability	0.7	4		2.8	2.0	3.45
	Air Pollution Potential	0.2		0	0.0		
	Water Pollution Potential	0.2		2	0.4		
	Land Pollution Potential	0.2		4	0.8		
Microbial Treatment	Resource Depletion Potential	0.4		2	0.8	2.0	3.45
	Processing	0.1	5		0.5		
	Residue	0.2	8		1.6		
	Degradability	0.7	4		2.8		

NUMERICAL PROCESS EVALUATION MATRIX FOR STODDARD SOLVENT
MATERIAL NUMBER 14

Process	Characteristics	Relative Importance	Determined				Subtotal	Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Relative Rating		
Recovery/Reuse	Recovery	0.4	8		3.2	8.2	7.90	
	Safety	0.1	9		0.9			
	Residue	0.1	9		0.9			
	Reusability	0.4	8		3.2			
Sanitary Landfill	Air Pollution Potential	0.2		8	1.6	7.6	4.00	
	Water Pollution Potential	0.2		5	1.0			
	Land Pollution Potential	0.2		5	1.0			
	Resource Depletion Potential	0.4		10	4.0			
Incineration	Processing Degradability	0.3	8		2.4	8.2	6.40	
	Air Pollution Potential	0.2		2	0.4			
	Water Pollution Potential	0.2		4	0.8			
	Land Pollution Potential	0.2		4	0.8			
Sea Disposal	Processing Residue Degradability	0.3	8		2.4	6.4	4.60	
	Air Pollution Potential	0.2		8	1.6			
	Water Pollution Potential	0.2		5	1.0			
	Land Pollution Potential	0.2		6	1.2			
Microbial Treatment	Resource Depletion Potential	0.4		2	0.8	5.1	3.95	
	Processing Residue Degradability	0.1	7		0.7			
	Air Pollution Potential	0.2		4	0.8			
	Water Pollution Potential	0.2		4	0.8			
Microbial Treatment	Resource Depletion Potential	0.4		2	0.8	2.8	2.8	
	Air Pollution Potential	0.2		4	0.8			
	Water Pollution Potential	0.2		4	0.8			
	Resource Depletion Potential	0.4		2	0.8			

NUMERICAL PROCESS EVALUATION MATRIX FOR PETROLEUM DISTILLATE
MATERIAL NUMBER 15

Process	Characteristics	Relative Importance	Determined				Subtotal	Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating			
Recovery/Reuse	Recovery	0.4	7		2.8	7.8	7.50	
	Safety	0.1	8		0.8			
	Residue	0.1	6		0.6			
	Reusability	0.4	9		3.6			
Sanitary Landfill	Air Pollution Potential	0.2		8	1.6	7.2	4.00	
	Water Pollution Potential	0.2		6	1.2			
	Land Pollution Potential	0.2		2	0.4			
	Resource Depletion Potential	0.4		10	4.0			
Incineration	Processing	0.3	4		1.2	7.1	5.85	
	Degradability	0.7	4		2.8			
	Air Pollution Potential	0.2		4	0.8			
	Water Pollution Potential	0.2		2	0.4			
Sea Disposal	Land Pollution Potential	0.2		4	0.8	4.6	4.45	
	Resource Depletion Potential	0.4		5	2.0			
	Processing	0.3	4		1.2			
	Residue	0.3	7		2.1			
Microbial Treatment	Degradability	0.4	4		1.6	4.6	4.10	
	Air Pollution Potential	0.2		4	0.8			
	Water Pollution Potential	0.2		2	0.4			
	Land Pollution Potential	0.2		4	0.8			
Microbial Treatment	Resource Depletion Potential	0.4		5	2.0	3.6	4.10	
	Processing	0.2	4		0.4			
	Residue	0.2	7		1.4			
	Degradability	0.7	4		2.8			

NUMERICAL PROCESS EVALUATION MATRIX FOR TETRACHLOROETHYLENE
MATERIAL NUMBER 16

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Subtotal	
Recovery/Reuse	Recovery	0.4	9		3.6	8.7	8.35
	Safety	0.1	7		0.7		
	Residue	0.1	8		0.8		
	Reusability	0.4	9		3.6		
	Air Pollution Potential	0.2		8	1.6	8.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		8	1.6		
	Resource Depletion Potential	0.4		8	3.2		
	Processing	0.3	8		2.4	4.5	
	Degradability	0.7	3		2.1		
Sanitary Landfill	Air Pollution Potential	0.2		3	0.6	2.6	3.55
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		0	0.0		
	Resource Depletion Potential	0.4		5	2.0		
Incineration	Processing	0.3	5		1.5	5.1	5.60
	Safety	0.1	5		0.5		
	Residue	0.1	9		0.9		
	Combustibility	0.5	5		2.5		
	Air Pollution Potential	0.2		7	1.4	5.8	
	Water Pollution Potential	0.2		6	1.2		
	Land Pollution Potential	0.2		6	1.2		
	Resource Depletion Potential	0.4		5	2.0		
Sea Disposal	Processing	0.3	7		2.1	5.7	4.35
	Residue	0.3	8		2.4		
	Degradability	0.4	3		1.2		
	Air Pollution Potential	0.2		0	0.0	3.0	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		5	1.0		
	Resource Depletion Potential	0.4		5	2.0		
Microbial Treatment	Processing	0.1	7		0.7	2.7	2.75
	Residue	0.2	3		0.6		
	Degradability	0.7	2		1.4		
	Air Pollution Potential	0.2		0	0.0	2.8	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		4	0.8		
	Resource Depletion Potential	0.4		5	2.0		

NUMERICAL PROCESS EVALUATION MATRIX FOR TRICHLOROETHYLENE
MATERIAL NUMBER 17

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Subtotal	
Recovery/Reuse	Recovery	0.4	9		3.6	8.7	8.35
	Safety	0.1	7		0.7		
	Residue	0.1	8		0.8		
	Reusability	0.4	9		3.6		
Sanitary Landfill	Air Pollution Potential	0.2		8	1.6	8.0	3.55
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		8	1.6		
	Resource Depletion Potential	0.4		8	3.2		
Incineration	Processing	0.3	8		2.4	5.4	5.60
	Degradability	0.7	3		2.1		
	Air Pollution Potential	0.2		3	0.6		
	Water Pollution Potential	0.2		0	0.0		
Sea Disposal	Land Pollution Potential	0.2		0	0.0	5.8	4.35
	Resource Depletion Potential	0.4		5	2.0		
	Processing	0.3	7		2.1		
	Residue	0.3	8		2.4		
Microbial Treatment	Degradability	0.4	3		1.2	3.0	2.75
	Air Pollution Potential	0.2		0	0.0		
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		5	1.0		
Microbial Treatment	Resource Depletion Potential	0.4		5	2.0	2.7	2.8
	Processing	0.1	7		0.7		
	Residue	0.2	3		0.6		
	Degradability	0.7	2		1.4		
Microbial Treatment	Air Pollution Potential	0.2		0	0.0	2.8	2.75
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		4	0.8		
	Resource Depletion Potential	0.4		5	2.0		

Numerical Process Evaluation Matrix
For FIBERGLAS CUSHIONING

Material Number 18

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	3.0	6.50
	Market for Commodity	0.5	3		1.5		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	3		1.2	2.4	5.70
	Technical Operating Restrictions	0.6	2		1.2		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	10		2.0	3.0	5.60
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0	8.2	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		7	2.8			
Composting	Fragmentability	0.2	10		2.0	3.8	6.00
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	3		1.2		
	Technical Operating Restrictions	0.2	0		0.0	8.2	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		7	2.8			
Baling	Compactibility	0.4	1		0.4	5.8	7.00
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		7	2.8		
	Incineration	Fragmentability	0.2	10		2.0	
Separability		0.1	3		0.3		
Combustibility		0.5	0		0.0		
Potential Damage to Equipment		0.2	5		1.0	6.8	
Air Pollution Potential		0.2		7	1.4		
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Sanitary Landfill	Fragmentability	0.1	10		1.0	7.6	7.70
	Material Density	0.2	10		2.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	2		0.6	7.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		7	2.8			
Sea Disposal	Material Density	0.2	10		2.0	5.6	5.10
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	2		0.6		
	Regulatory Operational Restrictions	0.2	0		0.0	4.6	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			

Numerical Process Evaluation Matrix
For FIBERGLASS CONTAINER

Material Number 19

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	5.0	7.50
	Market for Commodity	0.5	7		3.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	2.4	5.70
	Technical Operating Restrictions	0.6	2		1.2		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	7		1.4	2.4	5.30
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		7	2.8			
Composting	Fragmentability	0.2	7		1.4	3.2	5.70
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	3		1.2		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		7	2.8			
Baling	Compactibility	0.4	1		0.4	5.8	7.00
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		7	2.8		
	Incineration	Fragmentability	0.2	7		1.4	
Separability		0.1	3		0.3		
Combustibility		0.5	0		0.0		
Potential Damage to Equipment		0.2	5		1.0		
Air Pollution Potential		0.2		7	1.4	6.8	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Sanitary Landfill	Fragmentability	0.1	7		0.7	7.0	7.40
	Material Density	0.2	10		2.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	1		0.3		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		7	2.8			
Sea Disposal	Material Density	0.2	10		2.0	5.8	5.10
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	2		0.6		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.6	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			

Numerical Process Evaluation Matrix
For FIBERGLAS CONTAINER

Material Number 20

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	8		4.0	8.5	9.25
	Market for Commodity	0.5	9		4.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	8		3.2	8.8	7.90
	Technical Operating Restrictions	0.6	6		3.6		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	3.6	5.90
	Separability	0.2	8		1.6		
	Chemical Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		7	2.8			
Composting	Fragmentability	0.2	8		1.6	4.4	6.30
	Separability	0.2	8		1.6		
	Biological Degradability	0.4	3		1.2		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		7	2.8			
Baling	Compactibility	0.4	4		1.6	6.4	7.30
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		7	2.8		
	Incineration	Fragmentability	0.2	8		1.8	
Separability		0.1	8		0.8		
Combustibility		0.5	0		0.0		
Potential Damage to Equipment		0.2	5		1.0		
Air Pollution Potential		0.2		7	1.4	8.8	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Sanitary Landfill	Fragmentability	0.1	8		0.8	7.4	7.60
	Material Density	0.2	10		2.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	2		0.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		7	2.8			
Sea Disposal	Material Density	0.2	10		2.0	5.8	5.10
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	2		0.8		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.8	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			

Numerical Process Evaluation Matrix
For VERMICULITE

Material Number 21

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	4.0	7.00
	Market for Commodity	0.5	5		2.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	4.8	6.90
	Technical Operating Restrictions	0.6	6		3.6		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	2.4	5.30
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	0		0.0		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		7	2.8			
Compressing	Fragmentability	0.2	10		2.0	2.8	5.40
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	0		0.0		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		7	2.8			
Baling	Compactibility	0.4	2		0.8	6.8	7.50
	Baleability	0.6	10		6.0		
	Air Pollution Potential	0.2		10	2.0	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		7	2.8			
Incineration	Fragmentability	0.2	10		2.0	3.7	5.25
	Separability	0.1	3		0.3		
	Combustibility	0.5	0		0.0		
	Potential Damage to Equipment	0.2	7		1.4		
	Air Pollution Potential	0.2		7	1.4	6.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Sanitary Landfill	Fragmentability	0.1	10		1.0	5.4	6.60
	Material Density	0.2	2		0.4		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		7	2.8			
Sea Disposal	Material Density	0.2	2		0.4	3.4	4.00
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	0		0.0		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.6	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	1.2			

Numerical Process Evaluation Matrix
For ALUMINUM TRAY

Material Number 22

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Relative Rating	Sub-Total		
Direct Reuse	Separability	0.5	3		1.5	3.5	6.75
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	8.8	7.80
	Technical Operating Restrictions	0.8	9		5.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	3.0	5.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	2		0.8		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Composting	Fragmentability	0.2	8		1.6	2.8	5.00
	Separability	0.2	3		0.8		
	Biological Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Baling	Compactibility	0.4	1		0.4	8.4	8.80
	Baleability	0.6	10		6.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Incineration	Fragmentability	0.2	8		1.8	4.0	5.00
	Separability	0.1	3		0.3		
	Combustibility	0.5	1		0.5		
	Potential Damage to Equipment	0.2	8		1.6		
	Air Pollution Potential	0.2		7	1.4	8.0	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			
Sanitary Landfill	Fragmentability	0.1	8		0.8	7.4	7.10
	Material Density	0.2	10		2.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	2		0.6		
	Air Pollution Potential	0.2		10	2.0	6.8	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		5	2.0			
Sea Disposal	Material Density	0.2	10		2.0	5.6	4.70
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	2		0.8		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	3.8	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		1	0.4			

Numerical Process Evaluation Matrix
For ALUMINUM CAN

Material Number 23

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	4		2.0	4.0	7.00
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	4		1.6	7.0	8.00
	Technical Operating Restrictions	0.6	9		5.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	6		1.6	3.2	5.30
	Separability	0.2	4		0.8		
	Chemical Degradability	0.4	2		0.8		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Composting	Fragmentability	0.2	8		1.6	2.8	5.10
	Separability	0.2	4		0.8		
	Biological Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Baling	Compactibility	0.4	10		4.0	9.4	8.40
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Incineration	Fragmentability	0.2	6		1.6	3.6	4.80
	Separability	0.1	4		0.4		
	Combustibility	0.5	0		0.0		
	Potential Damage to Equipment	0.2	8		1.6		
	Air Pollution Potential	0.2		7	1.4	6.0	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			
Sanitary Landfill	Fragmentability	0.1	8		0.8	7.4	7.10
	Material Density	0.2	10		2.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	2		0.6		
	Air Pollution Potential	0.2		10	2.0	6.8	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		5	2.0			
Sea Disposal	Material Density	0.2	10		2.0	5.6	4.70
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	2		0.6		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	3.8	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		1	0.4			

Numerical Process Evaluation Matrix
For LEAD TUBES

Material Number 24

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	8.0	8.00
	Market for Commodity	0.5	7		3.5		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	5		2.0	7.4	8.2
	Technical Operating Restrictions	0.6	9		5.4		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	3		0.8	2.0	4.70
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0	7.4	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Composting	Fragmentability	0.2	3		0.8	2.0	4.70
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0	7.4	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Baling	Compactibility	0.4	5		2.0	3.2	5.30
	Baleability	0.6	2		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		5	2.0		
	Incineration	Fragmentability	0.2	3		0.8	
Separability		0.1	5		0.5		
Combustibility		0.5	0		0.0		
Potential Damage to Equipment		0.2	7		1.4		
Air Pollution Potential		0.2		7	1.4	8.0	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			
Sanitary Landfill	Fragmentability	0.1	3		0.3	3.1	5.10
	Material Density	0.2	10		2.0		
	Compactibility	0.4	2		0.8		
	Biological Degradability	0.3	1		0.3	8.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		5	2.0			
Sea Disposal	Material Density	0.2	10		2.0	2.9	3.35
	Compactibility	0.3	2		0.6		
	Biological Degradability	0.3	1		0.3		
	Regulatory Operational Restrictions	0.2	0		0.0	3.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		1	0.4			

Numerical Process Evaluation Matrix
For STEEL CYLINDER

Material Number 25

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	9		4.5	8.0	9.00
	Market for Commodity	0.5	7		3.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	9		3.6	4.8	6.90
	Technical Operating Restrictions	0.2	2		1.2		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	1		0.2	2.8	5.10
	Separability	0.3	9		1.8		
	Chemical Degradability	0.4	2		0.8		
	Technical Operating Restrictions	0.3	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Composting	Fragmentability	0.2	1		0.2	2.4	4.90
	Separability	0.3	9		1.8		
	Biological Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.3	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Baling	Compactibility	0.4	10		4.0	5.8	6.60
	Baleability	0.6	3		1.8		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Incineration	Fragmentability	0.2	1		0.2	1.5	3.80
	Separability	0.1	9		0.9		
	Combustibility	0.5	0		0.0		
	Potential Damage to Equipment	0.3	2		0.4		
	Air Pollution Potential	0.2		7	1.4	6.0	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			
Sanitary Landfill	Fragmentability	0.1	1		0.1	3.6	5.20
	Material Density	0.2	10		2.0		
	Compactibility	0.4	3		1.2		
	Biological Degradability	0.3	1		0.3		
	Air Pollution Potential	0.2		10	2.0	6.8	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		5	2.0			
Sea Disposal	Material Density	0.2	10		2.0	5.7	3.80
	Compactibility	0.3	3		0.9		
	Biological Degradability	0.3	1		0.3		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	3.8	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		1	0.4			

Numerical Process Evaluation Matrix
For Steel Drum

Material Number 26

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	10		10.0	10.0	10.00
	Market for Commodity	0.5	10		10.0		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	10		4.0	7.6	8.30
	Technical Operating Restrictions	0.6	0		3.6		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	4		0.8	3.6	5.50
	Separability	0.2	10		2.0		
	Chemical Degradability	0.4	2		0.8		
	Technical Operating Restrictions	0.2	0		0.0	7.4	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Composting	Fragmentability	0.2	4		0.8	3.2	5.30
	Separability	0.2	10		2.0		
	Biological Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0	7.4	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Baling	Compactibility	0.4	10		4.0	7.6	7.50
	Baleability	0.6	6		3.6		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		5	2.0		
Incineration	Fragmentability	0.2	4		0.8	3.2	4.60
	Separability	0.1	10		1.0		
	Combustibility	0.5	0		0.0		
	Potential Damages to Equipment	0.2	7		1.4	6.0	
	Air Pollution Potential	0.2		7	1.4		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			
Sanitary Landfill	Fragmentability	0.1	4		0.4	5.3	6.05
	Material Density	0.2	10		2.0		
	Compactibility	0.4	5		2.0		
	Biological Degradability	0.3	3		0.9	6.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		5	2.0			
Sea Disposal	Material Density	0.2	10		2.0	4.4	4.10
	Compactibility	0.3	5		1.5		
	Biological Degradability	0.3	3		0.9		
	Regulatory Operational Restrictions	0.2	0		0.0	3.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		1	0.4			

Numerical Process Evaluation Matrix
For Metal Strap

Material Number 27

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	1		0.5	1.0	5.50
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	9		3.6	9.0	9.00
	Technical Operating Restrictions	0.6	9		5.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	1		0.2	2.8	5.10
	Separability	0.2	9		1.8		
	Chemical Degradability	0.4	2		0.8		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Composting	Fragmentability	0.2	1		0.2	2.4	4.90
	Separability	0.2	9		1.8		
	Biological Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Baling	Compactibility	0.4	1		0.4	2.2	4.80
	Baleability	0.6	3		1.8		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		5	2.0		
	Incineration	Fragmentability	0.2	1		0.2	
Separability		0.1	9		0.9		
Combustibility		0.5	0		0.0		
Potential Damage to Equipment		0.2	7		1.4		
Air Pollution Potential		0.2		7	1.4	6.0	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			
Sanitary Landfill	Fragmentability	0.1	1		0.1	4.6	5.70
	Material Density	0.2	10		2.0		
	Compactibility	0.4	4		1.6		
	Biological Degradability	0.3	3		0.9		
	Air Pollution Potential	0.2		10	2.0	6.8	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		5	2.0			
See Disposal	Material Density	0.2	10		2.0	4.1	3.95
	Compactibility	0.3	4		1.2		
	Biological Degradability	0.3	3		0.9		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	3.8	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		1	0.4			

Numerical Process Evaluation Matrix
For Tin Can (Steel)

Material Number 28

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	10		5.0	8.5	9.25
	Market for Commodity	0.5	7		3.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	10		4.0	8.8	8.90
	Technical Operating Restrictions	0.6	8		4.8		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	6		1.2	4.0	5.70
	Separability	0.2	10		2.0		
	Chemical Degradability	0.4	2		0.8		
	Technical Operating Restrictions	0.2	0		0.0	7.4	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Composting	Fragmentability	0.2	6		1.2	3.8	5.60
	Separability	0.2	10		2.0		
	Biological Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0	7.4	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Baling	Compactibility	0.4	10		4.0	9.4	8.40
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		5	2.0		
	Incineration	Fragmentability	0.2	6		1.2	
Separability		0.1	10		1.0		
Combustibility		0.5	0		0.0		
Potential Damage to Equipment		0.2	8		1.6	6.0	
Air Pollution Potential		0.2		7	1.4		
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			
Sanitary Landfill	Fragmentability	0.1	6		0.6	7.2	7.00
	Material Density	0.2	10		2.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	2		0.6	6.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		5	2.0			
Sea Disposal	Material Density	0.2	10		2.0	5.6	4.70
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	2		0.6		
	Regulatory Operational Restrictions	0.2	0		0.0	3.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		1	0.4			

**Numerical Process Evaluation Matrix
For TIN-PLATED STEEL/ALUMINUM CAN**

Material Number 29

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	10		5.0	6.5	9.25
	Market for Commodity	0.5	7		3.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	10		4.0	8.8	8.90
	Technical Operating Restrictions	0.6	8		4.8		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	6		1.2	4.0	5.70
	Separability	0.2	10		2.0		
	Chemical Degradability	0.4	2		0.8		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		5	2.0		
Composting	Fragmentability	0.2	6		1.2	3.6	5.50
	Separability	0.2	10		2.0		
	Biological Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Baling	Compactibility	0.4	10		4.0	9.4	8.40
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		5	2.0		
Incineration	Fragmentability	0.2	6		1.2	3.6	4.90
	Separability	0.1	10		1.0		
	Combustibility	0.5	0		0.0		
	Potential Damage to Equipment	0.2	6		1.6		
	Air Pollution Potential	0.2		7	1.4	6.0	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			
Sanitary Landfill	Fragmentability	0.1	6		0.6	7.2	7.00
	Material Density	0.2	10		2.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	2		0.6		
	Air Pollution Potential	0.2		10	2.0	6.6	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
	Resource Depletion Potential	0.4		5	2.0		
Sea Disposal	Material Density	0.2	10		2.0	5.6	4.70
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	2		0.6		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2	10		2.0	3.8	
	Water Pollution Potential	0.2	0		0.0		
	Land Pollution Potential	0.2	7		1.4		
	Resource Depletion Potential	0.4	1		0.4		

Numerical Process Evaluation Matrix
For AEROSOLS/PRESSURIZED CAN

Material Number 30

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub Total	
Direct Reuse	Separability	0.5	9		4.5	5.0	7.50
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	9		3.6	4.6	6.90
	Technical Operating Restrictions	0.6	2		1.2		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	1		0.2	2.6	5.40
	Separability	0.2	9		1.6		
	Chemical Degradability	0.4	2		0.8		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Composting	Fragmentability	0.2	1		0.2	2.4	4.90
	Separability	0.2	9		1.6		
	Biological Degradability	0.4	1		0.4		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Baling	Compactibility	0.4	10		4.0	5.6	6.60
	Baleability	0.6	3		1.6		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		5	2.0			
Incineration	Fragmentability	0.2	1		0.2	1.5	3.75
	Separability	0.1	9		0.9		
	Combustibility	0.5	0		0.0		
	Potential Damage to Equipment	0.2	2		0.4		
	Air Pollution Potential	0.2		7	1.4	6.0	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		3	1.2			
Sanitary Landfill	Fragmentability	0.1	1		0.1	3.6	5.20
	Material Density	0.2	10		2.0		
	Compactibility	0.4	3		1.2		
	Biological Degradability	0.3	1		0.3		
	Air Pollution Potential	0.2		10	2.0	6.6	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		5	2.0			
Sea Disposal	Material Density	0.2	10		2.0	3.2	3.50
	Compactibility	0.3	3		0.9		
	Biological Degradability	0.3	1		0.3		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	3.6	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		1	0.4			

Numerical Process Evaluation Matrix
For Coated Corrugated Container

Material Number 31

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	8.5	9.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	7		2.8	5.2	7.10
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	7		1.4	7.8	7.80
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
Composting	Fragmentability	0.2	7		1.4	8.2	7.00
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		8	2.4		
Baling	Compactibility	0.4	10		4.0	9.4	8.80
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
Incineration	Fragmentability	0.2	7		1.4	9.1	7.75
	Separability	0.1	7		0.7		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		4	1.8		
Sanitary Landfill	Fragmentability	0.1	7		0.7	7.2	7.10
	Material Density	0.2	4		0.8		
	Compactibility	0.4	9		3.6		
	Biological Degradability	0.3	7		2.1	7.0	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
	Resource Depletion Potential	0.4		8	2.4		
Sea Disposal	Material Density	0.2	4		0.8	5.6	4.90
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0	4.2	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		2	0.8		

Numerical Process Evaluation Matrix
For Corrugated Container

Material Number 32

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	8.5	9.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	7		2.8	7.0	8.00
	Technical Operating Restrictions	0.6	7		4.2		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	7		1.4	7.8	7.80
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	7		1.4	6.6	7.20
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	8		3.2		
	Technical Operating Restrictions	0.2	3		0.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	10		4.0	9.4	8.60
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	7		1.4	9.1	7.75
	Separability	0.1	7		0.7		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.5			
Sanitary Landfill	Fragmentability	0.1	7		0.7	6.9	6.95
	Material Density	0.2	1		0.2		
	Compactibility	0.4	9		3.6		
	Biological Degradability	0.3	8		2.4		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	1		0.2	5.0	4.60
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			

Numerical Process Evaluation Matrix
For Wax Impregnated Paper

Material Number 33

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	8.5	9.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	7		2.8	5.2	7.10
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	7		1.4	7.8	7.80
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	7		1.4	6.2	7.00
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	10		4.0	9.4	8.60
	Balesability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	7		1.4	9.1	7.75
	Separability	0.1	7		0.7		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	7		0.7	7.2	7.10
	Material Density	0.2	4		0.8		
	Compactibility	0.4	9		3.6		
	Biological Degradability	0.3	7		2.1		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	4		0.8	5.6	4.90
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
 For Paper Bag
 Material Number 34

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	4		2.0	5.5	7.75
	Market for Commodity	0.5	7		3.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	4		1.6	5.2	7.10
	Technical Operating Restrictions	0.6	6		3.6		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	7.4	7.80
	Separability	0.2	4		0.8		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	6.2	7.00
	Separability	0.2	4		0.8		
	Biological Degradability	0.4	6		3.2		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	5		2.0	7.4	7.80
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	6		1.6	9.0	7.70
	Separability	0.1	4		0.4		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	6		0.8	7.6	7.30
	Material Density	0.2	4		0.8		
	Compactibility	0.4	9		3.6		
	Biological Degradability	0.3	6		2.4		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	4		0.8	5.9	5.05
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	6		2.4		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For Impregnated Paper

Material Number 35

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	8.5	9.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	7		2.8	5.2	7.10
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	7		1.4	7.8	7.80
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential and Resource Depletion Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
Composting	Fragmentability	0.2	7		1.4	6.2	7.00
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	3		0.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
Baling	Compactibility	0.4	4		1.6	7.0	7.40
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	7		1.4	
Separability		0.1	7		0.7		
Combustibility		0.5	10		5.0		
Potential Damage to Equipment		0.2	10		2.0		
Air Pollution Potential		0.2		7	1.4	6.4	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential		0.4		4	1.6		
Sanitary Landfill		Fragmentability	0.1	7		0.7	7.2
	Material Density	0.2	4		0.8		
	Compactibility	0.4	9		3.8		
	Biological Degradability	0.3	7		2.1		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
	Resource Depletion Potential	0.4		6	2.4		
Sea Disposal	Material Density	0.2	4		0.8	5.6	4.90
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		2	0.8		

Numerical Process Evaluation Matrix
For Converting Paper

Material Number 36

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	1.5	5.75
	Market for Commodity	0.5	0		0.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	6.6	7.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	8		3.2		
	Technical Operating Restrictions	0.2	5		1.0	7.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	5.2	8.50
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	6		2.4		
	Technical Operating Restrictions	0.2	2		0.4	7.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	8.4	7.10
	Baleability	0.6	10		6.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.8	9.1	7.75
	Separability	0.1	3		0.3		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0	8.4	
	Air Pollution Potential	0.2		7	1.4		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.8			
Sanitary Landfill	Fragmentability	0.1	9		0.9	7.7	7.35
	Material Density	0.2	5		1.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	8		1.8	7.0	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		3	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	5		1.0	5.6	5.00
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	8		1.8		
	Regulatory Operational Restrictions	0.2	0		0.0	4.2	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For Newsprint Wrapping

Material Number 37

Process	Characteristics	Relative Importance	Determined				Total Dispos: Rating		
			Operational Rating	Environ- mental Rating	Relative Rating	Sub- Total			
Direct Reuse	Separability	0.5	2		1.0	3.5	6.75		
	Market for Commodity	0.5	5		2.5				
	Resource Depletion Potential	1.0		10	10.0				
Recycle	Separability	0.4	2		0.8	3.6	6.40		
	Technical Operating Restrictions	0.6	5		3.0				
	Resource Depletion Potential	1.0		9	9.0				
Pyrolysis	Fragmentability	0.2	10		2.0	7.4	7.60		
	Separability	0.2	2		0.4				
	Chemical Degradability	0.4	10		4.0				
	Technical Operating Restrictions	0.2	5		1.0				
	Air Pollution Potential	0.2		10	2.0	7.8			
	Water Pollution Potential	0.2		10	2.0				
	Land Pollution Potential	0.2		7	1.4				
	Resource Depletion Potential	0.4		6	2.4				
Compost- ing	Fragmentability	0.2	10		2.0	6.2	7.00		
	Separability	0.2	2		0.4				
	Biological Degradability	0.4	6		3.2				
	Technical Operating Restrictions	0.2	3		0.8				
	Air Pollution Potential	0.2		10	2.0	7.6			
	Water Pollution Potential	0.2		10	2.0				
	Land Pollution Potential	0.2		7	1.4				
	Resource Depletion Potential	0.4		6	2.4				
Baling	Compactibility	0.4	2		0.8	6.8	7.30		
	Baleability	0.6	10		6.0				
	Air Pollution Potential	0.2		10	2.0	7.8			
	Water Pollution Potential	0.2		10	2.0				
	Land Pollution Potential	0.2		7	1.4				
	Resource Depletion Potential	0.4		6	2.4				
	Incineration	Fragmentability	0.2	10		2.0		9.2	7.80
		Separability	0.1	2		0.2			
Combustibility		0.5	10		5.0				
Potential Damage to Equipment		0.3	10		2.0				
Air Pollution Potential		0.2		7	1.4	6.4			
Water Pollution Potential		0.2		10	2.0				
Land Pollution Potential		0.2		7	1.4				
Resource Depletion Potential		0.4		4	1.6				
Sanitary Landfill	Fragmentability	0.1	10		1.0	8.2	7.60		
	Material Density	0.2	4		0.8				
	Compactibility	0.4	10		4.0				
	Biological Degradability	0.3	8		2.4				
	Air Pollution Potential	0.2		10	2.0	7.0			
	Water Pollution Potential	0.2		8	1.6				
	Land Pollution Potential	0.2		5	1.0				
	Resource Depletion Potential	0.4		6	2.4				
Sea Disposal	Material Density	0.2	4		0.8	6.2	5.20		
	Compactibility	0.3	10		3.0				
	Biological Degradability	0.3	8		2.4				
	Regulatory Operational Restrictions	0.2	0		0.0				
	Air Pollution Potential	0.2		10	2.0	4.2			
	Water Pollution Potential	0.2		0	0.0				
	Land Pollution Potential	0.2		7	1.4				
	Resource Depletion Potential	0.4		2	0.8				

Numerical Process Evaluation Matrix
For Pulp Tray

Material Number 38

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	2		1.0	4.5	7.25
	Market for Commodity	0.5	7		3.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	2		0.8	5.0	7.00
	Technical Operating Restrictions	0.6	7		4.2		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	7.0	7.40
	Separability	0.2	2		0.4		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	2.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.8	5.8	6.80
	Separability	0.2	2		0.4		
	Biological Degradability	0.4	8		3.2		
	Technical Operating Restrictions	0.2	3		0.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.8	6.80
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	1		1.8	7.8	7.10
	Separability	0.1	2		0.2		
	Combustibility	0.5	8		4.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	8.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	8		0.8	8.0	7.50
	Material Density	0.2	4		0.8		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	8		2.4		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	4		0.8	8.2	5.20
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	8		2.4		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For Tissue Paper

Material Number 39

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	4		2.0	4.5	7.35
	Market for Commodity	0.5	5		2.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	4		1.6	5.8	7.40
	Technical Operating Restrictions	0.6	7		4.2		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	7.4	7.60
	Separability	0.2	4		0.8		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.3	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	5.8	6.80
	Separability	0.2	4		0.8		
	Biological Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	2		0.8	6.8	7.30
	Baleability	0.6	10		6.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	6		1.6	
Separability		0.1	4		0.4		
Combustibility		0.3	10		5.0		
Potential Damage to Equipment		0.3	10		2.0		
Air Pollution Potential		0.2		7	1.4	6.4	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	6		0.8	7.3	7.15
	Material Density	0.3	2		0.4		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	7		2.1		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	2		0.4	5.5	4.85
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For VCI PACKAGING MATERIALS

Material Number 40

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	6.0	9.00
	Market for Commodity	0.5	9		4.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	7		2.8	5.2	7.10
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	7		1.4	7.8	7.80
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Composting	Fragmentability	0.2	7		1.4	8.2	7.00
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	3		0.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	10		4.0	9.4	8.80
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	7		1.4	9.1	7.75
	Separability	0.1	7		0.7		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2			2.0		
	Air Pollution Potential	0.2		7	1.4	8.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.8			
Sanitary Landfill	Fragmentability	0.1	7		0.7	7.2	7.10
	Material Density	0.2	4		0.8		
	Compactibility	0.4	9		3.8		
	Biological Degradability	0.3	7		2.1		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	4		0.8	5.6	4.90
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For WAX PAPER

Material Number 41

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	4.0	7.00
	Market for Commodity	0.5	5		2.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.0	8.00
	Technical Operating Restrictions	0.6	3		1.8		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	10		2.0	8.4	7.10
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	8		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Composting	Fragmentability	0.2	10		2.0	5.2	6.50
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	8		2.0		
	Technical Operating Restrictions	0.2	3		0.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	1		0.4	8.4	7.10
	Baleability	0.6	10		6.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Incineration	Fragmentability	0.2	10		2.0	8.8	7.60
	Separability	0.1	3		0.3		
	Combustibility	0.5	9		4.5		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	8.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	10		1.0	7.3	7.15
	Material Density	0.2	4		0.8		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	8		1.8		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	4		0.8	5.3	4.75
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	8		1.8		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.1		2	0.8			

Numerical Process Evaluation Matrix
For Wrapping Paper

Material Number 48

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	4		2.0	4.5	7.25
	Market for Commodity	0.5	5		2.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	4		1.6	5.8	7.40
	Technical Operating Restrictions	0.6	7		4.2		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	7.4	7.80
	Separability	0.2	4		0.8		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
Composting	Fragmentability	0.2	8		1.6	6.2	7.00
	Separability	0.2	4		0.8		
	Biological Degradability	0.4	8		3.2		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
Baling	Compactibility	0.4	4		1.6	7.0	7.40
	Balesability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	8		1.6	9.0	7.70
	Separability	0.1	4		0.4		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		4	1.6		
Sanitary Landfill	Fragmentability	0.1	8		0.8	8.0	7.50
	Material Density	0.2	4		0.8		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	8		2.4		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
	Resource Depletion Potential	0.4		6	2.4		
Sea Disposal	Material Density	0.2	4		0.8	6.2	5.20
	Compactibility	0.2	10		3.0		
	Biological Degradability	0.3	8		2.4		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		2	0.8		

Numerical Process Evaluation Matrix
For Chipboard Box

Material Number 43

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	4		2.0	6.5	8.25
	Market for Commodity	0.5	9		4.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	4		1.6	7.0	8.00
	Technical Operating Restrictions	0.6	9		5.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	7.4	7.80
	Separability	0.2	4		0.8		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	8.2	7.00
	Separability	0.2	4		0.8		
	Biological Degradability	0.4	8		3.2		
	Technical Operating Restrictions	0.2	3		0.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	10		4.0	9.4	8.60
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	6		1.2	9.0	7.70
	Separability	0.1	4		0.4		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	6		0.6	8.0	7.50
	Material Density	0.2	4		0.8		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	6		1.8		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		8	3.2			
Sea Disposal	Material Density	0.2	4		0.8	8.2	5.20
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	8		2.4		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For SPIRALLY WOUND FIBER CAN

Material Number 4a

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	8.5	9.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	7		2.8	3.4	8.20
	Technical Operating Restrictions	0.6	1		0.6		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.2	8.4	7.10
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	7		2.3		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Composting	Fragmentability	0.2	8		1.2	4.8	8.30
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	4		1.8		
	Technical Operating Restrictions	0.2	3		0.8		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	10		4.0	0.8	8.30
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		8	2.4		
	Incineration	Fragmentability	0.2	8		1.2	
Separability		0.1	7		0.7		
Combustibility		0.5	9		4.5		
Potential Damage to Equipment		0.2	10		2.0		
Air Pollution Potential		0.2		7	1.4	6.4	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.8			
Sanitary Landfill	Fragmentability	0.1	8		0.6	6.8	6.80
	Material Density	0.2	5		1.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	6.8	
	Water Pollution Potential	0.2		7	1.4		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		8	2.4			
Sea Disposal	Material Density	0.2	5		1.0	5.2	4.70
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For POLYOLEFIN/FOIL/PAPER

Material Number 45

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	1.6	5.40
	Technical Operating Restrictions	0.6	1		0.6		
	Resource Depletion Potential	1.0		8	8.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	6.50
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.1	9		1.8	5.2	5.70
	Separability	0.1	3		0.3		
	Combustibility	0.5	3		1.5		
	Potential Damage to Equipment	0.2	8		1.6		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.9	6.65
	Material Density	0.2	7		1.4		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	7		1.4	4.4	4.20
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For Paperboard Box

Material Number 48

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	6.5	9.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	7		2.8	5.6	7.40
	Technical Operating Restrictions	0.6	5		3.0		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	7		1.4	7.4	7.60
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	9		3.6		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	7		1.4	4.2	6.00
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	2		0.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	10		4.0	6.8	8.30
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	7		1.4	6.6	7.50
	Separability	0.1	7		0.7		
	Combustibility	0.5	9		4.5		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	7		0.7	6.6	6.60
	Material Density	0.2	4		0.6		
	Compactibility	0.4	9		3.6		
	Biological Degradability	0.3	5		1.5		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		6	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	4		0.8	5.0	4.60
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	5		1.5		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For METAL EDGED PAPERBOARD

Material Number 47

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	8.5	9.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	7		2.8	5.8	7.40
	Technical Operating Restrictions	0.6	5		3.0		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	7		1.4	7.4	7.60
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	9		3.6		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	7		1.4	4.2	6.00
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	2		0.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	10		4.0	8.8	8.30
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	7		1.4	
Separability		0.1	7		0.7		
Combustibility		0.5	9		4.5		
Potential Damage to Equipment		0.2	10		2.0		
Air Pollution Potential		0.2		7	1.4	8.4	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	7		0.7	6.6	6.80
	Material Density	0.2	4		0.8		
	Compactibility	0.4	9		3.6		
	Biological Degradability	0.3	5		1.5		
	Air Pollution Potential	0.2		10	2.0	7.0	
	Water Pollution Potential	0.2		8	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	4		0.8	5.0	4.60
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	5		1.5		
	Regulatory Operational Restrictions	0	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For WOOD CLEATED FIBERBOARD

Material Number 48

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	8.5	9.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	7		2.8	4.0	6.50
	Technical Operating Restrictions	0.5	2		1.2		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	6		1.2	7.8	7.70
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0	7.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Composting	Fragmentability	0.2	6		1.2	6.2	7.00
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	4		0.8	7.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	10		4.0	8.8	8.30
	Balability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Incineration	Fragmentability	0.2	8		1.2	7.9	7.15
	Separability	0.1	7		0.7		
	Combustibility	0.5	8		4.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	8.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.8			
Sanitary Landfill	Fragmentability	0.1	8		0.8	6.7	6.85
	Material Density	0.2	2		0.4		
	Compactibility	0.4	9		3.6		
	Biological Degradability	0.3	7		2.1		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	2		0.4	5.2	4.70
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For ABS Tray

Material Number 49

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.3	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	5		2.0	4.4	6.70
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		5	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	4.6	6.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6	7.8	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	4.2	6.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0	7.2	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	9		3.6	6.6	7.20
	Baleability	0.6	5		3.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
Incineration	Fragmentability	0.2	6		1.6	6.7	6.45
	Separability	0.1	5		0.5		
	Combustibility	0.5	6		3.0		
	Potential Damage to Equipment	0.2	8		1.6	6.2	
	Air Pollution Potential	0.2		6	1.2		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	6		0.8	6.0	6.70
	Material Density	0.2	6		1.2		
	Compactibility	0.4	7		2.8		
	Biological Degradability	0.3	4		1.2	7.4	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.2	4.5	4.35
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0	4.2	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For Cellophane Wrapping

Material Number 50

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		6	2.4		
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		6	2.4		
Baling	Compactibility	0.4	2		0.8	5.6	6.70
	Baleability	0.6	6		4.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
Incineration	Fragmentability	0.2	9		1.8	7.7	6.95
	Separability	0.1	3		0.3		
	Combustibility	0.5	8		4.0		
	Potential Damage to Equipment	0.2	8		1.6		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		4	1.6		
Sanitary Landfill	Fragmentability	0.1	9		0.9	6.1	6.75
	Material Density	0.2	6		1.6		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
Land Pollution Potential	0.2		5	1.0			
	Resource Depletion Potential	0.4		6	2.4		
Sea Disposal	Material Density	0.2	6		1.6	4.6	4.40
	Compactibility	0.3	6		1.6		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		2	0.8		

Numerical Process Evaluation Matrix
For Cellulose Cushioning

Material Number 51

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	4		2.0	2.5	6.25
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	4		1.6	4.0	6.50
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.30
	Separability	0.2	4		0.8		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.2	8.00
	Separability	0.2	4		0.8		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	2		0.8	5.6	6.70
	Baleability	0.6	6		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		8	2.4		
	Fragmentability	0.2	9		1.8		
Separability	0.1	4		0.4			
Combustibility	0.5	6		3.0			
Potential Damage to Equipment	0.2	6		1.8			
Air Pollution Potential	0.2		6	1.2	8.2		
Water Pollution Potential	0.2		10	2.0			
Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	4.9	8.15
	Material Density	0.2	2		0.4		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2	7.4	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Resource Depletion Potential	0.4		5	1.0		
Sea Disposal	Material Density	0.2	2		0.4	3.4	3.80
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0	4.2	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		0	0.0		
	Resource Depletion Potential	0.4		2	0.8		

Numerical Process Evaluation Matrix
For Cellulose Wrapping

Material Number 52

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.6	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	1		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	2		0.6	5.6	6.70
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.6	5.7	5.95
	Separability	0.1	3		0.3		
	Combustibility	0.5	4		2.0		
	Potential Damage to Equipment	0.2	6		1.6		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.7	6.55
	Material Density	0.2	6		1.2		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.2	4.2	4.20
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For Cellulose Container

Material Number 53

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	5		2.0	4.4	6.70
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	4.8	6.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Composting	Fragmentability	0.2	8		1.6	4.2	8.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	10		4.0	7.0	7.40
	Baleability	0.6	5		3.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	6		1.2	6.7	6.45
	Separability	0.1	5		0.5		
	Combustibility	0.5	6		3.0		
	Potential Damage to Equipment	0.2	6		1.2		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	8		0.8	6.2	6.80
	Material Density	0.2	7		1.4		
	Compactibility	0.4	7		2.8		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	7		1.4	4.7	4.45
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For Strippable Coating-Cold

Material Number 54

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	2		1.0	1.0	5.50
	Market for Commodity	0.5	0		0.0		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	2		0.8	0.8	4.90
	Technical Operating Restrictions	0.6	0		0.0		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	9		1.8	3.8	5.80
	Separability	0.2	2		0.4		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.3	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	3.8	5.80
	Separability	0.2	2		0.4		
	Biological Degradability	0.4	4		1.8		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	8.50
	Baleability	0.6	0		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.8	5.8	5.90
	Separability	0.1	2		0.2		
	Combustibility	0.5	4		2.0		
	Potential Damage to Equipment	0.2	6		1.8		
	Air Pollution Potential	0.2		6	1.2	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.7	8.55
	Material Density	0.2	8		1.2		
	Compactibility	0.4	8		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	8		1.2	4.2	4.20
	Compactibility	0.3	8		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For Strippable Coating-Hot

Material Number 55

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	2		1.0	1.0	3.50
	Market for Commodity	0.5	0		0.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	2		0.8	0.8	4.90
	Technical Operating Restrictions	0.5	0		0.0		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	3.8	5.80
	Separability	0.2	2		0.4		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	3.8	5.80
	Separability	0.2	2		0.4		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	6.50
	Baleability	0.8	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.8	5.6	5.90
	Separability	0.1	2		0.2		
	Combustibility	0.5	4		2.0		
	Potential Damage to Equipment	0.2	8		1.6		
	Air Pollution Potential	0.2		8	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.7	6.55
	Material Density	0.2	6		1.2		
	Compactibility	0.4	8		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.2	4.2	4.20
	Compactibility	0.3	8		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For Epoxy Coating

Material Number 56

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	2		1.0	1.0	5.50
	Market for Commodity	0.5	0		0.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	2		0.8	1.4	5.20
	Technical Operating Restrictions	0.6	1		0.6		
	Resource Depletion Potential	1.0		0	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.4	6.10
	Separability	0.2	2		0.4		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	5.8	5.80
	Separability	0.2	2		0.4		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	6.50
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.8	
Separability		0.1	3		0.2		
Combustibility		0.5	4		2.0		
Potential Damage to Equipment		0.3	8		1.8		
Air Pollution Potential		0.2		8	1.2	8.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.9	8.85
	Material Density	0.2	7		1.4		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		8	2.4			
Sea Disposal	Material Density	0.2	7		1.4	4.4	4.30
	Compactibility	0.3	8		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

**Numerical Process Evaluation Matrix
For Surlyn Wrapping**

Material Number 57

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	5		2.0	4.4	6.70
	Technical Operating Restrictions	0.8	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	4.6	6.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	4.2	6.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	4.0	5.90
	Baleability	0.6	6		3.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Fragmentability	0.2	8		1.6		
Separability	0.1	5		0.5			
Combustibility	0.5	5		2.5			
Potential Damage to Equipment	0.2	6		1.6			
Air Pollution Potential	0.2		6	1.2	6.2		
Water Pollution Potential	0.2		10	2.0			
Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	8		0.8	5.8	6.60
	Material Density	0.2	5		1.0		
	Compactibility	0.4	7		2.8		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		8	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	5		1.0	4.3	4.25
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For SURLYN CUSHIONING

Material Number 58

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	4		2.0	3.0	6.50
	Market for Commodity	0.5	2		1.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	4		1.6	4.0	6.50
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	4.6	6.20
	Separability	0.2	4		0.8		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	4.0	5.90
	Separability	0.2	4		0.8		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	8		3.2	6.8	7.30
	Baleability	0.6	6		3.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	8		1.6	
Separability		0.1	4		0.4		
Combustibility		0.5	5		2.5		
Potential Damage to Equipment		0.3	8		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	8		0.8	5.8	6.60
	Material Density	0.2	5		1.0		
	Compactibility	0.4	7		2.8		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	5		1.0	4.3	4.25
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For Bakelite Tray

Material Number 59

Process	Characteristica	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	5		2.0	2.6	5.80
	Technical Operating Restrictions	0.6	1		0.6		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	4.8	6.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	4.2	6.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	4		1.8		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	8		3.2	6.2	7.00
	Baleability	0.6	5		3.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	8		1.6	5.2	5.70
	Separability	0.1	5		0.5		
	Combustibility	0.5	3		1.5		
	Potential Damage to Equipment	0.2	8		1.6		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	8		0.8	6.4	6.90
	Material Density	0.2	8		1.6		
	Compactibility	0.4	7		2.8		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	8		1.6	4.9	4.55
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For Polyolefin Wrapping

Material Number 60

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	1.8	5.40
	Technical Operating Restrictions	0.6	1		0.6		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.8	6.20
	Separability	0.2	3		0.8		
	Chemical Degradability	0.4	4		1.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.8		
	Biological Degradability	0.4	4		1.8		
	Technical Operating Restrictions	0.2	0		0.2		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	8.50
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.8	5.2	5.70
	Separability	0.1	3		0.3		
	Combustibility	0.2	3		1.5		
	Potential Damage to Equipment	0.2	8		1.8		
	Air Pollution Potential	0.2		8	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.9	6.85
	Material Density	0.2	7		1.4		
	Compactibility	0.4	8		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.1	7		1.4	4.4	4.30
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For LUCITE CONTAINER

Material Number 61

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	5		2.0	4.4	6.70
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	6		1.6	4.6	6.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6	7.6	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	4.2	6.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0	7.6	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	9		3.6	7.2	7.50
	Baleability	0.6	6		3.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	6		1.6	5.7	5.95
	Separability	0.1	5		0.5		
	Combustibility	0.5	4		2.0		
	Potential Damage to Equipment	0.2	8		1.6	6.2	
	Air Pollution Potential	0.2		6	1.2		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	8		0.6	6.0	6.70
	Material Density	0.2	6		1.2		
	Compactibility	0.4	7		2.6		
	Biological Degradability	0.3	4		1.2	7.4	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.2	4.5	4.35
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0	4.2	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.6			

Numerical Process Evaluation Matrix
For Nylon Sack

Material Number 62

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	3.0	6.50
	Market for Commodity	0.5	3		1.5		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.8		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	6.5
	Baleability	0.6	6		4.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Fragmentability	0.2	9		1.8		
Separability	0.1	3		0.3			
Combustibility	0.5	2		1.0			
Potential Damage to Equipment	0.2	6		1.8			
Air Pollution Potential	0.2		6	1.2	9.2		
Water Pollution Potential	0.2		10	2.0			
Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.9	6.65
	Material Density	0.2	7		1.4		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	7		1.4	4.4	4.30
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For NYLON CORD

Material Number 63

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	6.50
	Baleability	0.6	6		4.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.8	
Separability		0.1	3		0.3		
Combustibility		0.5	2		1.0		
Potential Damage to Equipment		0.2	8		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.9	6.66
	Material Density	0.2	7		1.4		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	7		1.4	4.4	4.30
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

**Numerical Process Evaluation Matrix
For POLYCARBONATE WRAPPING**

Material Number 64

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.6	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.6	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	6.50
	Baleability	0.6	8		4.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.6	
Separability		0.1	3		0.3		
Combustibility		0.5	6		3.0		
Potential Damage to Equipment		0.2	6		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.9	6.65
	Material Density	0.2	7		1.4		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	7		1.4	4.4	4.30
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For POLYCARBONATE CONTAINER

Material Number 65

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating		
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total			
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25		
	Market for Commodity	0.5	4		2.0				
	Resource Depletion Potential	1.0		10	10.0	10.0			
Recycle	Separability	0.4	5		2.0	4.4	6.70		
	Technical Operating Restrictions	0.6	4		2.4				
	Resource Depletion Potential	1.0		9	9.0	9.0			
Pyrolysis	Fragmentability	0.2	8		1.6	4.8	6.30		
	Separability	0.2	5		1.0				
	Chemical Degradability	0.4	4		1.6				
	Technical Operating Restrictions	0.2	3		0.6				
	Air Pollution Potential	0.2		10	2.0	7.6			
	Water Pollution Potential	0.2		10	2.0				
	Land Pollution Potential	0.2		7	1.4				
	Resource Depletion Potential	0.4		6	2.4				
Composting	Fragmentability	0.2	8		1.6	4.2	6.00		
	Separability	0.2	5		1.0				
	Biological Degradability	0.4	4		1.6				
	Technical Operating Restrictions	0.2	0		0.0				
	Air Pollution Potential	0.2		10	2.0	7.8			
	Water Pollution Potential	0.2		10	2.0				
	Land Pollution Potential	0.2		7	1.4				
	Resource Depletion Potential	0.4		6	2.4				
Baling	Compactibility	0.4	10		4.0	7.0	7.40		
	Baleability	0.6	5		3.0				
	Air Pollution Potential	0.2		10	2.0	7.6			
	Water Pollution Potential	0.2		10	2.0				
	Land Pollution Potential	0.2		7	1.4				
	Resource Depletion Potential	0.4		6	2.4				
	Incineration	Fragmentability	0.2	8		1.6		5.2	5.70
		Separability	0.1	5		0.5			
Combustibility		0.5	3		1.5				
Potential Damage to Equipment		0.2	6		1.6				
Air Pollution Potential		0.2		6	1.2	6.2			
Water Pollution Potential		0.2		10	2.0				
Land Pollution Potential		0.2		7	1.4				
Resource Depletion Potential		0.4		4	1.6				
Sanitary Landfill	Fragmentability	0.1	8		0.8	6.2	6.80		
	Material Density	0.2	7		1.4				
	Compactibility	0.4	7		2.6				
	Biological Degradability	0.3	4		1.2				
	Air Pollution Potential	0.2		10	2.0	7.4			
	Water Pollution Potential	0.2		10	2.0				
	Land Pollution Potential	0.2		5	1.0				
	Resource Depletion Potential	0.4		6	2.4				
Sea Disposal	Material Density	0.2	7		1.4	4.7	4.45		
	Compactibility	0.3	7		2.1				
	Biological Degradability	0.3	4		1.2				
	Regulatory Operational Restrictions	0.2	0		0.0				
	Air Pollution Potential	0.2		10	2.0	4.2			
	Water Pollution Potential	0.2		0	0.0				
	Land Pollution Potential	0.2		7	1.4				
	Resource Depletion Potential	0.4		2	0.6				

Numerical Process Evaluation Matrix
For DACRON STRAP

Material Number 68

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.8	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.8	8.20
	Separability	0.2	3		0.8		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.8		
	Biological Degradability	0.4	4		1.8		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	8.50
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		8	2.4		
	Incineration	Fragmentability	0.2	9		1.8	
Separability		0.1	3		0.3		
Combustibility		0.5	8		4.0		
Potential Damage to Equipment		0.2	8		1.6		
Air Pollution Potential		0.2		8	1.2	8.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.8			
Sanitary Landfill	Fragmentability	0.1	9		0.9	6.3	6.85
	Material Density	0.2	9		1.8		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		8	2.4			
Sea Disposal	Material Density	0.2	9		1.8	4.8	4.50
	Compactibility	0.3	8		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For MYLAR POUCH

Material Number 67

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	6.50
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.8	
Separability		0.1	3		0.3		
Combustibility		0.5	8		4.0		
Potential Damage to Equipment		0.3	8		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	6.3	6.65
	Material Density	0.2	9		1.8		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	9		1.8	4.8	4.50
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.6			

**Numerical Process Evaluation Matrix
For POLYETHYLENE WRAPPING**

Material Number 68

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.8	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	2		0.8	5.0	6.40
	Baleability	0.6	7		4.2		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.8	6.7	6.45
	Separability	0.1	3		0.3		
	Combustibility	0.5	6		3.0		
	Potential Damage to Equipment	0.2	8		1.6		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.5	6.45
	Material Density	0.2	5		1.0		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	5		1.0	4.0	4.10
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For POLYETHYLENE CONTAINER

Material Number 69

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating	
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total		
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25	
	Market for Commodity	0.5	4		2.0			
	Resource Depletion Potential	1.0		10	10.0			
Recycle	Separability	0.4	5		2.0	4.4	6.70	
	Technical Operating Restrictions	0.4	4		2.4			
	Resource Depletion Potential	1.0		9	9.0			
Pyrolysis	Fragmentability	0.2	6		1.6	4.6	6.30	
	Separability	0.2	5		1.0			
	Chemical Degradability	0.4	4		1.6			
	Technical Operating Restrictions	0.2	3		0.6			
	Air Pollution Potential	0.2		10	2.0			7.8
	Water Pollution Potential	0.2		10	2.0			
	Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		6	2.4				
Composting	Fragmentability	0.2	6		1.6	4.2	8.00	
	Separability	0.2	5		1.0			
	Biological Degradability	0.4	4		1.6			
	Technical Operating Restrictions	0.2	0		0.0			
	Air Pollution Potential	0.2		10	2.0			7.8
	Water Pollution Potential	0.2		10	2.0			
	Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		6	2.4				
Baling	Compactibility	0.4	10		4.0	7.0	7.40	
	Baleability	0.6	5		3.0			
	Air Pollution Potential	0.2		10	2.0	7.8		
	Water Pollution Potential	0.2		10	2.0			
	Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		6	2.4			
	Incineration	Fragmentability	0.2	8		1.6		6.7
Separability		0.1	5		0.5			
Combustibility		0.5	6		3.0			
Potential Damage to Equipment		0.2	6		1.8			
Air Pollution Potential		0.2		6	1.2	6.2		
Water Pollution Potential		0.2		10	2.0			
Land Pollution Potential		0.2		7	1.4			
Resource Depletion Potential	0.4		4	1.6				
Sanitary Landfill	Fragmentability	0.1	5		0.6	5.8	6.60	
	Material Density	0.2	5		1.0			
	Compactibility	0.4	7		2.8			
	Biological Degradability	0.2	4		1.2			
	Air Pollution Potential	0.2		10	2.0			7.4
	Water Pollution Potential	0.2		10	2.0			
	Land Pollution Potential	0.2		5	1.0			
Resource Depletion Potential	0.4		6	2.4				
Sea Disposal	Material Density	0.2	5		1.0	4.2	4.25	
	Compactibility	0.2	7		2.1			
	Biological Degradability	0.2	4		1.2			
	Regulatory Operational Restrictions	0.2	0		0.0			
	Air Pollution Potential	0.2		10	2.0			4.2
	Water Pollution Potential	0.2		0	0.0			
	Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		2	0.8				

Numerical Process Evaluation Matrix
For POLYPROPYLENE CORD

Material Number 70

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	6.50
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.8	6.7	6.45
	Separability	0.1	3		0.3		
	Combustibility	0.5	5		3.0		
	Material Damage to Equipment	0.3	8		1.6		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		4	1.6		
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.5	6.45
	Material Density	0.2	5		1.0		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sec Disposal	Material Density	0.2	5		1.0	4.0	4.10
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For POLYPROPYLENE WRAPPING

Material Number 71

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.5	6.25
	Market for Commodity	0.5	2		1.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.3		
	Air Pollution Potential	0.2		10	2.0	7.9	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	2		0.8	5.6	5.70
	Baleability	0.6	6		4.8		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.8	
Separability		0.1	3		0.3		
Combustibility		0.5	6		3.0		
Potential Damage to Equipment		0.2	6		1.8		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.5	8.45
	Material Density	0.2	5		1.0		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	5		1.0	4.0	4.10
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

**Numerical Process Evaluation Matrix
For POLY PROPYLENE CUSHIONING**

Material Number 72

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	4		2.0	3.0	6.50
	Market for Commodity	0.5	2		1.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4			1.6	4.0	6.50
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.8	6.30
	Separability	0.2	4		0.8		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.2	6.00
	Separability	0.2	4		0.8		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	10		4.0	8.2	8.00
	Baleability	0.6	7		4.2		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Fragmentability	0.2	9		1.8		
Separability	0.1	4		0.4			
Combustibility	0.5	6		3.0			
Potential Damage to Equipment	0.2	8		1.6			
Air Pollution Potential	0.2		6	1.2	6.2		
Water Pollution Potential	0.2		10	2.0			
Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.5	6.45
	Material Density	0.2	5		1.0		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	5		1.0	4.0	4.10
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For POLY PROPYLENE CONTAINER

Material Number 73

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	5		2.0	4.4	6.70
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	6		1.6	4.8	6.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	6		1.6	4.2	6.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	9		3.6	6.6	7.20
	Baleability	0.6	5		3.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	8		1.6	
Separability		0.1	5		0.5		
Combustibility		0.5	6		3.0		
Potential Damage to Equipment		0.2	6		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	6		0.6	5.8	6.60
	Material Density	0.2	5		1.0		
	Compactibility	0.4	7		2.8		
	Biological Degradability	0.2	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	5		1.0	4.3	4.25
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.6			

Numerical Process Evaluation Matrix
For POLYSTYRENE WRAPPING

Material Number 74

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	2		0.8	5.6	6.70
	Baleability	0.6	6		4.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.8	
Separability		0.1	3		0.3		
Combustibility		0.5	6		3.0		
Potential Damage to Equipment		0.3	6		1.8		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.7	6.55
	Material Density	0.2	6		1.2		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resources Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.2	4.2	4.20
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For POLYSTYRENE CONTAINER

Material Number 75

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	5		2.0	4.4	6.70
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	4.8	8.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	4.2	6.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	8		3.2	6.2	7.00
	Baleability	0.6	5		3.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	8		1.8	
Separability		0.1	5		0.5		
Combustibility		0.5	6		3.0		
Potential Damage to Equipment		0.2	8		1.6		
Air Pollution Potential		0.2		8	1.2	8.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.8			
Sanitary Landfill	Fragmentability	0.1	8		0.8	8.0	6.70
	Material Density	0.2	6		1.2		
	Compactibility	0.4	7		2.8		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.2	4.5	4.35
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For STYROFOAM CONTAINER

Material Number 76

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	5		2.0	4.4	6.70
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	4.8	6.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	4.2	6.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.2	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	10		4.0	6.4	7.10
	Baleability	0.6	4		2.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	8		1.6	5.2	5.70
	Separability	0.1	5		0.5		
	Combustibility	0.5	3		1.5		
	Potential Damage to Equipment	0.3	8		1.6		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	8		0.8	6.0	6.70
	Material Density	0.2	6		1.2		
	Compactibility	0.4	7		2.8		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.2	4.5	4.35
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For STYROFOAM CUSHIONING

Material Number 77

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	4		2.0	3.0	6.50
	Market for Commodity	0.5	2		1.0		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	4		1.6	4.0	6.50
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		3	9.0		
Pyrolysis	Fragmentability	0.2	9		1.8	4.8	6.30
	Separability	0.2	4		0.8		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.2	6.00
	Separability	0.2	4		0.8		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	10		4.0	6.4	7.10
	Baleability	0.6	4		2.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.8	
Separability		0.1	4		0.4		
Combustibility		0.5	3		1.5		
Potential Damage to Equipment		0.2	8		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.7	6.55
	Material Density	0.2	6		1.2		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
See Disposal	Material Density	0.2	6		1.2	4.2	4.20
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For STYROFOAM DUNNAGE

Material Number 78

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.6	4.0	5.90
	Separability	0.2	3		0.8		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	10		4.0	6.4	7.10
	Baleability	0.6	4		2.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.6	
Separability		0.1	3		0.3		
Combustibility		0.5	3		1.5		
Potential Damage to Equipment		0.2	8		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.7	6.55
	Material Density	0.2	6		1.2		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	8		1.2	4.2	4.20
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For POLYSULPHONE TRAY

Material Number 79

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	5		2.0	4.4	6.70
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	6		1.6	4.6	6.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	6		1.6	4.2	6.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	10		4.0	7.0	7.40
	Baleability	0.6	5		3.0		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
Incineration	Fragmentability	0.2	8		1.6	5.2	5.70
	Separability	0.1	5		0.5		
	Combustibility	0.5	3		1.5		
	Potential Damage to Equipment	0.2	6		1.6		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	6		0.6	6.0	6.70
	Material Density	0.2	5		1.2		
	Compactibility	0.4	7		2.6		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.2	4.5	4.35
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For TEFLON WRAPPING

Material Number 60

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.6	4.0	6.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	3.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	2		0.6	5.8	6.70
	Baleability	0.6	6		4.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.8	4.7	5.45
	Separability	0.1	3		0.3		
	Combustibility	0.5	2		1.0		
	Potential Damage to Equipment	0.3	6		1.6		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	6.3	6.65
	Material Density	0.2	9		1.6		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	9		1.6	4.8	4.50
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory (Operational) Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For TEFLON CONTAINER

Material Number 61

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	5		2.0	4.4	6.70
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	8		1.6	4.8	6.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	4.2	8.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	7		2.8	5.2	8.50
	Baleability	0.6	4		2.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	6		1.6	4.7	5.45
	Separability	0.1	5		0.5		
	Combustibility	0.5	2		1.0		
	Potential Damage to Equipment	0.2	2		1.6		
	Air Pollution Potential	0.2		6	1.2	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	6		0.6	5.6	7.00
	Material Density	0.2	9		1.8		
	Compactibility	0.4	7		2.8		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	9		1.8	5.1	4.85
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For POLYURETHANE WRAPPING

Material Number 82

Process	Characteristics	Relative Importance	Determined				Total Disposal Ratio
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	4		2.0	2.5	6.25
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	4		1.6	4.0	6.50
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.8	6.30
	Separability	0.2	4		0.8		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.2	6.00
	Separability	0.2	4		0.8		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		6	2.4		
Baling	Compactibility	0.4	2		0.8	5.6	6.70
	Baleability	0.6	6		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.8	5.3	5.75
	Separability	0.1	4		0.4		
	Combustibility	0.5	3		1.5		
	Potential Damage to Equipment	0.2	6		1.6		
	Air Pollution Potential	0.2		8	1.2	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		4	1.6		
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.7	6.55
	Material Density	0.2	6		1.2		
	Compactibility	0.4	8		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.2	4.2	4.20
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.2	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
Land Pollution Potential	0.2		7	1.4			
	Resource Depletion Potential	0.4		2	0.8		

**Numerical Process Evaluation Matrix
For POLYURETHANE CUSHIONING**

Material Number 63

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.5	6.25
	Market for Commodity	0.5	2		1.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.80
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	8		3.2	7.4	7.60
	Baleability	0.6	7		4.2		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.8	
Separability		0.1	3		0.3		
Combustibility		0.5	4		2.0		
Potential Damage to Equipment		0.2	8		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.7	6.55
	Material Density	0.2	6		1.2		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.2	4.2	4.20
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.5	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For POLYURETHANE CONTAINER

Material Number 84

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	5		2.0	4.4	6.70
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	6		1.6	4.8	6.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	4.2	6.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	10		4.0	7.0	7.40
	Baleability	0.8	5		3.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	8		1.6	
Separability		0.1	5		0.5		
Combustibility		0.5	4		2.0		
Potential Damage to Equipment		0.2	8		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	6		0.6	6.2	6.60
	Material Density	0.2	7		1.4		
	Compactibility	0.4	7		2.8		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	7		1.4	4.7	4.45
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For PVA WRAPPING

Material Number 85

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.8	8.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.8		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	3		1.2	8.0	8.90
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.8	8.7	8.45
	Separability	0.1	3		0.3		
	Combustibility	0.5	6		3.0		
	Potential Damage to Equipment	0.2	8		1.8		
	Air Pollution Potential	0.2		8	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.8			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.9	6.65
	Material Density	0.2	7		1.4		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	7		1.4	4.4	4.30
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For **PVAC WRAPPING**

Material Number 86

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	3		1.2	6.0	6.90
	Baleability	0.6	6		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.8	
Separability		0.1	3		0.3		
Combustibility		0.5	3		1.5		
Potential Damage to Equipment		0.2	8		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.7	6.55
	Material Density	0.2	3		1.2		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.2	4.2	4.20
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

**Numerical Process Evaluation Matrix
For PVC WRAPPING**

Material Number 67

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.6	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.6	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	3		1.2	6.0	6.90
	Baleability	0.6	2		4.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.6	
Separability		0.1	3		0.3		
Combustibility		0.5	4		2.0		
Potential Damage to Equipment		0.2	2		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	6.1	6.75
	Material Density	0.2	6		1.6		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	6		1.6	4.6	4.40
	Compactibility	0.3	6		1.6		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For PVC CONTAINER

Material Number 66

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	5		2.5	4.5	7.25
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	5		2.0	4.4	6.70
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	6		1.6	4.6	6.30
	Separability	0.2	5		1.0		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	4.2	6.00
	Separability	0.2	5		1.0		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	2		0.6	5.6	6.70
	Baleability	0.6	6		4.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	8		1.6	5.7	5.95
	Separability	0.1	5		0.5		
	Combustibility	0.5	4		2.0		
	Potential Damage to Equipment	0.2	8		1.6		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	8		0.8	6.4	6.90
	Material Density	0.2	6		1.6		
	Compactibility	0.4	7		2.8		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	8		1.6	4.9	4.55
	Compactibility	0.3	7		2.1		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.6			

Numerical Process Evaluation Matrix
For SARAN WRAPPING

Material Number 89

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	3.5	6.75
	Market for Commodity	0.5	4		2.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	3.6	6.30
	Technical Operating Restrictions	0.6	4		2.4		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	6.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	6.50
	Baleability	0.6	6		4.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	9		1.8	
Separability		0.1	3		0.3		
Combustibility		0.5	3		1.5		
Potential Damage to Equipment		0.2	8		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	6.3	6.85
	Material Density	0.2	9		1.8		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	9		1.8	4.8	4.50
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.6			

Numerical Process Evaluation Matrix
For LATEX CUSHIONING

Material Number 90

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	6.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	1.8	5.40
	Technical Operating Restrictions	0.4	1		0.8		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	8.20
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.30
	Separability	0.2	3		0.8		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	2		0.8	5.6	8.70
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.8	8.7	6.45
	Separability	0.1	3		0.3		
	Combustibility	0.5	6		3.0		
	Potential Damage to Equipment	0.2	8		1.6		
	Air Pollution Potential	0.2		8	1.2	8.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.8			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.5	8.45
	Material Density	0.2	5		1.0		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	5		1.0	4.0	4.10
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For RUBBERIZED HAIR

Material Number 91

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	2		1.0	1.5	5.75
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	2		0.8	1.4	5.20
	Technical Operating Restrictions	0.6	1		0.6		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	10		2.0	4.2	6.00
	Separability	0.2	2		0.4		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	1		0.2		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	3.8	5.80
	Separability	0.2	2		0.4		
	Biological Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	4		1.6	6.4	7.10
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	9		1.8	6.1	6.15
	Separability	0.1	2		0.2		
	Combustibility	0.5	5		2.5		
	Potential Damage to Equipment	0.8	8		1.6		
	Air Pollution Potential	0.2		6	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.9	6.85
	Material Density	0.2	7		1.4		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
Land Pollution Potential	0.2		5	1.0			
Resource Depletion Potential	0.4		8	2.4			
Sea Disposal	Material Density	0.2	5		1.0	4.0	4.10
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
Land Pollution Potential	0.2		7	1.4			
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For CANVASS, RUBBERIZED

Material Number 02

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	6		3.0	8.0	9.00
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	6		2.4	3.0	6.00
	Technical Operating Restrictions	0.6	1		0.6		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	6		1.2	3.6	5.70
	Separability	0.2	6		1.2		
	Chemical Degradability	0.4	2		0.8		
	Technical Operating Restrictions	0.2	2		0.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	6		1.2	3.6	5.70
	Separability	0.2	6		1.2		
	Biological Degradability	0.4	3		1.2		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	6		2.4	7.8	7.80
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	6		1.2	
Separability		0.1	6		0.6		
Combustibility		0.5	5		2.5		
Potential Damage to Equipment		0.3	8		1.6		
Air Pollution Potential		0.2		6	1.2	6.2	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	6		0.6	6.4	6.90
	Material Density	0.2	8		1.6		
	Compactibility	0.4	9		3.6		
	Biological Degradability	0.3	2		0.6		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	8		1.6	4.9	4.55
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	2		0.6		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For COTTON CUSHIONING

Material Number 93

Process	Characteristic	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.5	6.25
	Market for Commodity	0.5	2		1.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	4.6	6.90
	Technical Operating Restrictions	0.6	6		3.6		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	10		2.0	7.6	7.70
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0	7.6	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	10		2.0	6.4	7.10
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	6		3.2		
	Technical Operating Restrictions	0.2	3		0.6	7.6	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	2		0.8	6.2	7.00
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	10		2.0	9.3	7.85
	Separability	0.1	3		0.3		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	10		1.0	9.4	8.30
	Material Density	0.2	10		2.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	6		2.4	7.2	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	10		2.0	7.4	5.80
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	6		2.4		
	Regulatory Operational Restrictions	0.2	0		0.0	4.2	
	Air Pollution Potential	0.2		10	2.0		
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.6			

Numerical Process Evaluation Matrix
For COTTON RAG

Material Number 94

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	4.0	7.00
	Market for Commodity	0.5	5		2.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	4.8	6.90
	Technical Operating Restrictions	0.6	8		3.6		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	6.8	7.30
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	9		3.6		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Composting	Fragmentability	0.2	8		1.6	6.0	8.90
	Separability	0.2	3		0.8		
	Biological Degradability	0.4	8		3.2		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	2		0.8	6.2	7.00
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	8		1.8	8.9	7.85
	Separability	0.1	3		0.3		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.8			
Sanitary Landfill	Fragmentability	0.1	8		0.8	9.2	8.20
	Material Density	0.2	10		2.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	8		2.4		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	10		2.0	7.4	5.80
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	8		2.4		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For COTTON SACK

Material Number 95

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	8.5	8.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	4.8	6.90
	Technical Operating Restrictions	0.6	6		3.8		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.8	6.8	7.30
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	9		3.6		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	7		1.6	8.0	8.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	8		3.2		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	2		0.8	6.2	7.00
	Enteability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	8		1.6	8.9	7.65
	Separability	0.1	3		0.3		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	8		0.8	9.2	8.20
	Material Density	0.2	10		2.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	8		2.4		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	10		2.0	7.4	5.80
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	8		2.4		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		3	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For FELT CUSHIONING

Material Number 86

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.5	6.25
	Market for Commodity	0.5	2		1.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	4.8	6.90
	Technical Operating Restrictions	0.6	6		3.6		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	10		2.0	7.6	7.70
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	10		2.0	6.4	7.10
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	8		3.2		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	1		0.4	5.8	6.80
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	10		2.0	9.3	7.85
	Separability	0.1	3		0.3		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		4	1.6		
Sanitary Landfill	Fragmentability	0.1	10		1.0	9.4	8.30
	Material Density	0.2	10		2.0		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	8		2.4		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	10		2.0	7.4	5.80
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	8		2.4		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

**Numerical Process Evaluation Matrix
For BURLAP SACK**

Material Number 97

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	6.5	8.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	4.8	6.90
	Technical Operating Restrictions	0.6	6		3.6		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	8		1.6	6.8	7.30
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	9		3.6		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	6.0	6.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	8		3.2		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	2		0.8	6.2	7.00
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	8		1.6	8.9	7.65
	Separability	0.1	3		0.3		
	Combustibility	0.5	10		5.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	8		0.8	8.8	6.00
	Material Density	0.2	8		1.6		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	8		2.4		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		9	1.8		
Land Pollution Potential	0.2		5	1.0			
Resource Depletion Potential	0.4		8	2.4			
Sea Disposal	Material Density	0.2	8		1.6	7.0	5.60
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	8		2.4		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For POLYOLEFIN/ALUMINUM/SCRIM

Material Number 98

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	2.0	8.00
	Market for Commodity	0.5	1		0.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	1.8	5.40
	Technical Operating Restrictions	0.6	1		0.6		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	9		1.8	4.6	8.20
	Separability	0.2	3		0.8		
	Chemical Degradability	0.4	4		1.6		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	9		1.8	4.0	5.90
	Separability	0.2	3		0.8		
	Biological Degradability	0.4	4		1.8		
	Technical Operating Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	1		0.4	5.2	6.50
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Incineration	Fragmentability	0.2	9		1.8	5.2	5.70
	Separability	0.1	3		0.3		
	Combustibility	0.5	3		1.5		
	Potential Damage to Equipment	0.2	8		1.6		
	Air Pollution Potential	0.2		8	1.2	6.2	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	9		0.9	5.0	8.85
	Material Density	0.2	7		1.4		
	Compactibility	0.4	8		2.4		
	Biological Degradability	0.3	4		1.2		
	Air Pollution Potential	0.2		10	2.0	7.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	7		1.4	4.4	4.30
	Compactibility	0.3	8		1.8		
	Biological Degradability	0.3	4		1.2		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For COOPERAGE KEG

Material Number 99

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	8		4.0	9.0	9.50
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	8		3.2	4.4	8.70
	Technical Operating Restrictions	0.6	2		1.2		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	5		1.0	7.8	7.70
	Separability	0.2	8		1.6		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	5		1.0	6.0	8.90
	Separability	0.2	8		1.6		
	Biological Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		8	2.4			
Baling	Compactibility	0.4	4		1.6	5.8	8.80
	Baleability	0.6	7		4.2		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	5		1.0	
Separability		0.1	8		0.8		
Combustibility		0.5	8		4.0		
Potential Damage to Equipment		0.2	10		2.0		
Air Pollution Potential		0.2		7	1.4	8.4	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	5		0.5	5.0	8.10
	Material Density	0.2	2		0.4		
	Compactibility	0.4	5		2.0		
	Biological Degradability	0.3	7		2.1		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	2		0.4	4.0	4.10
	Compactibility	0.3	5		1.5		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For EXCELSIOR DUNNAGE

Material Number 100

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	3		1.5	3.0	6.50
	Market for Commodity	0.5	3		1.5		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	3		1.2	2.4	5.70
	Technical Operating Restrictions	0.6	2		1.2		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	10		2.0	7.6	7.70
	Separability	0.2	3		0.6		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	10		2.0	6.0	6.90
	Separability	0.2	3		0.6		
	Biological Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	3		1.2	6.6	7.20
	Baleability	0.6	9		5.4		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	10		2.0	
Separability		0.1	3		0.3		
Combustibility		0.5	9		4.5		
Potential Damage to Equipment		0.2	10		2.0		
Air Pollution Potential		0.2		7	1.4	6.4	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	10		1.0	7.5	7.35
	Material Density	0.2	2		0.4		
	Compactibility	0.4	10		4.0		
	Biological Degradability	0.3	7		2.1		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	2		0.4	5.5	4.85
	Compactibility	0.3	10		3.0		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

**Numerical Process Evaluation Matrix
For PLYWOOD CRATE**

Material Number 101

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	8.5	9.30
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycling	Separability	0.4	7		2.8	4.0	6.50
	Technical Operating Restrictions	0.6	2		1.2		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	6		1.2	7.6	7.70
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	6		1.2	6.0	6.90
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	4		1.6	6.4	7.10
	Baleability	0.6	8		4.8		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	6		1.2	
Separability		0.1	7		0.7		
Combustibility		0.5	8		4.0		
Potential Damage to Equipment		0.2	10		2.0		
Air Pollution Potential		0.2		7	1.4	6.4	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	6		0.6	6.7	6.95
	Material Density	0.2	2		0.4		
	Compactibility	0.4	9		3.6		
	Biological Degradability	0.3	7		2.1		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	2		0.4	5.2	4.70
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For VENEER CRATE

Material Number 102

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	3.5	7		3.5	8.0	9.00
	Market for Commodity	0.5	9		4.5		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	7		2.6	4.0	6.50
	Technical Operating Restrictions	0.6	2		1.2		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	6		1.6	8.0	7.90
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	8		1.6	6.6	7.30
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	6		3.2		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.6	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	4		1.6	5.4	6.60
	Baleability	0.6	6		4.8		
	Air Pollution Potential	0.2		10	2.0	7.9	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	6		1.6	
Separability		0.1	7		0.7		
Combustibility		0.5	8		4.0		
Potential Damage to Equipment		0.2	10		2.0		
Air Pollution Potential		0.2		7	1.4	6.4	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	6		0.6	7.2	7.20
	Material Density	0.2	2		0.4		
	Compactibility	0.4	9		3.6		
	Biological Degradability	0.3	6		2.4		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	2		0.4	5.2	4.70
	Compactibility	0.3	9		2.7		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.6			

Numerical Process Evaluation Matrix
For WOOD PALLET

Material Number 103

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	6.5	9.25
	Market for Commodity	0.5	10		5.0		
	Resource Depletion Potential	1.0		10	10.0	10.0	
Recycle	Separability	0.4	7		2.8	4.0	8.50
	Technical Operating Restrictions	0.8	2		1.2		
	Resource Depletion Potential	1.0		9	9.0	9.0	
Pyrolysis	Fragmentability	0.2	5		1.0	7.4	7.60
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	10		4.0		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	5		1.0	5.8	8.70
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	4		1.6	5.8	6.80
	Baleability	0.6	7		4.2		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
	Resource Depletion Potential	0.4		6	2.4		
	Incineration	Fragmentability	0.2	5		1.0	
Separability		0.1	7		0.7		
Combustibility		0.5	8		4.0		
Potential Damage to Equipment		0.2	10		2.0		
Air Pollution Potential		0.2		7	1.4	6.4	
Water Pollution Potential		0.2		10	2.0		
Land Pollution Potential		0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	5		0.5	5.2	6.20
	Material Density	0.2	3		0.6		
	Compactibility	0.4	5		2.0		
	Biological Degradability	0.3	7		2.1		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		9	1.6		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	3		0.6	4.2	4.20
	Compactibility	0.3	5		1.5		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.8			

Numerical Process Evaluation Matrix
For WIREBOUNE WOOD CRATE

Material Number 104

Process	Characteristics	Relative Importance	Determined				Total Disposal Rating
			Operational Rating	Environmental Rating	Relative Rating	Sub-Total	
Direct Reuse	Separability	0.5	7		3.5	6.0	9.00
	Market for Commodity	0.5	9		4.5		
	Resource Depletion Potential	1.0		10	10.0		
Recycle	Separability	0.4	7		2.8	4.0	6.50
	Technical Operating Restrictions	0.6	2		1.2		
	Resource Depletion Potential	1.0		9	9.0		
Pyrolysis	Fragmentability	0.2	2		0.4	6.4	7.10
	Separability	0.2	7		1.4		
	Chemical Degradability	0.4	9		3.6		
	Technical Operating Restrictions	0.2	5		1.0		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Composting	Fragmentability	0.2	2		0.4	5.2	5.50
	Separability	0.2	7		1.4		
	Biological Degradability	0.4	7		2.8		
	Technical Operating Restrictions	0.2	3		0.6		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Baling	Compactibility	0.4	5		2.0	6.2	7.00
	Baleability	0.6	7		4.2		
	Air Pollution Potential	0.2		10	2.0	7.8	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		6	2.4			
Incineration	Fragmentability	0.2	2		0.4	7.1	6.75
	Separability	0.1	7		0.7		
	Combustibility	0.5	6		4.0		
	Potential Damage to Equipment	0.2	10		2.0		
	Air Pollution Potential	0.2		7	1.4	6.4	
	Water Pollution Potential	0.2		10	2.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		4	1.6			
Sanitary Landfill	Fragmentability	0.1	2		0.2	5.3	6.25
	Material Density	0.2	3		0.6		
	Compactibility	0.4	6		2.4		
	Biological Degradability	0.3	7		2.1		
	Air Pollution Potential	0.2		10	2.0	7.2	
	Water Pollution Potential	0.2		9	1.8		
	Land Pollution Potential	0.2		5	1.0		
Resource Depletion Potential	0.4		6	2.4			
Sea Disposal	Material Density	0.2	3		0.6	4.5	4.35
	Compactibility	0.3	6		1.8		
	Biological Degradability	0.3	7		2.1		
	Regulatory Operational Restrictions	0.2	0		0.0		
	Air Pollution Potential	0.2		10	2.0	4.2	
	Water Pollution Potential	0.2		0	0.0		
	Land Pollution Potential	0.2		7	1.4		
Resource Depletion Potential	0.4		2	0.6			

APPENDIX D

ECONOMIC ANALYSIS OF WASTE DISPOSAL PROCESSES

1. COST AND REVENUE DATA

As mentioned in the Fact Sheet format section of this report, Chapter II, Section 4, the economics of waste disposal processes are a function of many variables, such as the tons of particular wastes generated per day and specific locations of the Army installations in reference to other available reclamation and disposal sites. Therefore, to make the Summary Fact Sheets as complete as possible, and prior to selecting a waste disposal process, it will be necessary for the cognizant officer at each Army installation to assess the economics associated with each alternative waste disposal process.

As an aid in determining the relevant costs and revenues of the alternative processes, a Cost Revenue Data Sheet, Table D-1, has been developed in conjunction with specific instructions for completing the table. An example of the Completed Cost Revenue Data Sheet, Table D-2, is provided. In addition, a Summary Cost Data Sheet for solid waste and liquid waste, Tables D-3 and D-4, respectively, and specific instructions for each, have been developed and are presented on the following pages.

(1) Cost/Revenue Data Sheet

The objective of the Cost/Revenue Data Sheet is to determine for each process, the daily costs and revenues involved in the disposal of solid or chemical wastes. The cognizant officer at each U.S. Army base will be tasked with the determination of (1) relevant costs and revenue figures and (2) the disposal cost per ton for each process.

APPENDIX D(2)

U.S. Army Base Name: _____ U.S. Army Base Location: _____	Material Category: _____ Process: _____ Date: _____	Capacity Design _____ tons/day Actual _____ tons/day Throughput _____ tons/day	Interest Rate (%) _____ % _____ yr _____ yr _____ yr	Installation Date _____ No. of Operating Days _____ /yr No. of Operating Shifts _____ /yr
U.S. Army Base Name: _____ U.S. Army Base Location: _____	Economic Life Land _____ Plant _____ Equipment _____	Direct Costs Per Shift No. of Employees _____ Daily Wages _____ No. of Shifts _____ Subtotal _____ _____ _____ _____ _____ Daily Operating Labor Cost: \$ _____/day Maintenance Labor No. of Employees _____ Daily Wages _____ No. of Shifts _____ Subtotal _____ _____ _____ _____ _____ Daily Maintenance Labor Cost: \$ _____/day Ultimate Disposal Cost of Residue: \$ _____/day Daily Direct Costs: \$ _____/day	Indirect Costs Fringe Benefits Benefit Rate _____ Total O. & M. Labor Wages _____ _____ x _____ Utilities _____ Materials and Supplies _____ Overhead and Administrative Costs _____ Capital Amortization Annual Amortization Factor _____ No. of Operating Days/Year _____ Land _____ Plant _____ Equipment _____ Daily Capital Amortization \$ _____/day Daily Indirect Costs: \$ _____/day	Revenue Sale of By-Products: \$ _____/day Sale of Salvage: \$ _____/day External Contractual Services Revenue: \$ _____/day Daily Revenue: \$ _____/day
Disposal Costs	Disposal Cost (dollars per day) Daily Direct Costs: \$ _____/day + Daily Indirect Costs: \$ _____/day Daily Costs: \$ _____/day Daily Revenue: \$ _____/day Daily Disposal Costs: \$ _____/day Actual Throughput (in tons): _____/day Daily Disposal Costs per Ton: \$ _____/ton-day			

TABLE D-1. COST/REVENUE DATA SHEET

COST/REVENUE DATA SHEET

U. S. Army Base Name: <u>Fort Hometown</u> U. S. Army Base Location: <u>Hometown, Iowa</u>	Material Category: <u>Papers</u> Process: <u>Incineration</u> Date: <u>12/1/73</u>	Installation Date: <u>1/1/73</u> No. of Operating Days: <u>280</u> /yr No. of Operating Shifts: <u>2</u> /yr	Capacity Design: <u>120</u> tons/day Actual Throughput: <u>100</u> tons/day	Interest Rate (%): <u>4</u> Economic Life Land: <u>35</u> yr Plant: <u>35</u> yr Equipment: <u>15</u> yr																																																								
Capital Costs Land: \$ <u>15,000</u> Buildings: \$ <u>550,000</u> Equipment: \$ <u>125,000</u> Total Capital Costs: \$ <u>690,000</u>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="3">Direct Costs</th> <th colspan="3">Indirect Costs</th> </tr> <tr> <td colspan="3"> Operating Labor <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>No. of Employees</th> <th>Daily Wages</th> <th>No. of Shifts</th> <th>Subtotal</th> </tr> <tr> <td>2</td> <td>20</td> <td>2</td> <td>80</td> </tr> <tr> <td>2</td> <td>25</td> <td>2</td> <td>100</td> </tr> <tr> <td>1</td> <td>30</td> <td>2</td> <td>60</td> </tr> <tr> <td colspan="3">Daily Operating Labor Cost:</td> <td>\$ <u>240</u> /day</td> </tr> </table> </td> <td colspan="3"> Fringe Benefits Total O. & M. Labor Wages: \$ <u>300</u> Benefit Rate: <u>.25</u> x <u>300</u> = \$ <u>75</u> /day Utilities: \$ <u>130</u> /day Materials and Supplies: \$ <u>20</u> /day Overhead and Administrative Costs: \$ <u>70</u> /day </td> </tr> <tr> <td colspan="3"> Maintenance Labor <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>No. of Employees</th> <th>Daily Wages</th> <th>No. of Shifts</th> <th>Subtotal</th> </tr> <tr> <td>1</td> <td>30</td> <td>2</td> <td>60</td> </tr> <tr> <td colspan="3">Daily Maintenance Labor Cost:</td> <td>\$ <u>60</u> /day</td> </tr> </table> </td> <td colspan="3"> Capital Amortization Annual Amortization Factor: <u>280</u> /yr Land: $15,000 \times .0534 = 3.08$ Plant: $550,000 \times .0534 = 113.34$ Equipment: $125,000 \times .0899 = 43.24$ Daily Capital Amortization: \$ <u>159.67</u> /day </td> </tr> <tr> <td colspan="3"> Ultimate Disposal Cost of Residue: \$ <u>75</u> /day Daily Direct Costs: \$ <u>375</u> /day </td> <td colspan="3"> Daily Indirect Costs: \$ <u>454.67</u> /day Daily Revenue: \$ <u>162</u> /day </td> </tr> </table>				Direct Costs			Indirect Costs			Operating Labor <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>No. of Employees</th> <th>Daily Wages</th> <th>No. of Shifts</th> <th>Subtotal</th> </tr> <tr> <td>2</td> <td>20</td> <td>2</td> <td>80</td> </tr> <tr> <td>2</td> <td>25</td> <td>2</td> <td>100</td> </tr> <tr> <td>1</td> <td>30</td> <td>2</td> <td>60</td> </tr> <tr> <td colspan="3">Daily Operating Labor Cost:</td> <td>\$ <u>240</u> /day</td> </tr> </table>			No. of Employees	Daily Wages	No. of Shifts	Subtotal	2	20	2	80	2	25	2	100	1	30	2	60	Daily Operating Labor Cost:			\$ <u>240</u> /day	Fringe Benefits Total O. & M. Labor Wages: \$ <u>300</u> Benefit Rate: <u>.25</u> x <u>300</u> = \$ <u>75</u> /day Utilities: \$ <u>130</u> /day Materials and Supplies: \$ <u>20</u> /day Overhead and Administrative Costs: \$ <u>70</u> /day			Maintenance Labor <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>No. of Employees</th> <th>Daily Wages</th> <th>No. of Shifts</th> <th>Subtotal</th> </tr> <tr> <td>1</td> <td>30</td> <td>2</td> <td>60</td> </tr> <tr> <td colspan="3">Daily Maintenance Labor Cost:</td> <td>\$ <u>60</u> /day</td> </tr> </table>			No. of Employees	Daily Wages	No. of Shifts	Subtotal	1	30	2	60	Daily Maintenance Labor Cost:			\$ <u>60</u> /day	Capital Amortization Annual Amortization Factor: <u>280</u> /yr Land: $15,000 \times .0534 = 3.08$ Plant: $550,000 \times .0534 = 113.34$ Equipment: $125,000 \times .0899 = 43.24$ Daily Capital Amortization: \$ <u>159.67</u> /day			Ultimate Disposal Cost of Residue: \$ <u>75</u> /day Daily Direct Costs: \$ <u>375</u> /day			Daily Indirect Costs: \$ <u>454.67</u> /day Daily Revenue: \$ <u>162</u> /day		
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TABLE D-2. SAMPLE OF COMPLETED COST/REVENUE DATA SHEET

APPENDIX D(4)

For entering data on the Cost/Revenue Data Sheet, the following instructions apply.

General

- U.S. Army Base Name:** Enter the name of your particular Army base.
- U.S. Army Base Location:** Enter the location of your particular Army base.
- Material Category:** Enter the name of the material category as it is stated on the Fact Sheet.
- Process:** Enter the name of the disposal process that is under consideration.
- Date:** Enter the date on which this data sheet is completed.

Process Data

- Capital Costs:** Enter the one-time investment costs for the land, buildings, and associated equipment including any initial engineering, training, or legal costs. The total capital cost is the sum of these investments.
- Economic Life:** Enter the economic or useful life in years for each capital cost investment. The data will be used for determining the amortization factor. (See Note on page D-7).
- Interest Rate:** Enter, in terms of percent, the present interest rate or cost of money (e. g., 4%, 6%, 10%). The interest rate will be used for determining the amortization factor.

APPENDIX D(5)

Capacity: Enter the design or rated capacity of the disposal process in tons per day. Enter the actual or estimated throughput of the disposal process in tons per day.

Installation Date: If the disposal process is presently operating, enter the date of installation. If the disposal process is not presently operating, enter the words, "Not Applicable."

Number of Operating Days: Enter the number of days the process is or would operate per year.

Number of Operating Shifts: Enter the number of shifts which is or would be operated per year.

Cost/Revenue Data

Direct Costs

Operating Labor: Enter the number of employees per shift and their associated daily wages for each labor grade (e. g., \$30.00 per day). Multiply the number of employees per shift by their associated daily wages and by the number of shifts. Enter this product under the subtotal heading. Add the values under the subtotal heading and enter this sum in the daily operating labor cost space.

APPENDIX D(6)

Maintenance Labor: Enter the number of employees per shift and their associated daily wages for each labor grade (e. g. , \$30. 00 per day). Multiply the number of employees per shift by their associated wages and by the number of shifts. Enter this product under the subtotal heading. Add the values under the subtotal heading, and enter this sum in the daily maintenance labor cost space.

Ultimate Disposal Cost of Residue: Enter the daily costs involved in collecting, transporting, and disposing of the residue from the process. If the ultimate disposal is sanitary landfill, the cost of disposing may be obtained from the Cost/Revenue Data Sheet for sanitary landfill.

Daily Direct Costs: Enter the sum of the total daily operating and maintenance labor costs, and the ultimate disposal cost of the residue.

Indirect Costs

Fringe Benefits: Enter the existing fringe benefit rate in decimal form (e. g. , . 25) in the provided space and the sum of the daily operating and maintenance (O&M) costs in the labor wages space. Multiply the benefit rates by the labor wages. Enter the product in the provided space.

Utilities: Enter the cost of utilities per day.

APPENDIX D(7)

- Materials and Supplies:** Enter the cost of materials and supplies for the operation and maintenance of the process on a per-day basis.
- Overhead and Administrative Cost:** Enter the daily overhead (not included in other indirect costs) and administration costs.
- Capital Amortization:** Enter the capital costs for each investment (see process data section). Enter the annual amortization factor selected from standard interest rate tables on the basis of the economic life and the interest rate. Multiply the capital cost by its respective amortization factor. Since this value is an annual amount, divide this amount by the number of operating days per year. Add the capital amortization for the land, plant, and equipment. Enter the sum of the daily capital amortization in the space provided.
- Daily Indirect Costs:** Enter the sum of the daily costs of fringe benefits, utilities, materials and supplies, overhead and administration, and capital amortization.

Revenue

- Sale of By-Products:** Enter the daily amount of dollars received from the sale of by-products.
- Sale of Salvage:** Enter the daily amount of dollars received from the sale of salvageable materials.

APPENDIX D(8)

External Contractual Services/Revenue: Enter the daily amount of dollars received for external contractual services rendered.

Daily Revenue: Add the daily sales of by-products, salvage, and the external contractual services. Enter this sum in the space provided.

Disposal Costs

Daily Direct Costs: Enter the daily direct costs from above.

Daily Indirect Costs: Enter the daily indirect costs from above.

Daily Costs: Enter the sum of the daily direct and indirect costs.

Daily Revenue: Enter the daily revenue dollars from above.

Daily Disposal Cost: Subtract the daily revenue from the daily costs. Enter this value in the space provided.

Actual Throughput: Enter the actual daily throughput in tons per day from the process data section.

Daily Disposal Cost per Ton: Divide the daily disposal cost by the actual throughput. Enter the result in the space provided.

Note: For purposes of computing depreciation, land is usually excluded. However, in the computation of the amortization of the investment, the economic and useful life of the land is usually taken to be the same as the plant except for sanitary landfill. In such a case, the following calculations apply:

APPENDIX D(9)

$$E = \frac{FR}{D} \left(1 + \frac{P}{100} \right) \quad (D. 1)$$

- where E = estimation of necessary landfill capacity in cubic yards per year
- F = a factor incorporating cover material, averaging 17 percent for deep fills and 33 percent for shallow fills, with corresponding F values of 1.17 and 1.33
- R = amount of wastes in pounds per year
- D = average density of wastes in pounds per cubic yard
- P = percent reduction of waste volume in the landfill (0 to 90 percent).

$$Y = \frac{A}{E} \quad (D. 2)$$

- where Y = number of useful years left in landfill site
- A = present availability of the landfill site in cubic yards
- E = estimation of necessary landfill capacity in cubic yards per year.

Example:

A hypothetical Army base, utilizing a deep fill sanitary landfill, generates 10,000,000 lb of wastes per year. The average density of the wastes is 300 lb/cu ft, and the estimated volume reduction is 17 percent. The present availability of land is 323,700 cu yd.

Solution:

$$F = 1.17$$

$$R = 10,000,000 \text{ lb/year}$$

$$D = 300 \text{ lb/cu ft}$$

$$P = 17 \text{ percent}$$

$$A = 323,700 \text{ cu yd}$$

Equation (D. 1):

$$E = \frac{FR}{D} \left(1 - \frac{P}{100} \right)$$

$$E = \left[\frac{(1.17)(10,000,000)}{300} \right] \times \left[1 - \frac{17}{100} \right]$$

$$E = (39,000) \times (.83)$$

$$E = 32,370 \text{ cu yd/year}$$

Equation (D. 2):

$$Y = \frac{A}{E}$$

$$Y = \frac{323,700}{32,370} = 10 \text{ years}$$

APPENDIX D(11)

(2) Summary Cost Data Sheet

The objective of the Summary Cost Data Sheets (Tables D-3, D-4) is to determine for each disposal process (1) the daily cost per ton and (2) the resultant economic ranking. The cognizant officer at each U. S. Army base will be tasked with the determination of the economic ranking of each disposal process.

For entering data on the Summary Cost Data Sheet, the following instructions apply.

- U. S. Army Base Name: Enter the name of your particular Army base.
- Material Category: Enter the material category as it is stated on the Fact Sheet
- Date: Enter the date on which this data sheet is completed.
- Daily Disposal Cost per Ton: Enter the daily disposal cost per ton for each enumerated process from the Cost/Revenue Data Sheet.
- Daily Collection Cost per Ton: Enter the daily collection cost per ton from the Cost/Revenue Data Sheet for each process. Unless unusual circumstances arise, the cost will be the same for each enumerated process.
- Daily Cost per Ton: Add the respective daily disposal cost per ton and the daily collection cost per ton. Enter the respective sum for each enumerated process in the space provided.

TABLE D-3
SUMMARY COST DATA SHEET — SOLID WASTE

U. S. Army Base Name: _____ Material Category: _____ Date: _____

Process	Reuse	Recycle	Compost	Pyrolysis	Compaction	Shredding	Incineration	Sanitary Landfill	Sea Disposal
Daily Disposal Cost per ton									
Daily Collection Cost per ton									
Daily Cost per ton									
Economic Ranking*									

* To be entered on the Solid Waste Summary Fact Sheet.

Note: It is not technically feasible to dispose of some materials by a given process. In this instance, the notation N.A. for "not applicable" should be entered. (For example, metals being disposed of by pyrolysis.)

TABLE D-4
 SUMMARY COST DATA SHEET -- CHEMICAL WASTE

U.S. Army Base Name: _____ Material Category: _____ Date: _____

Process	Recovery and Reuse	Sanitary Landfill	Incineration	Sea Disposal	Microbial Treatment
Daily Disposal Cost per ton					
Daily Collection Cost per ton					
Daily Cost per ton					
Economic Ranking*					

*To be entered on the Liquid Waste Summary Fact Sheets.

Economic Ranking:

Review the computed daily cost per ton figures. Rank each process with the lowest daily cost per ton receiving a value of 1, the next lowest a value of 2 and so on until all processes are ranked. Enter the economic rankings on the Solid Waste Summary Fact Sheet or the Liquid Waste Summary Fact Sheet as applicable.

APPENDIX D(15)

2. COST ESTIMATES

As an aid in accomplishing the economic analysis, cost estimates of different waste disposal processes have been extracted from Volume II of the Handbook of Environmental Control, and are presented on the following pages.

The cost estimates are grouped in the following manner:

- . Common Waste Disposal Methods
- . Refuse Collection
- . Size Reduction Equipment
- . Pyrolysis
- . Composting
- . Incineration
- . Sanitary Landfill
- . Liquid Waste Disposal
- . Marine Disposal.

COSTS OF COMMON WASTE DISPOSAL METHODS

Method	Description	Direct cost		Status
		A	B	
Mechanical compaction	Compression of refuse to reduce its volume by a factor of 3-15		0.05-0.25	Used extensively to reduce collection and hauling costs
Burning and dumping in the open	Dumping and burning of refuse in the city dump	Minimal		Accounts for 45 per cent of waste disposal, but use is decreasing
Incineration	Burning of refuse in a furnace under controlled conditions	3,000-10,000 ¹ 3,500-7,000 ²	3-8 ¹ 3.5-5 ²	Fairly well accepted in large communities
Pyrolysis	Chemical conversion of organic fraction to useful products	5,000-10,000	3-10	Introduction contingent on salability of products
Composting	Conversion of organic fraction to harmless products by microbial activity	4,000-10,000 ¹ 1,500-10,000 ²	3-10 ¹ 2-7 ²	Introduction contingent on salability of products
Sanitary landfill	Burial of refuse or processed residue under 1-2 feet of soil	1,000-2,000 ^{1,2}	1-2 ¹ 1.25-2.25	Accounts for 45 per cent of waste disposal, especially in communities with access to land expanses
Mine fill	Hauling of refuse to and burial in abandoned mines		4-6	Being introduced in large communities with access to abandoned mines
Ocean dumping	Dumping of refuse from barges in open ocean			Largely discontinued except for a few coastal cities
Hog feeding	Feeding of garbage to hogs	Not relevant		Largely discontinued as a consequence of sterilization requirement
Waste disposer	Grinding of garbage in sink unit and disposal in sewers	Not relevant		Early popular in communities with sewer systems
Salvage	Processing and reuse of waste	Highly variable		Ancient, with a growing impact

Note: A - capital investment (excluding cost of land), in \$ per ton of rated daily capacity.

B - operating cost, in \$ per ton of unprocessed refuse.

REFERENCES

1. A. Hershatt, "Solid Waste Treatment," *Science and Technology*, 90:34, June 1969.
2. A. Spilhaus, *Waste Management and Control*, National Academy of Sciences, National Research Council, 1966.

APPENDIX D(17)

UNIT COSTS OF COMMON WASTE DISPOSAL METHODS

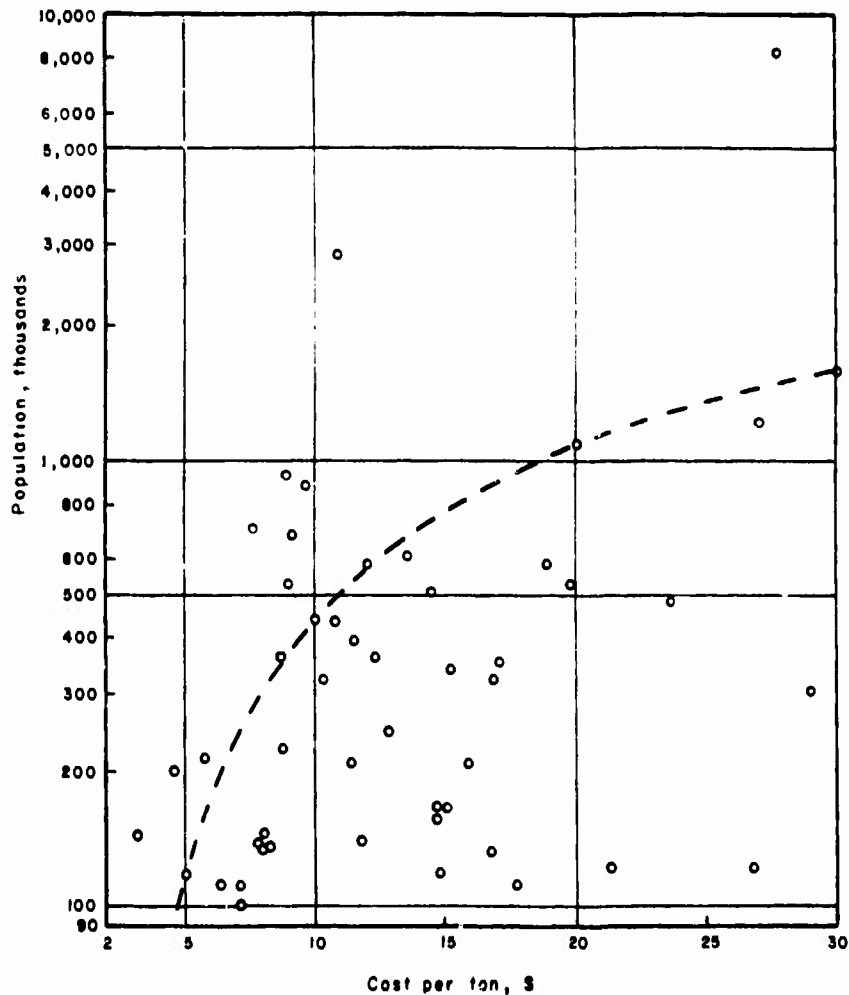
Candidate concept	Collections per week	Cost/ton, 1967
Processing		
Central municipal incineration (standard)		\$ 7.00
Central municipal incineration (with air pollution control)		9.00
Sludge incineration		24.00
Industrial incineration		16.00
Open burning		negligible
Composting (mechanical)		10.00
Composting (windrow)		5.00
Sewage treatment		3.00
Single residence refuse grinders		28.00
Central refuse grinders		3.00
Central compression and baling		4.50
Disposal		
Sanitary landfilling		1.20
Open dumping		0.50
Land spreading		1.00
Animal feeding		0.17

Source: *A Systems Study of Solid Waste Management in the Fresno Area*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1969

COST OF REFUSE COLLECTION

The cost of refuse collection varies from \$5 to \$25 per ton, depending on route structure, number of required stops, and location of containers. Since this item represents 70 to 80 per cent of the total refuse-handling budget, simplification of collection procedure can yield considerable savings. Conversely, a cumbersome collection problem can lead to dramatic consequences. For example, the average cost of disposing of an item discarded along the highway has been estimated at 32 cents!

Source: A. Hershaft, "Solid Waste Treatment," *Sci. Technol.*, 90:36, June 1969.

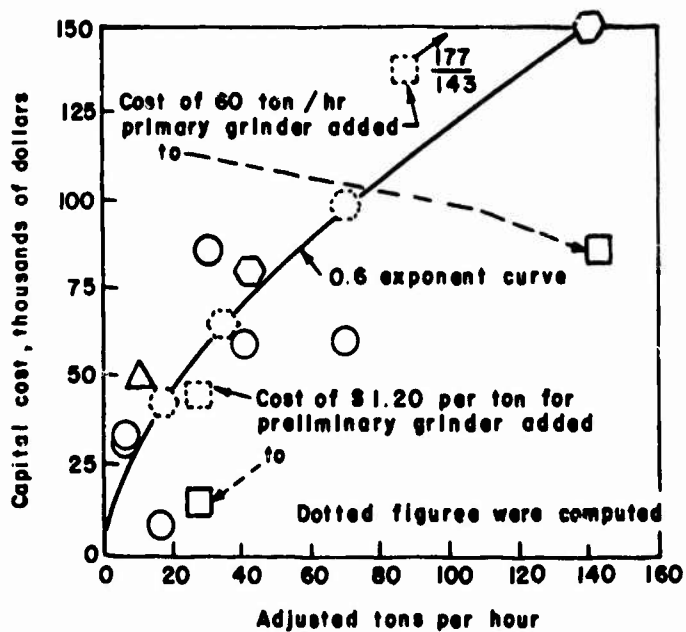


3.2 48 Cost of Refuse Collection in 46 Cities.

Source: *A Study of Solid Waste Collection Systems Comparing 1-Man with Multi-Man Crews*
 U.S. Department of Health, Education, and Welfare, Public Health Service, 1969, p. 62.

APPENDIX D(19)

COST OF SIZE REDUCTION EQUIPMENT



3.2-148 Capital Cost of Size Reduction Equipment.

Source: R.F. Testin and N. L. Drobny, "Processing and Recovery of Municipal Solid Waste," *J. Sanit. Eng. Div., Proc. Am. Soc. Civ. Eng.*, June 1970, p. 706.

COST OF SIZE REDUCTION EQUIPMENT

Cost	Grate Size		
	55 mm - 2 in.	100 mm - 4 in.	150 mm - 6 in.
Labor	\$2.42	\$2.04	\$1.50
Depreciation	3.17	2.86	2.04
Hammer wear	0.26	0.23	0.16
Utility	0.76	0.56	0.58

Source: *Solid Waste Reduction Salvage Plant*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1968, p. 14.

COST ESTIMATE FOR PYROLYSIS

Plant cost	\$6,000,000
Fixed charges at 0.1030 ^a	824,000
Labor, 12 men at \$7,000	84,000
4 men at \$9,000	36,000
Maintenance (2% retort investment) ^b	190,000
Disposal 149T residual refuse/day at \$4.50/ton	245,000
Total cost	1,065,000
Revenue at \$1,521/day	550,000
Net annual cost	515,000
Disposal cost/ton	\$5.66

^a Original paper assumed 20-year plant life at 4 per cent interest. These figures were changed to 15 years and 6 per cent, respectively.

^b Data obtained on hammermill operation indicated maintenance costs of the order of \$1.00/ton processed could be expected. Approximately \$90,000 was, therefore, added to Porteous' maintenance figure.

Source: A. Porteous, "Toward a Profitable Means of Waste Disposal," presented at Winter Annual Meeting and Energy Systems Exposition, Am. Soc. Mech. Eng., November 1967.

REFERENCES

1. G.R. Fryling, *Combustion Engineering*, Combustion Engineering, Inc., 1966, p. 3.
2. W.G. Nelson, "Wood Utilization by the Badger-Stafford Process," *Ind Eng Chem.*, 22(4):312, April 1930.

3.2 410 REVENUE ESTIMATE FOR PYROLYSIS

Item	Yield, per cent	Ton/day	Price	Revenue, per diem
Acetone	0.3	0.45	6.5¢/lb	\$57
Acetic acid	3.1	4.65	9¢/lb	835
Tars	7	10.5	1¢/lb \$7/ton	360
Oils	5	7.5		
Charcoal	25	37.5		
				\$1,512

Source: A. Porteous, "Toward a Profitable Means of Waste Disposal," presented at Winter Annual Meeting and Energy Systems Exposition, Am. Soc. Mech. Eng., November 1967.

APPENDIX D(21)

TYPICAL LOW PRESSURE PYROLYSIS SYSTEMS

System	U.S. Bureau of Mines, Pittsburgh, Pa. ^{1,2} (Domestic refuse and industrial waste)	Monsanto Enviro-Chem ³	Pan American Resources ⁴	University of California ⁵
Reactor type	3.8 ft ³ /batch, electrically heated	Rotary kiln, 35 ton/day pilot plant	Rotary kiln, 45 ton/day industrial waste treatment plant	Two-stage pilot plant I Fluidized bed II
Temperature, °C	500-900		500-800	I 500-700 II 850-1,200
Products, per ton of refuse				
Gas	7,400-18,000 ft ³ 332-570 Btu/ft ³ 3.7-9.2 million Btu/ton refuse			
Oil	0.6-3.7 gal			
Tar	0.5-5.6 gal 10,000-18,000 Btu/lb			
Char	150-830 lb, 2,200-8,700 Btu/lb		600-700 lb; 12,000 Btu/lb	
Aqueous liquor	20-130 gal			
Other	16-32 lb ammonium sulfate			
Cost	\$2-6 per ton net cost (includes credit for products) ¹	\$7.50-8.50 per ton (no reclamation of products)	\$3.50-4.00 per ton	

25 ft³ of gas per foot of waste (gas figure includes uncondensed oils, tars plus aqueous liquor), 400-500 Btu/ft³

Applicable to treatment of paper mill black liquor to recover inorganic pulping chemicals

REFERENCES

1. "Reuse and Recycle of Wastes," Proc. Northeastern Regional Antipollution Conference, University of Rhode Island, 1971.
2. W.S. Sanner *et al.*, *Conversion of Municipal and Industrial Refuse Into Useful Materials by Pyrolysis*, U.S. Department of the Interior, Bureau of Mines, 1970.
3. "Pyrolysis of Refuse Gains Ground," *Environ. Sci. Technol.*, 5:310, 1971.
4. C.G. Golueke, *Solid Waste Management*, University of California, 1970.
5. C.G. Golueke and P.H. McGahey, *Comprehensive Studies of Solid Waste Management*, University of California, 1970.

ACTUAL COST OF OPERATIONS FOR THE USPHS-TVA COMPOSTING PLANT, 1968^a

7,164 Tons Processed in 210 Days

Activities	Operations						Maintenance					Grand total		
	Salaries and benefits	Super-vision	Electric power	Utilities (excluding electricity)	Truck use	Supplies and materials	Miscellaneous	Total	Salaries and benefits	Super-vision	Supplies and materials		Repairs	Miscellaneous
Receiving ^a	\$6,905	\$1,181	\$59			\$28	\$8,173	\$974	\$250	\$661	\$480	\$2,365	\$10,538	
Picking and sorting	8,116	1,388	17			319	9,840	305	78	30		413	10,253	
Disposal of rejects ^b	7,351	1,258			\$3,524	38	12,171	620	159	56		835	13,006	
Grinding														
Rasper	3,211	549	770				4,530	2,134	548	2,925		5,607	10,137	
Hammermill	39	7	17				63	231	59			290	353	
Compositing														
Hauling and handling	5,930	1,015	28		5,764	327	13,114	3,073	789	677	140	4,679	17,793	
Turning and wetting	4,615	790				291	5,717	2,342	600	1,548	783	5,273	10,990	
Curing	982	168			224	9	1,383	45	12		15	72	1,455	
Storage	2,477	424			577		3,526						3,526	
Operation and maintenance grounds, buildings, and utilities			1,165				1,165	4,506	1,156	509		\$68	7,404	
Cleanup of process and receiving buildings	9,556	1,635				123	11,314						11,314	
Office and laboratory	6,123	1,048	378	\$614		800	9,107		144				9,107	
Other	1,712	293		134	1,044	4,519	8,326		624				8,326	
Regrinding and screening	4,293	734	130		1,230		6,387	846	217			409	7,859	
Sewage sludge processing	3,350	573	54			782	4,759	2,970	762	1,395	218	5,345	10,104	
Total	64,660	11,063	2,618	748	12,363	7,236	99,575	18,046	4,630	7,801	1,636	477	32,590	132,165

^a At plant site.

^b Includes cost of haulage to landfill (no landfilling costs).

Source: A. W. Breidenbach et al., *Composting of Municipal Solid Wastes in the United States*, U.S. Environmental Protection Agency, 1971, p. 66.

APPENDIX D(23)

**COSTS OF PROCESSING RAW REFUSE UTILIZING
DIFFERENT COMPOST SYSTEMS**

\$/U.S. Ton

Type of system	Dano ^a	Dorr-Oliver ^b	Ventilated cells ^c	Buhler-Dano ^d	Van Maanen ^e	Average, unweighted
Number of plants	5	3	3	2	1	14
Capital cost						
Amortization of building and equipment	0.78	0.68	1.08	2.01	0.19	0.95
Interest on building and equipment	0.74	0.55	0.65	1.18	0.12	0.64
Interest on reserve fund	0.08	0.07	0.05	0.06	0.03	0.06
Rental of land	0.04	0.15	0.01	0.04	0.21	0.11
	1.64	1.45	1.86	3.29	0.55	1.76
Operating expense						
Personnel	1.08	0.83	1.92	1.74	0.64	1.23
Utilities	0.38	0.29	0.53	0.50	0.07	0.36
Maintenance and repairs	0.33	0.64	0.25	0.73	0.46	0.49
Disposal of rejects	0.30	0.20	0.20	0.12	0.05	0.17
Miscellaneous	0.36	0.31	0.37	0.18	1.46	0.54
	2.45	2.27	3.27	3.27	2.68	2.79
Total cost	4.09	3.72	5.13	6.56	3.23	4.55
Income						
Salvage	0.42	0.08	0.17	0.02	0.13	0.16
Sale of compost	1.18	1.15	1.56	0.70	0.45	1.01
Total income	1.60	1.23	1.73	0.72	0.58	1.17
Net cost	2.49	2.49	3.40	5.84	2.65	3.38
Cost indices						
Interest rate, %	7.5	7.5	5.3	4.7	5.0	6.5
Typical labor cost, annually	3000	2300	2300	4000	2500	2800
Date of construction	1960	1963	1964	1964	1932	1958

^a Dano's system - Continual mixing aeration, grinding in one unit. Refuse and sewage sludge is held for 3-5 days in rotating drum with blower and air manifolds. Should be windrowed after leaving drum before sale.

^b Dorr-Oliver rasping system - Initial sorting, grinding, roller crushing, and gravity separation followed by windrow composting. Turning every 3-5 months. Windrow height 5-10 feet outdoors on impervious surface.

^c Ventilated cells - Composting in cells with natural or forced ventilation. Intermittent disturbances. Rotary screening, sorting, salvaging and ballistic (gravity) separation.

^d Buhler system - No sorting, grinds refuse in rotary hammermill, then passes over permanent magnet.

^e Van Maanen - Unprocessed refuse wetted and decomposed in huge windrows along railway siding. Turned every 4-6 months.

Source: G. I. Kupchik, *J. Sanit. Eng. Div., Am. Soc. Civ. Eng.*, 92(41), 1966. Footnotes from P. Jones, *Eng. J.*, 52(6):34, June 1969

PRODUCTION AND SALES OF COMPOST

System	Population served	Raw refuse processed, U.S. tons	Compost produced, U.S. tons	Compost sold, U.S. tons	Sales income, \$	Income, \$/ton of	
						Compost sold	Refuse processed
Danco	700,000	99,000	66,000	33,000	24,000	0.75	0.24
	170,000	46,500	25,800	25,800	171,000	6.63	3.68
	80,000	18,800	13,200	9,900	9,900	1.00	0.53
	54,000	9,900	4,500	4,400	14,000	3.18	1.41
	210,000	32,400	5,300	4,300	2,700	0.63	0.08
	1,214,000	206,600	114,800 (56%)	77,400	221,600	2.86	1.07
Dorr-Oliver	700,000	199,000	74,200	37,400	204,000	5.45	1.03
	130,000	26,400	18,100	17,600	28,300	1.61	1.07
	75,000	17,700	13,200	13,000	24,000	1.85	1.36
	905,000	243,100	105,500 (43%)	68,000	256,300	3.77	1.05
Others	27,000	9,300	5,500	5,500	29,000	5.27	3.12
	90,000	16,800	10,100	0	0	0.00	0.00
	100,000	18,800	8,800	8,800	13,200	1.50	0.70
	800,000	162,000	55,000	57,200	72,000	1.26	0.44
	1,017,000	206,900	79,400 (38%)	71,500	114,200	1.60	0.55
Total	3,136,000	656,600	299,700 (46%)	216,900 (33%)	592,100	2.73	0.90

Source: *Economics of Composting Municipal Refuse in Europe and Israel*, Am. Publ. Health Assn., 1965.

SALES DISTRIBUTION OF COMPOST FROM MUNICIPAL REFUSE IN HOLLAND

Outlet	Year	
	1961	1965
Forestland improvement	2.4	0.6
Basic agriculture (field and row crops, and for pig litter)	34.4	16.4
Fruit farming	6.5	6.3
Hotbed vegetable farming ^a	11.6	13.0
Greenhouse vegetable farming	7.9	8.4
Flower and flower bulb production (greenhouse and outdoor)	11.7	17.6
City park, sportfield, and recreational use	25.5	37.7

^a Hotbed compost is freshly ground domestic refuse. It is used on the bottom of the hotbed in place of horse manure. The biological process of composting generates heat that makes the hotbed crop grow. Hotbed crops in Holland are cucumbers, melons, and green peppers.

Source: *Solid Waste Management/Composting*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1968, p. 23.

APPENDIX D(25)

TRANSPORTATION COSTS FOR PRODUCT COMPOST SALES

Dollars Per Ton

The municipality and its composter have no control over location of the market. The cost of shipping urban produced compost to either the rural consumer grower or the regional commercial fertilizer blending plant is a marketing distribution constraint.

Miles	Class 20 ^a (humus, sewage sludge, etc)	Class 22½ ^a (peat moss)
100	\$ 6.40	\$ 7.20
200	8.40	9.40
300	10.00	11.20
400	11.60	13.00
500	13.00	14.60
600	14.20	16.00
800	17.00	19.20
1,000	19.20	21.60

^a Figures are from J.D. Hackler, *Uniform Freight Classification*, September 20, 1966. They indicate the cost per ton for two slightly different commodity freight classes.

Source: *Technical-Economic Study of Solid Waste Disposal Needs and Practices*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1969, p. 22.

APPFNDIX D(26)

ESTIMATED COSTS FOR WINDROW COMPOSTING PLANTS

1969

Plant capacity in tons per day

Item	Plant capacity in tons per day				
	52 Johnson City, 1 shift, 7,164 tons, 1968 ^a	50 1 shift, 13,000 ton/year ^b	100 2 shifts, 26,000 ton/year ^b	100 1 shift, 26,000 ton/year ^c	200 2 shifts, 52,000 ton/year ^c
Capital costs					
Buildings	\$368,338	\$210,000	\$231,000	\$231,000	\$251,000
Equipment	463,251	482,700	482,700	607,100	607,100
Site improvement ^d	126,786	126,800	126,800	152,000	152,000
Land cost ^e	7,600	8,400	12,400	12,400	21,200
Total	\$965,980	\$827,900	\$852,900	\$1,002,500	\$1,031,300
Total per ton daily capacity	\$18,580	\$16,560	\$8,530	\$10,020	\$5,156
Annual operating costs					
Depreciation ^f	\$47,920	\$41,000	\$42,000	\$49,500	\$53,550
Interest ^g	45,080	38,600	39,800	46,200	51,000
Operations ^c	99,575	133,950	213,795	197,850	357,015
Maintenance	32,590	43,700	59,150	59,850	95,400
Total	225,165	257,250	354,745	353,400	556,965
Operating cost per ton refuse processed	31.43	19.77	13.65	13.58	10.71

^a Actual costs of plant as built at Johnson City. Plant operates on 1-shift day. Cost per ton based on 1968 level of 7,164 tons of refuse processed.

^b Based on Johnson City plant cost data adjusted for less elaborate equipment, buildings, and modifications.

^c Estimates based on actual Johnson City cost data projected to the larger daily capacity plants.

^d Includes preparation of composting field with crushed stone and needed utility lines.

^e Land costs are estimated based on approximate land values near Johnson City, Tennessee, of \$800 per acre.

^f Straight line depreciation over 20 years of buildings and equipment, excluding land.

^g Bank financing at 7½ per cent over 20 years. Yearly figure is average of 20-year total interest charge. Land cost included.

Source: A.W. Breidenbach *et al.*, *Composting of Municipal Solid Wastes in the United States*, U.S. Environmental Protection Agency, 1971, p. 59.

APPENDIX D(27)

COMPARISON OF ESTIMATED CAPITAL COSTS^a

Energy and Manpower Requirements for Mechanical Compost Plants

Capacity, ton/day	Fairfield			Metrowaste			HDC		
	\$ x 10 ⁶	HP	Labor	\$ x 10 ⁶	HP	Labor	\$ x 10 ⁶	HP	Labor
100	1.4 ^b	900 ^b	8 ^b	0.9	1,250	12	1.4	600	20
200	2.1 ^b	1,400 ^b	11 ^b	1.2	1,700	17	2.1 ^b	800 ^b	28 ^b
300	2.5	1,700	14	1.5	1,900	25	2.7 ^b	950 ^b	36 ^b
400	3.2	2,500	20	1.6	2,000	30	3.2 ^b	1,100 ^b	45 ^b

^a Exclusive of cost of land and special foundation problems (fill and/or piling).

^b Author's estimate based on chemical engineering estimating procedures.

Source: *Surgeon General's Conference on Solid Waste Management, Proceedings for Metropolitan Washington, U.S. Department of Health, Education, and Welfare, Public Health Service, 1967, p. 115.*

REFERENCES

1. J.S. Coulson, Sales Manager, Fairfield Engineering Company, Personal communication, June 15, 1967.
2. V. Brown, President, Metropolitan Waste Conversion Corporation, Personal communication, July 13, 1967.
3. R.A. Lynn, Plant Manager, International Disposal Corporation, St. Petersburg, Fla., Personal communication, June 21, 1967.

ESTIMATED COST TO OWN AND OPERATE DIGESTER PLANTS

Daily capacity of plant, tons	Annual tonnage, 5 day week	Number of plant employees	Construction costs		Cost per ton of refuse to amortize plant ^a	Cost per ton of refuse to operate plant ^b
			Machinery	Buildings and utilities		
100	26,000	15	\$1,200,000	\$ 500,000	\$6.75	\$9.25
200	52,000	18	2,000,000	700,000	5.25	6.75
300	78,000	23	2,600,000	900,000	4.50	6.50
400	104,000	26	3,200,000	1,100,000	4.25	6.00

^a Land not included (5 to 10 acres required). Amortization 20 years on buildings and stationary machinery and 5 years on mobile equipment. Interest at 9%.

^b Real estate and personal property tax not included. No credit taken for sale of plant byproducts. (This revenue will cover cost of byproduct marketing and provide profit for the marketing company).

Source: Fairfield Engineering Company, Marion, Ohio, 1972.

APPENDIX D(28)

ESTIMATED INVESTMENT COSTS FOR COMPOSTING PLANTS

Windrowing and Enclosed Digestion Systems

Item of cost	150 ton/day capacity	
	Windrowing	Enclosed
Construction and equipment	\$185,500.00 ^d	\$300,800.00 ^b
Depreciation ^c	9,280.00	15,040.00
Interest, 7½% ^d	8,660.00	14,040.00
Capital cost per ton daily capacity	1,237.00	2,005.00
Total cost per ton refuse processed	0.46	0.75
Land	9,300.00	2,640.00
Interest, 7½%	430.00	120.00
Cost per ton daily capacity	62.00	18.00
Cost per ton of refuse processed ^e	0.01	< 0.01 (.003)
Total cost		
Per ton of daily capacity	1,300.00(1,550.00) ^f	2,023.00
Per ton of refuse processed	0.47 (0.52) ^f	0.75

^a Based on costs from PHS-TVA Composting Plant at Johnson City, Tennessee, and land at \$800 per acre.

^b Based on costs from composting plant at Gainesville, Florida, and land at \$4,000 per acre.

^c Straight line depreciation of equipment and buildings over 20 years.

^d Average yearly interest, bank financing over 20 years.

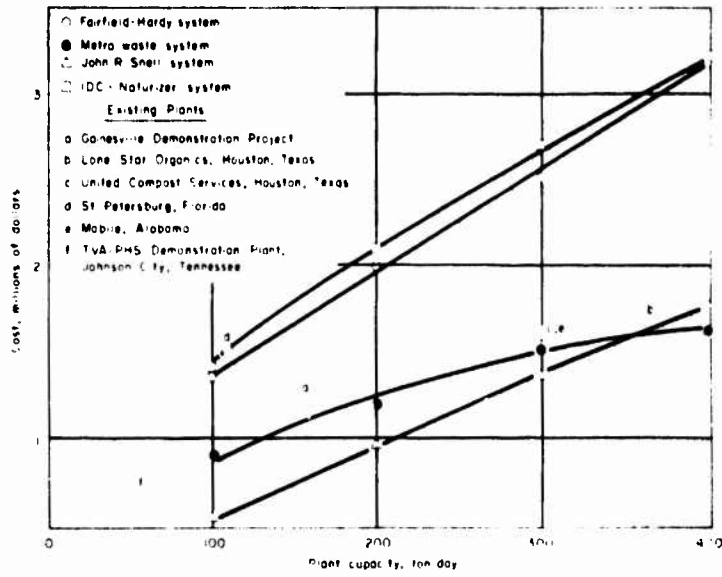
^e Computed from interest only; land is assumed not to depreciate.

^f Computed with comparable land values estimated at \$4,000 per acre.

Source: A.W. Breidenbach *et al.*, *Composting of Municipal Solid Wastes in the United States*. U.S. Environmental Protection Agency, 1971, p. 63.

APPENDIX D(29)

CAPITAL COSTS OF COMPOSTING SYSTEMS



Source: "Processing and Recovery of Municipal Solid Waste," *J. Sanit. Eng. Div., Proc. Am. Soc. Civ. Eng.*, June 1970, p. 710.

APPENDIX D(30)

COMMERCIAL VENTURE COMPOST PLANT^a

160 Ton/Day; 50,000 Tons Annually; Capital Needs \$1,500,000

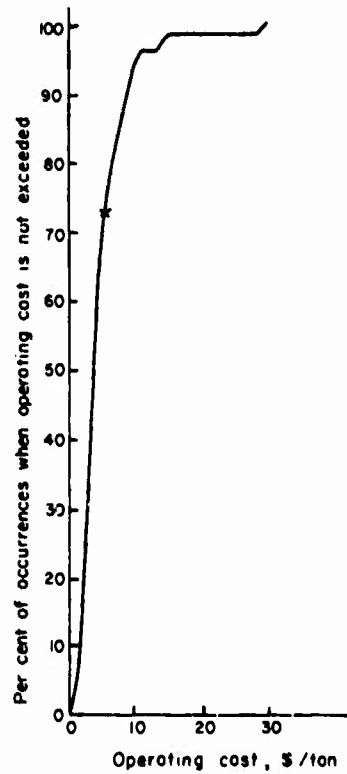
	Rate per ton	Amount
Operating costs		
Labor and payroll expense	\$3.28	\$164,000
Utilities	0.42	21,000
Supplies	0.40	20,000
Repairs	0.50	25,000
Travel	0.04	2,000
Telephone	0.12	6,000
Equipment rental	0.03	1,500
Licenses and fees	0.02	1,000
Consultants	0.05	2,500
Contract hauling	0.26	13,000
Total controllable expense	5.12	\$256,000
Insurance	0.20	10,000
Land rental	0.12	6,000
Property taxes	0.20	10,000
Legal and audit	0.09	4,500
Management fee	0.60	30,000
Franchise taxes, start-up expense, etc	0.20	10,000
Total noncontrollable expense	\$1.41	\$ 70,500
Total operating expense	\$6.53	\$326,500
Depreciation or debt service		
Debt service = \$1,200,000 at 6 ^{1/2} % for		
20 years equals \$107,424 per year; depreciation		
on \$1,250,000 at 8% annually is \$100,000.		
Capital needs include some working capital, which		
is not depreciable		
Total operating expense	\$2.15	\$107,500
Total operating expense	\$8.68	\$434,000
Less credits for		
Sludge	\$0.10	\$ 5,000
Metal and paper salvage	1.30	65,000
Compost	2.00	100,000
Total credits	\$3.40	\$170,000
Net cost for 50,000 tons	\$5.28	\$264,000

APPENDIX D(31)

- ^a Data as for the 160-ton per day plant at Gainesville, Florida, which receives the refuse from the City of Gainesville and the University of Florida. Operating costs for a plant of this size were estimated by its operators on an annual and per ton basis.
- ^b The net cost of \$5.28 per ton is predicted upon finding a market for the compost produced from 50,000 tons per year of refuse. A recent study made for Riverview, Michigan, covering an estimated population of 319,970, by Johnson and Anderson, Inc., Consulting Engineers, had the following to say regarding the marketing of compost:
- "This study of the possible uses of refuse compost from a manufacturing facility located in lower Michigan indicates the presence of a specialized market probably large enough to absorb 25,000 tons annually of compost out of an annual production of from 25,000 44,000 tons from the Riverview plant, provided that there is no immediate development of additional compost manufacturing capacity in the Ohio-Michigan region."

Source: *Master Plan for Solid Waste Collection and Disposal, Tri-Parish Metropolitan Area of New Orleans*. U.S. Department of Health, Education, and Welfare, Public Health Service, 1969, p. IV-4.

CUMULATIVE FREQUENCY DIAGRAM OF OPERATING COSTS FOR 78 MUNICIPAL INCINERATORS IN DOLLAR PER TON INCREMENTS



Note: At the asterisk, 73 per cent of the incinerators have operating costs below \$5.00 per ton solid waste received.

Source: *Incinerator Guidelines*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1969, p. 9.

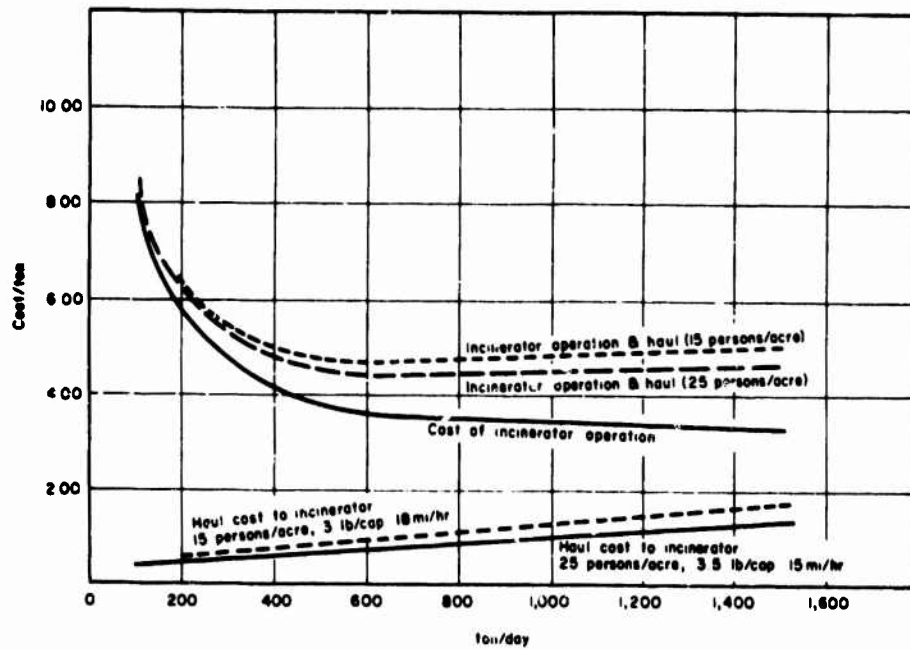
APPENDIX D(33)

INCINERATION COSTS, 1967-68

Division of operating costs	Cost Per Ton						Estimated costs, 1968			
	Actual costs, 1967									
	Florida Ave.		Seventh St.		Algiers		St. Louis		New Orleans East	
	\$	%	\$	%	\$	%	\$	%	\$	%
Labor and fringe benefits	3.45	62	2.77	57	4.01	56	1.55	53	1.65	46
Utilities, fuels, maintenance repairs, license, and insurance	1.22	22	1.06	22	1.33	19	.49	17	.42	12
Subtotal	4.67		3.83		5.34		2.04		2.07	
Depreciation and amortization ¹	.90	16	1.04	21	1.57	23	.88	30	1.50	42
Total cost per ton	5.57		4.87		6.91		2.92		3.57	
Capacity of plant, ton/day										
Rated capacity	400		400		200		450		400	
Effective capacity	200		270		150		410		365	

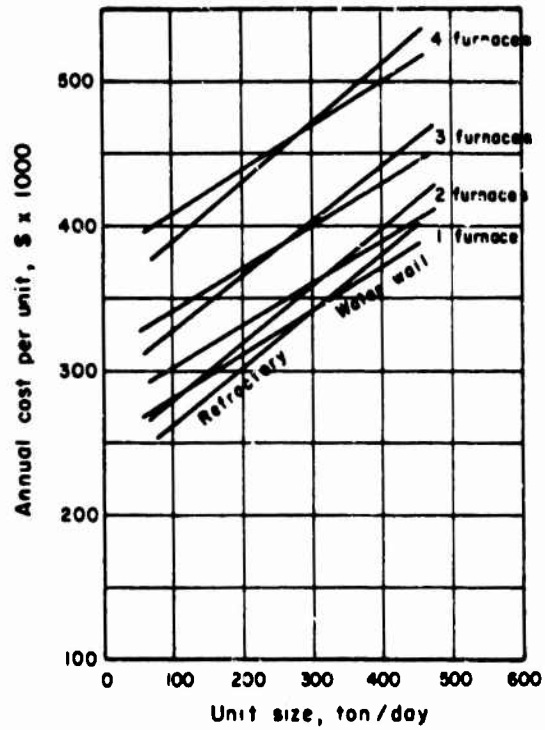
Source: *Master Plan for Solid Waste Collection and Disposal, Tri-Parish Metropolitan Area of New Orleans*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1969, p. V-37

ECONOMIC SIZE OF INCINERATORS – COST OF OPERATION AND HAUL



Source: *Master Plan for Solid Waste Collection and Disposal, Tri-Parish Metropolitan Area of New Orleans*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1969, p. VII-3.

**COMPARATIVE COST OF MULTIPLE UNIT REFRACTORY
AND WATER WALL INCINERATORS EXCLUSIVE OF LAND,
LANDSCAPING, AND RESIDUE DISPOSAL.**



Source: *Proposals for a Refuse Disposal System in Oakland County, Michigan*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1970.

**APPROXIMATE COSTS OF RECOMMENDED MULTIPLE CHAMBER
INCINERATORS AND SCRUBBERS IN 1968^a**

Size of incinerator, lb/hr	General refuse incinerators	Scrubbers ^b	Pathological incinerators
50	\$ 1,200	\$ 2,200	\$2,000
100	1,700	3,000	2,700
150	2,000	3,600	4,000
250	2,700	4,400	5,500 ^c
500	5,000	6,200	
750	9,500	7,600	
1,000	12,500	8,800	
1,500	20,000	11,200	
2,000	25,000	13,200	

^a Incinerator costs are exclusive of foundations.

^b Scrubber costs are exclusive of foundations but include reasonable utility connections.

^c For a 200 lb/hr incinerator.

Source: *Interim Guide of Good Practice for Incineration at Federal Facilities*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1969.

APPENDIX D(37)

**ESTIMATED CAPITAL INVESTMENTS AND OPERATING COSTS,^a
INCINERATOR AND INCINERATOR BOILER PLANTS**

Refuse Design Capacity 4,000 Tons Per Week

	Case I Refractory furnace	Case II Refractory furnace with boiler	Case III Waterwall furnace with boiler	Case IV Waterwall furnace
Capital costs				
General building construction	\$930,000	\$1,215,000	\$1,030,000	\$938,000
Equipment delivered to site	\$1,340,000	\$2,620,000	\$2,230,000	\$2,150,000
Mechanical contract	\$75,000	\$1,580,000	\$800,000	\$983,000
Electrical contract	\$238,000	\$322,000	\$237,000	\$232,000
Total incremental cost	\$3,583,000	\$5,737,000	\$4,297,000	\$4,303,000
Annual operating expenses				
Operating days per week	5	7	7	5
Maintenance labor and supplies	\$140,000	\$161,000	\$147,000	\$123,000
Operating labor	\$326,000	\$495,000	\$495,000	\$365,000
City water	\$28,000	\$25,000	\$43,000	\$30,000
Auxiliary fuel		\$140,000	\$187,000	\$10,000
Electric power	\$161,000	\$184,000	\$174,000	\$161,000
Operating supplies and chemicals	\$1,000	\$2,000	\$3,000	\$1,000
Subtotal	\$656,000	\$1,007,000	\$1,049,000	\$690,000
Fixed charges on investment				
Estimated total annual expense	\$932,000	\$1,449,000	\$1,380,000	\$1,021,000
Estimated value of steam per 1,000 pounds		\$1.06	\$0.42	

^a Capital investments and operating expenses include only those variables affected by plant design. They are not intended to include all costs of operation or construction at the incinerator plant.

Source: *Special Studies for Incinerators for the Government of the District of Columbia*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1968, p. 70.

APPENDIX D(38)

TYPICAL COMPARATIVE COST FIGURES FOR FURNACE SYSTEMS

3 Units @ 300 Ton/Day

	Water furnace with waste heat boiler	Refractory lined furnace	Refractory lined furnace with waste heat boiler	Refractory furnace with rotary kiln
Incinerator structure	\$2,240,000	\$2,290,000	\$2,240,000	\$2,290,000
Utility construction	259,000	265,000	256,000	265,000
Furnace components	2,933,000	903,000	2,375,000	3,253,000
Air pollution control equipment	690,000	1,500,000	900,000	1,500,000
Estimated project cost	\$6,122,000	\$4,958,000	\$5,771,000	\$7,308,000
Amortization of capital cost Based on 4½% annual interest, 20 yr bonds	\$ 472,000	\$ 380,000	\$ 447,000	\$ 563,000
Plant labor	520,000	495,000	520,000	496,300
Utilities	15,000	35,000	15,000	36,500
Building supplies, operation and maintenance	192,000	312,000	280,000	350,400
Estimated annual cost	\$1,200,000	\$1,220,000	\$1,262,000	\$1,446,200

Source: *Proposals for a Refuse Disposal System in Oakland County, Michigan*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1970, p. 30.

APPENDIX D(39)

**DISTRIBUTION OF INCINERATOR CONSTRUCTION COSTS
FOR EQUIPMENT AND BUILDING**

Dollars Per Ton Per Day^a

	Architectural and structural	Mechanical	Electrical	Heating and ventilating, plumbing and miscellaneous	Total cost	% of total
Delivery of refuse tipping floor, scales and accessories	337	4	14	18	373	8
Handling of refuse (storage pit, crane hoppers and accessories)	658	141	14	27	840	17
Burning of refuse (furnaces, flues, chimneys, combustion chamber and accessories)	955	1,321	121	55	2,452	51
Residue removal (ash cellar, conveyors, controls and accessories)	309	108	66	41	524	11
Fly ash removal (subsidence chambers, screens, and accessories)	113	15	9	9	146	3
Miscellaneous (utilities, grading, land scaping, demolition, furniture tools)	313	127	30	16	486	10
Total costs	2,685	1,716	254	166	4,821	100
Per cent distribution	55%	36%	5%	4%	100%	

^a 1958 cost index.

Source: *J. Sanit. Eng. Div., Am. Soc. Civ. Eng.*, 90, June 1964.

**COMPARATIVE COSTS FOR TWO TYPES
OF INCINERATORS, CHICAGO**

1962 Costs

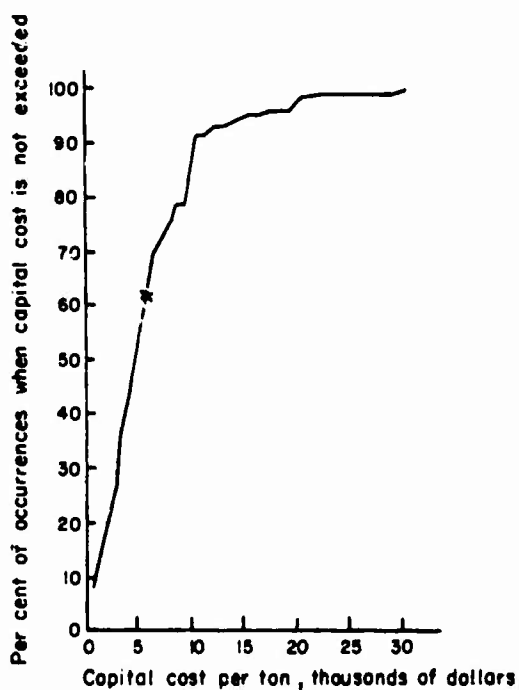
	Mechanized continuous type rotary kiln	Manually stoked batch type
Total construction costs per ton per day of capacity (including engineer- ing but exclusive of land)	\$4,500.00	\$3,900.00
Total operating costs per ton of refuse destroyed	5.86	6.06
Operating less residue disposal	1.40	1.62
Maintenance and repair	1.95	1.35
Administration and supervision	.56	.51
Pension	.20	.23
Fuel and utilities	.30	.14
Amortization	.00 ^a	1.19

^a Steam generation and metal salvage profits cover amortization costs.

Source: *Municipal Refuse Disposal*. Institute for Solid Wastes, Am. Publ. Works Assn., 1970, p. 155.

APPENDIX D(41)

**CUMULATIVE FREQUENCY DIAGRAM OF
CAPITAL COSTS FOR 170 MUNICIPAL INCINERATORS IN
\$1,000 INCREMENTS.**



Note. At the asterisk, 62 per cent of the incinerators have capital costs below \$6,150 per ton (24-hour design capacity).

Source: *Incinerator Guidelines*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1969, p. 8.

COST ESTIMATES FOR INCINERATION

Quantities

20th year 423,000 tons
 Average year 346,000 tons

Daily quantity average, 20th year, 198

$423,000 \times 7/6 \div 365 = 1,350$ ton/day average

Capacity = $1.2 \times 1,350 = 1,620$ ton/day rated capacity

Cost estimates

First cost ^(a) \$7,500/ton $\times 1,630 = \$12,225,000$

Amortized for 20 years ^(a) 4.5% (0.0768)

\$ 939,000

Operating and maintenance ^(b) 3.48/ton for average year $\times 346,000$

1,201,000

Hauling residue to landfill,

20% of average yr $\times 346,000 = 69,200$ tons ^(c) \$1.74 cost/ton

120,000

Total cost of incineration for average year

\$2,242,000

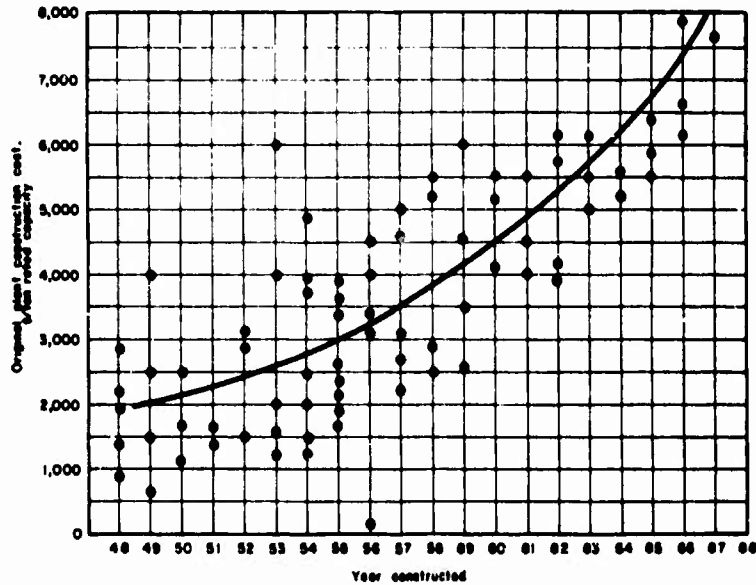
Cost per ton incinerated

$\$2,260,000 \div 346,000$ tons = \$6.50 per ton

Note First cost = \$6,800 + 10% for administration and engineering = \$7,500 per rated ton. Cost of \$6,800 was selected arbitrarily from reported costs ranging from \$4,900 to \$9,100. Actual costs must be based on detailed designs. These estimates are adequate only for establishing the magnitude of the cost per ton of incineration capacity. The operating and maintenance costs are similarly approximate.

Source: *Collection and Disposal of Solid Waste for the Des Moines Metropolitan Area*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1968, p. 4-6

ORIGINAL CONSTRUCTION COSTS FOR 74 CENTRAL INCINERATORS BUILT FOR MUNICIPALITIES BETWEEN 1948 AND 1968



Source: Prepared from data of the Solid Wastes Engineering Section, Committee on Sanitary Engineering Research, Am. Soc. Civ. Eng.

POWER FROM INCINERATION

STEAM AND POWER FROM INCINERATION

	Total annual tons incinerated	Total steam generated		Utilization of steam		
		Tons	lb of steam/ lb of refuse	Electric power generated		
				Total kWh	kWh/ton of refuse	Space heating total tons
Paris, France	623,000	712,000	1.14	14,200,000	75	495,000
Hamburg, Germany	330,000	460,000	1.40	60,000,000	180	
Zurich, Switzerland	75,000	121,000	1.60	5,500,000	110	40,000

Source: C. Rogus. *Public Works*, 93(7):75, June 1962.

SUMMARY OF OPERATING COSTS FOR
CHICAGO SOUTHWEST MUNICIPAL
HEAT-RECOVERY INCINERATOR

Cost item	Operating cost, \$/ton
Labor (62 men)	\$1.92
Repairs	0.73
Electrical	0.19
Supplies	0.60
Residue hauling	1.05
Steam production (4,000 lb at \$0.50/1,000 lb)	2.00
	<u>6.49</u>
Income item	
Sales of steam (4,000 lb at \$0.625/1,000 lb)	2.70
Profit from salvage	0.14
	<u>2.84</u>
Net operating cost	3.65
Amortization of capital cost	1.26 ^a
Total operation and maintenance cost	<u>4.91^b</u>

^a These calculations assume 100 per cent steam utilization. ASME states that actual operating cost is \$3.98 per ton implying that only 86 per cent ($\frac{2.70 - 0.38}{2.70}$) steam utilization is practiced.

^b ASME gives \$5.24 per ton, again reflecting less than 100 per cent steam utilization.

Source: Am. Soc. Mech. Eng., Incinerator Committee, June 1966.

APPENDIX D(45)

SANITARY LANDFILL COLLECTION COSTS
(Continuation)

Labor costs per hour		
Basic wage rate for collection crew member		\$3.50
Plus 20% for vacation, sick leave, retirement, etc		\$4.20
Plus 20% for supervision and administration overhead		\$5.04
Total hourly labor cost per man (for this study)		\$5.05
Vehicle costs per hour		
Initial cost of 4-ton payload vehicle	\$14,000.00	
Amortization cost/hr	\$1.37 ^a	
Operation and maintenance cost/hr	\$2.50	
	\$3.87	
Total hourly vehicle cost (for this study)	\$3.90	
Total vehicle and labor costs	2-man truck	3-man truck
Vehicle cost/hr (4-ton unit)	\$3.90	\$3.90
Labor cost/hr	\$1.10	\$1.15
Total hourly cost, 1968	\$14.00	\$19.05
Yearly working hours^b		
Great Falls (40 hr/wk) (52 wk/yr) - 72 hr	2,008 hr/yr	
Rural (32 hr/wk) (52 wk/yr) - 72 hr	1,592 hr/yr	
Great Falls Metropolitan area ^c (21 trucks) (2,008 hr)	42,168 hr/yr	
Rural area ^d (2 trucks) (1,592 hr)	3,184 hr/yr	
Great Falls Metropolitan area ^e (13 trucks) (2,008 hr)	26,100 hr/yr	
Rural area only, excluding Great Falls inside city limits ^d (3 trucks) (1,592 hr)	4,776 hr/yr	
Annual collection costs		
Alternate 1^f		
Metropolitan Great Falls area (42,168 hr/yr) (\$19.05/hr)	\$803,300	
Rural area (3,184 hr/yr) (\$14.00/hr)	\$ 44,576	
Total	\$847,876	
Alternate 2		
Metropolitan Great Falls area (26,100 hr/yr) (\$19.05/hr)	\$497,205	
Rural area (3,184 hr/yr) (\$14.00/hr)	\$ 44,576	
Total	\$541,781	
Alternate 3		
Rural area (4,776 hr/yr) (\$14.00/hr)	\$ 66,864	
Total	\$ 66,864	

^a Amortization based on 6 years without interest or salvage value. Replacement cost increase based on 3%/yr.

^b 1968; 9 holidays per week.

^c 3-man crew; twice per week pickup.

^d 2-man crew, once per week pickup.

^e 3-man crew, once per week pickup.

^f Alternate 1 includes rural routes with once per week collection and Great Falls with twice per week collection.

Alternate 2 includes rural routes with once per week collection and Great Falls with once per week collection.

Alternate 3 includes rural routes and the area adjacent to the Great Falls city limits with once per week collection. Under this alternate Great Falls would continue to operate its existing system and would not be included in the county-wide program.

Source: *Comprehensive Study of Solid Waste Disposal in Cascade County, Montana*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1970, p. 149.

**SANITARY LANDFILL OPERATION AND
MAINTENANCE COSTS**

	Including Great Falls	Rural only
Annual operating costs		
Payroll - Great Falls		
2 equipment operators @ \$650/mo	\$15,600	
Payroll - Rural		
1 equipment operator @ \$650/mo	\$ 7,800	\$ 7,800
Total labor per year	\$23,400	\$ 7,800
Plus 20% for vacation, sick leave, retirement, etc	\$28,080	\$ 9,360
Plus 20% for supervision and administration overhead		
Total	\$33,700	\$11,230
Annual equipment maintenance		
Great Falls - (140 hr/wk) (50 wk) (50¢/hr)	\$ 3,500	
Rural - (40 hr/wk) (50 wk) (50¢/hr)	\$ 1,000	\$ 1,000
Total	\$ 4,500	\$ 1,000
Supplies necessary for landfill maintenance		
Great Falls	\$ 1,000	
Rural	\$ 3,000	\$ 3,000
Total	\$ 4,000	\$ 3,000
Total per year	\$42,200	\$15,230

Source: *Comprehensive Study of Solid Waste Disposal in Cascade County, Montana*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1970, p. 148.

**SUMMARY OF OPERATION, MAINTENANCE
AND REPLACEMENT COSTS FOR A SANITARY
LANDFILL (Continuation)**

Alternate 1	
Replacement of land and landfill equipment	\$51,873/yr
Landfill operation and maintenance	\$42,200/yr
Collection costs including vehicle replacement	\$847,876/yr
TOTAL	\$941,949/yr

Cost per ton produced $\frac{\$941,949}{35,600 \text{ ton/yr}} = \$26.46/\text{ton}$
 $\$26.46/\text{ton} \times 73\%^a = \$19.32/\text{ton for residential dwelling}$
 $\$19.32/\text{ton} \times 1.84 \text{ ton/res. dwelling yr}^b = \$35.55/\text{res. dwelling yr}$

Alternate 2	
Replacement of land and landfill equipment	\$51,873/yr
Landfill operation and maintenance	\$42,100/yr
Collection costs including vehicle replacement	\$541,781/yr
TOTAL	\$635,854/yr

Cost per ton produced $\frac{\$635,854}{35,600 \text{ ton/yr}} = \$17.86/\text{ton}$
 $\$17.86/\text{ton} \times 73\%^a = \$13.04/\text{ton for residential dwelling}$
 $\$13.04/\text{ton} \times 1.84 \text{ ton/res. dwelling yr}^b = \$24.00/\text{res. dwelling yr}$

Alternate 3	
Replacement of land and landfill equipmen.	\$14,183/yr
Landfill operation and maintenance	\$15,230/yr
Collection costs including vehicle replacement	\$66,864/yr
TOTAL	\$96,277/yr

Total cost per dwelling^c $\frac{\$96,277}{2,690 \text{ dwellings}} = \$35.79/\text{res dwelling yr}$

^a For the City of Great Falls, 73% of the total revenue is from residential billing and the remaining 27% is from commercial.

^b Obtained by dividing the total refuse produced by the total number of residential dwellings.

^c Since commercial firms are a small percentage of total rural services, rates are based on residential charges.

Source: *Comprehensive Study of Solid Waste Disposal in Cascade County, Montana*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1970, p. 150.

APPENDIX D(48)

COST ESTIMATES FOR SANITARY LANDFILL OPERATIONS (Continued)

Annual maintenance and site development
2 Sites @ \$20,000 each \$ 40,000

Equipment purchase
Cost of new equipment (one time purchase only) \$240,000

Equipment maintenance, operation, and amortization

	hr/yr each	hr/yr total	Rate/hr	Cost/yr
3 bulldozers	3,060	9,180	\$15.00	\$137,700
1 scraper	2,080	2,080	10.00	20,800
1 grader	2,080	2,080	5.00	10,400
1 truck	1,040	1,040	4.00	4,160
1 tractor/mower	1,040	1,040	2.00	2,080
2 pick-up trucks				2,000
Miscellaneous equipment		2,080		5,000
Total equipment at 2 sites		17,500		\$182,140

Labor

Equipment operators	17,500	\$ 4.00	\$ 70,000
Laborers, 4 per site	8,320	3.40	28,300
Foreman, 1 per site	4,160	4.25	17,700
Gate keeper/fee collector (16 man hr/day site)	9,800	3.75	37,000
Total labor, 2 sites	39,780		\$153,000

Metro agency headquarters and repair shop

Office	\$ 36,000
Repair shed	50,000
Repair equipment	60,000
	\$146,000

50% each for collection and disposal \$ 73,000
Miscellaneous expense, overhead, and contingency \$100,000

Source: *Collection and Disposal of Solid Waste for the Des Moines Metropolitan Area*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1968, p. 4 - 29.

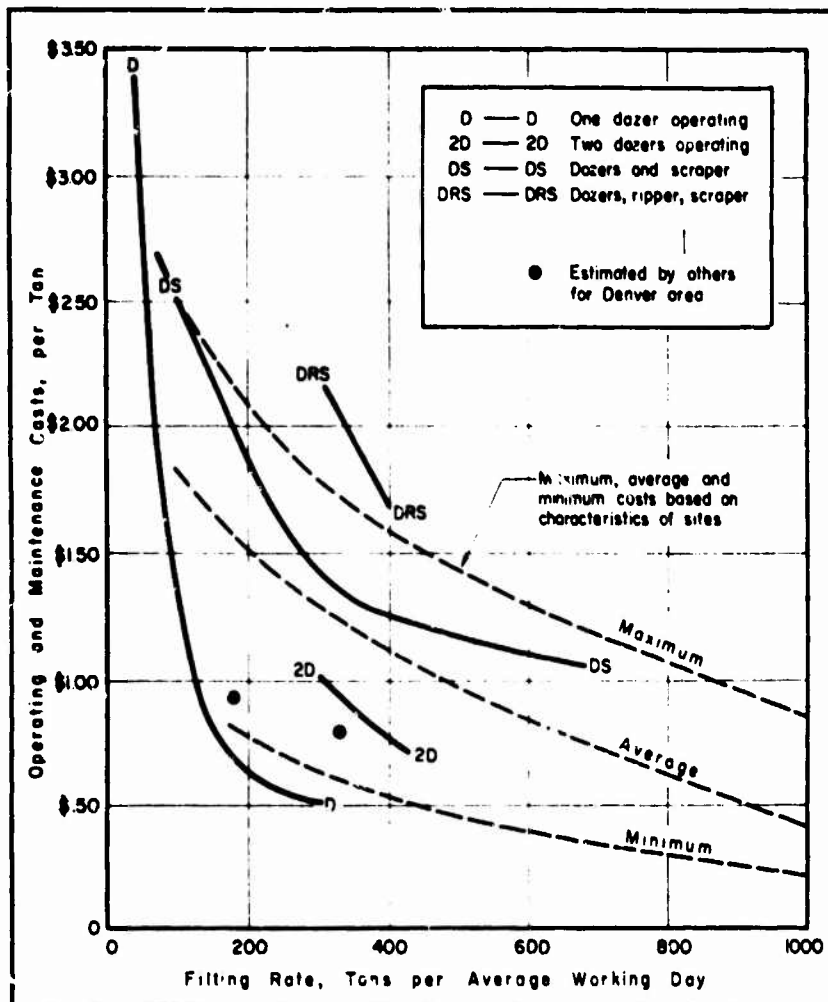
APPENDIX D(49)

COST ESTIMATES FOR SANITARY LANDFILL OPERATIONS

Basic Cost Data:

Land costs		
Northeast site	240 acres @ \$1,200/acre	\$288,000
Southwest site	282 acres @ \$1,000/acre	282,000
Total estimated land costs		\$570,000
Initial site development (one site example)		
Scale house		\$ 30,000
Two scales @ \$9,000		18,000
Scale equipment		10,000
Equipment shed and personnel facilities		30,000
Watermains, 8" x 3,000'		15,000
Perimeter fencing, 10,000'		5,000
Entrance fencing, 1,000'		5,000
On site gravel surfacing for roads		18,000
Grading		35,000
Landscaping		14,000
Yard lighting		5,000
Apron pavement		5,000
Miscellaneous		10,000
Total site development cost, one site		\$200,000
Total site development cost, two sites		\$400,000

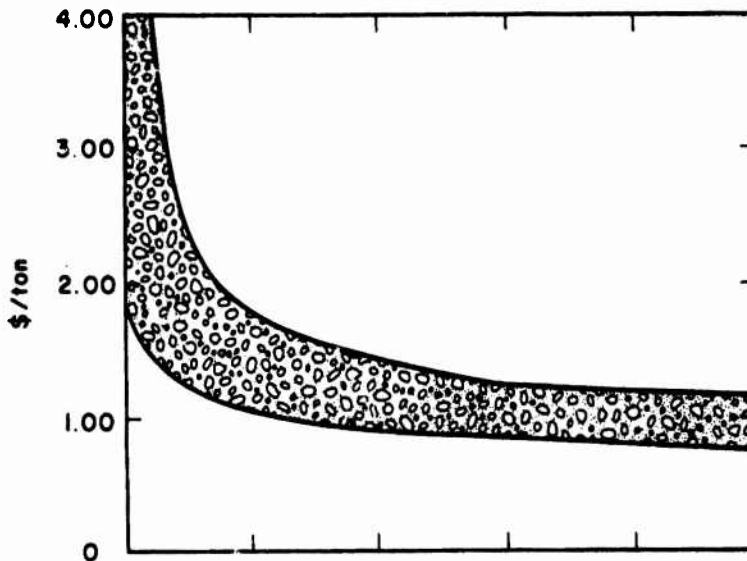
ESTIMATED SANITARY LANDFILL OPERATION AND MAINTENANCE COSTS



Note: Chart shows how cost of ownership and operation of equipment relates to the required filling rate.

Source: *Public Works*, 100(3):79, March 1969

Sanitary Landfill Operating Costs.



Ton/yr	0	100,000	200,000	300,000	400,000	500,000
Ton/day ^a	0	320	640	960	1280	1600
Population ^b	0	122,000	244,000	366,000	488,000	610,000

^a Based on 6-day work week.

^b Based on national average of 4.5 lb/person day.

Source: *Sanitary Landfill Facts*, U.S. Department of Health, Education, and Welfare, Public Health Service, 1970, p. 23.

APPENDIX D(52)

RESULTS OF SOIL ANALYSES FOR SELECTED LANDFILL SITES

Material description	Unified soil classification	Wet density, ^a lb/ft ³	Moisture content, %	Dry density, lb/ft ³	Porosity	Void ratio
Gravelly sand	SW	131.0	7.7	122.5	0.272	0.374
Silty shale	-	101.2	22.6	94.2		
Silty clay	CL	128.5	11.1	115.5	0.294	0.416
Sandy silt	ML	110.5	14.8	101.5	0.364	0.573
Silty sand	SM	118.5	7.3	110.5	0.332	0.497
Silty clay	CL	51.5	16.0	44.4	0.704	2.38
(diatomaceous)						
Silty clay	CL	106.2	6.2	100.0	0.359	0.560
(diatomaceous)						
Sandy silt	ML	137.5	19.6	115.0	0.300	0.429
Silty clay	CL	99.0	14.5	86.3	0.429	0.750
Gravelly sand	SW-SM	111.5	7.8	103.5	0.382	0.618
Gravelly sand	SM	114.5	4.4	109.5	0.346	0.530
with silt						
Gravel-sand and silt mixture	GW-GM	101.5	3.2	98.2	0.418	0.707

^a In place.

Source: *Development of Construction and Use Criteria for Sanitary Landfills*, County of Los Angeles, U.S. Department of Health, Education, and Welfare, Public Health Service, 1960, p. III-6.

COSTS FOR MARINE DISPOSAL OF WASTES IN U.S. COASTAL WATERS

1968

Type of waste	Total U.S.		Pacific Coast		Atlantic Coast		Gulf Coast	
	Average cost/ton	Reported range, \$/ton	Average cost/ton	Reported range, \$/ton	Average cost/ton	Reported range, \$/ton	Average cost/ton	Reported range, \$/ton
Dredging spoils	\$.40	\$.20-.55	\$.43	None	\$.54	\$.40-.55	\$.25	\$.20-.25
Industrial wastes	\$1.70	\$.60-9.50	\$1.00	\$.60-9.50	\$1.80	\$.60-7.00	\$2.30	\$.75-3.50
Bulk	\$24	\$5-130	\$53	\$50-130	\$7.73	\$5-17	\$28	\$10-40
Containerized								
Refuse and garbage	\$15	\$5-60	\$15	\$5-60				
Sewage sludge	\$1.00	\$.80-1.20			\$1.00	\$.80-1.20		
Construction and demolition debris	\$.75	\$.70-1.35			\$.75	\$.70-1.35		
Explosives	\$15	\$15-90						
Miscellaneous	\$15	\$5-600	\$15	\$5-600				

Sources: *J. Sanit. Eng. Div., Am. Soc. Civ. Eng., 96:1387, 1970 and Ocean Disposal of Barge-Delivered Liquid and Solid Wastes from U.S. Coastal Cities, U.S. Environmental Protection Agency, 1971, p. 10.*

COSTS FOR DISPOSAL OF LIQUID WASTES

<u>Disposal Method</u>	<u>Equipment Cost</u>	<u>Operating Costs</u>
Incinerator	\$10,000-15,000	\$1.50/100 Gallons
Deep Well	\$10 to \$30 per foot of depth	\$2 - 2.50/1000 Gallons
Lagoons & Ponds	up to \$5,000/acre	2 cents to 10 cents per pound BOD per day
Sewerage System (Municipal)	\$400 to \$1,500 /acre	\$172/1000 Gallons
Sea Disposal	\$1,100,000 (Barge Cost)	50 cents/ton (bulk) \$2.50/1000 Gallons \$24/ton (Containerized)
Centrifuge	\$2200	
Evaporator (Fume Hood)	\$850-\$1250	
- Sanitary Land Fill - Small Operation - Large Operation		\$2 - \$5/ton \$0.75 - \$2.50/ton
Ion Exchange	\$8000-\$34,000	\$1.10/1000 Gallons
Filtration (RO)	\$36,000	1.70/1000 Gallons
Professional Chemical Disposal Company	\$2,000,000	\$0.05 - \$0.60/Gallon

Source: Personal Communications with Manufacturers

COSTS FOR SOLVENT RECLAMATION STILLS

<u>Solvent</u>	<u>Equipment Costs</u>	<u>Operating Costs</u>
Carbon Tetrochloride Tetrachloroethylene	\$3273.00	\$.01 - \$.03/Gallon
Behzene Stoddard Solvent Acetone Methanol	\$11,940.00	Under \$0.01/Gallon
Mineral Spirits Light Oils	\$9,620.00	Under \$0.01/Gallon

Source: Personal Communication with Manufacturers.

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APPENDIX F

SUMMARY OF CONTACTS ESTABLISHED

One step of the study methodology included telephone and letter contacts to manufacturers of packaging and waste disposal equipment and to technical societies and trade associations. A copy of the form letter is shown on pages F(2) and F(3).

The contacts were made to increase and update an existing technical data base on packaging materials and waste disposal equipment. The types of information acquired included:

- Capacities of waste equipment and systems
- Number of waste treatment units produced and operating
- Types of waste materials compatible with the equipment
- Economic data concerning initial investment and operating costs.

The summary tables that begin on page F(4) indicate the total list of organizations contacted. The tables also indicate whether or not a response was received.

SUMMARY OF CONTACTS ESTABLISHED

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
AERONCA, INC., ENVIRONMENTAL CONTROL GROUP 200 RODNEY STREET PINEVILLE, NORTH CAROLINA 28134	X			
ALUMINUM FOIL CONTAINER MANUFACTURER'S ASSOCIATION P.O. BOX D FONTANA, WISCONSIN 53125 (414) 275-6838		X	X	
AMERICAN BUREAU OF METAL STATISTICS 50 BROADWAY NEW YORK, NEW YORK 10004 (212) 944-1870		X	X	
AMERICAN CHEMICAL SOCIETY 1155 SIXTEENTH STREET, N.W. WASHINGTON, D.C. 20036 (202) RE 7-3337		X	X	
AMERICAN IRON AND STEEL INSTITUTE 150 EAST 42ND STREET NEW YORK, NEW YORK 10017 (212) OX 7-5900		X	X	
AMERICAN PAPER INSTITUTE 260 MADISON AVENUE NEW YORK, NEW YORK 10016 (212) 889-8200		X	X	
AMERICAN SOCIETY OF MECHANICAL ENGINEERS 345 EAST 47TH STREET NEW YORK, NEW YORK (212) PL 2-6800		X	X	
AMERICAN SOCIETY FOR TESTING AND MATERIALS 1916 RACE STREET PHILADELPHIA, PENNSYLVANIA (215) LO 9-4200	X	X	X	
AMERICAN TEXTILE MANUFACTURER'S INSTITUTE 1150 17TH STREET, N.W. WASHINGTON, D.C. (202) 833-9420		X	X	

APPENDIX F(3)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
ANDCO ENVIRONMENTAL PROCESSES, INC. 51 ANDERSON ROAD BUFFALO, NEW YORK 14225 (716) 869-8181	X			
ANTEK INSTRUMENTS, INC. 6005 NORTH FREEWAY HOUSTON, TEXAS 77022 (713) 691-2265	X			
THE BAHNSON COMPANY BOX 10468, SALEM STATION WINSTON SALEM, NORTH CAROLINA 27108 (919) 724-1581	X		X	
BARCLAY & COMPANY, INC. 500 SANSOME STREET SAN FRANCISCO, CALIFORNIA 94111 (415) 981-1720	X			
BARNES ENGINEERING COMPANY 30 COMMERCE ROAD STAMFORD, CONNECTICUT 06902 (203) 348-5381	X			
BARTLETT-SNOW 6200 HARVARD AVENUE CLEVELAND, OHIO 44105 (216) 883-5700	X			
BEAUMONT BIRCH COMPANY 1505 RACE STREET PHILADELPHIA, PENNSYLVANIA 19102 (215) 564-3570	X			
BELOIT CORPORATION, JONES DIVISION 401 SOUTH STREET DALTON, MASSACHUSETTS (413) 443-5821	X			
BELTRAN ASSOCIATES, INC. 1133 EAST 35TH STREET BROOKLYN, NEW YORK 11210 (212) 338-3311	X			
BIGELOW-LIPTAK CORPORATION NORTHWESTERN HIGHWAY & 10 MILE ROAD SOUTHFIELD, MICHIGAN 48078 (313) 363-6400	X			

APPENDIX F(4)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
THE BLACK CLAWSON COMPANY 605 CLARK STREET MIDDLETOWN, OHIO 45042 (513) 422-4561	X		X	
BRULE INCINERATOR CORPORATION 13920 S. WESTERN AVENUE BLUE ISLAND, ILLINOIS 60406 (312) 388-7900	X			
BUREAU OF DOMESTIC COMMERCE FOREST PRODUCTS, PACKAGING, PRINTING AND PUBLISHING DIV. 14TH STREET (BETWEEN CONSTITUTION AVE. & E ST., N.W.) WASHINGTON, D.C. 20230 (202) 783-3962		X	X	
CALCINATOR CORPORATION 28TH & WATER STREETS BAY CITY, MICHIGAN 48706 (517) 894-4543	X		X	
CAN MANUFACTURER'S INSTITUTE 821 15TH STREET, N.W. WASHINGTON, D.C. 20005		X	X	
C-E AIR PREHEATER SUB. OF COMBUSTION ENGINEERING, INC. WELLSVILLE, NEW YORK 14895 (716) 593-2700	X		X	
C-E BAUER, BURT & SHERIDAN SPRINGFIELD, OHIO 45501 (513) 323-5501	X			
C-E RAYMOND/BARTLETT-SNOW 427 W. RANDOLPH STREET CHICAGO, ILLINOIS 60606 (312) 236-4044	X		X	
CERTAIN-TEED PRODUCTS CORPORATION VALLEY FORGE, PENNSYLVANIA 19481 (215) 661-6000	X			
CERTIFIED INCINERATOR COMPANY 14006 VENTURA BOULEVARD SHERMAN OAKS, CALIFORNIA 91403 (213) 784-4424	X			

APPENDIX F(5)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
CHEMEC PROCESS SYSTEMS, INC. 501 ROUTE 303 TAPPAN, NEW YORK 10983 (914) 359-3008	X			
CHEMICAL DATA SYSTEMS, INC. RD. 2, P.O. BOX 74 OXFORD, PENNSYLVANIA 18363 (215) 932-3636	X		X	
CHROMALYTICS CORPORATION ROUTE 82 UNIONVILLE, PENNSYLVANIA 18375 (215) 347-2454	X			
CLAW WASTE TREATMENT DIVISION P.O. BOX 324, 56 INDUSTRIAL ROAD FLORENCE, KENTUCKY 41042 (606) 283-2121	X			
CLOW CORPORATION EXECUTIVE PLAZA EAST 1211 W. 22ND STREET OAK BROOK, ILLINOIS 60521 (312) 325-6000	X			
COEN COMPANY 1510 ROLLINS ROAD BURLINGAME, CALIFORNIA 49010 (415) 697-0440	X		X	
COMBUSTION ENGINEERING, INC. 1000 PROSPECT HILL ROAD WINDSOR, CONNECTICUT 06096 (203) 688-1911	X		X	
COMBUSTION POWER COMPANY, INC. 1346 WILLOW ROAD MENLO PARK, CALIFORNIA 94025 (415) 324-4744	X		X	
COMPAKTION ENGINEERING P.O. BOX 248 TAMIARNI STATION MIAMI, FLORIDA 33144 (305) 887-8277	X			
COMPOSITE CAN AND TUBE INSTITUTE 1725 EYE STREET, N.W. WASHINGTON, D.C. 20006		X	X	

APPENDIX F(6)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
DESPATCH OVEN COMPANY P.O. BOX 1320 MINNEAPOLIS, MINNESOTA 55440 (612) 331-1873	X			
M.H. DETRICK COMPANY 20 NORTH WACKER DRIVE CHICAGO, ILLINOIS 60606 (312) 726-6974	X		X	
DETROIT STOKER COMPANY 1510 E. FIRST STREET MONROE, MICHIGAN 48161 (313) CHI-9500	X		X	
DORR-OLIVER, INC. 77 HAVEMEYER LANE STAMFORD, CONNECTICUT 06904 (203) 348-5871	X		X	
ECOLOGICAL SCIENCE CORPORATION 20215 N.W. SECOND AVENUE MIAMI, FLORIDA 33169 (305) 624-9601	X			
ECOLOTRON, INC. 1211 STEWARD AVENUE BETHPAGE, NEW YORK 11714 (516) 938-6622	X			
EIDAL INTERNATIONAL CORPORATION 245 WOODWARD ROAD, S.E., P.O. BOX 2087 ALBUQUERQUE, NEW MEXICO 87103 (505) 243-1341	X			
ENERGEX, LTD. 7998 MIRAMAR ROAD SAN DIEGO, CALIFORNIA 92128 (714) 271-4880	X			
ENVIRONISTCS, DIV. OF INSTRUMENT SYSTEMS CORP. 410 JERICO TURNPIKE JERICO, NEW YORK 11753 (516) 822-4200	X			
ENVIRONMENTAL SCIENCES, INC. 2901 BANKSVILLE ROAD PITTSBURGH, PENNSYLVANIA 15216 (412) 343-8800	X			

APPENDIX F(7)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
ENVIRONMENTAL SERVICES, INC. GRANITE & WEST STREETS MIDLAND PARK NEW JERSEY 07432 (201) 652-3332	X		X	
ENVIRONMENTAL SERVICES, INC. 433 LIBERTY STREET LITTLE FERRY, NEW JERSEY 07643 (201) 488-0200	X			
ENVIROTECH CORPORATION 3000 SAND HILL ROAD MENLO PARK, CALIFORNIA 94025 (415) 854-2000	X			
E.T.D. OF AQUA CHEM, INC. 3707 N. RICHARDS STREET MILWAUKEE, WISCONSIN 53217 (414) 962-0100	X			
FALCON PRODUCTS, INC. P.O. BOX 331-ES, 49 E. 2ND STREET HIALEAH, FLORIDA 33011 (305) 885-1183	X			
FIBER BOX ASSOCIATION 224 SOUTH MICHIGAN AVENUE CHICAGO, ILLINOIS 60604 (312) 683-0250		X	X	
FMC CORPORATION, ENVIRONMENTAL EQUIPMENT DIVISION 2240 W. DIVERSEY AVENUE CHICAGO, ILLINOIS 60647 (312) 227-7000	X		X	
GARVER-DAVIS, INC. 653 ALPHA PARK DRIVE HIGHLAND HEIGHTS OHIO 44143 (216) 531-0836	X			
GENERAL SERVICES ADMINISTRATION PACKAGING & PACKING BRANCH, STANDARDIZATION DIV. WASHINGTON, D.C. 20406		X	X	
GLASS CONTAINER INDUSTRY RESEARCH CORPORATION 444 EAST COLLEGE AVENUE STATE COLLEGE, PENNSYLVANIA 16801 (814) 237-5751		X	X	
GLASS CONTAINER MANUFACTURER'S INSTITUTE 330 MADISON AVENUE NEW YORK, NEW YORK 10017 (212) 682-5533		X	X	

APPENDIX F(8)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
JOSEPH GODER, INC. 2483 GREENLEAF AVENUE ELK GROVE VILLAGE, ILLINOIS 60007 (312) 439-5700	X			
GRUENDLER CRUSHER & PULVERIZER COMPANY 2915 N. MARKET STREET ST. LOUIS, MISSOURI 63106 (314) 531-1220	X		X	
GULF STATES POLLUTION CONTROL, INC. HIGHWAY 79 WEST JACKSONVILLE, TEXAS 75766 (214) 586-2408	X			
HAMILTON COMPANY 12440 E. LAMBERT ROAD WHITTIER, CALIFORNIA 90608 (213) 698-0751	X			
THE HEIL COMPANY 3000 W. MONTANA STREET MILWAUKEE, WISCONSIN 53201 (414) 647-3300	X		X	
HUDSON VALLEY COMPACTOR CORPORATION BOX 391 NEW CITY, NEW YORK 10956 (212) 244-3899	X			
INCINERATOR INTERNATIONAL, INC. 2702 N. MAIN STREET P.O. BOX 8617 HOUSTON, TEXAS 77009 (713) 227-1466	X			
INSTITUTE OF PAPER CHEMISTRY 1043 EAST SOUTH RIVER STREET APPLETON, WISCONSIN 54911 (414) 734-9251		X	X	
JEFFREY MANUFACTURING COMPANY P.O. BOX 1879 COLUMBUS, OHIO 43216 (614) 421-3123	X		X	
KLENZ-AIRE, INC. P.O. BOX 68326 LOUISVILLE, KENTUCKY 40299 (502) 267-1783	X			

APPENDIX F(9)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
LOMBARD CORPORATION 639 WICK AVENUE YOUNGSTOWN, OHIO 44501 (216) 747-3535	X			
MANUFACTURING CHEMISTS ASSOCIATION 1825 CONNECTICUT AVENUE, N.W. WASHINGTON, D.C. 20006		X	X	
MARATHON EQUIPMENT COMPANY, INC 1312 BORDEN AVENUE LEEDS, ALABAMA 35094	X		X	
MARENE ENGINEERING CORPORATION 111 W. 186TH STREET SOUTH HOLLAND, ILLINOIS 60473 (312) 333-6250	X			
MAXON CORPORATION 201 E. 18TH STREET MUNCIE, INDIANA 47302 (317) 284-3304	X		X	
McNAULIN INCINERATORS, INC. P.O. BOX 634 BUTLER, WISCONSIN 53007 (414) 781-3680	X			
MIDLAND-ROSS CORPORATION P.O. BOX 490 ROXBORO, NORTH CAROLINA 27573	X			
MIDLAND-ROSS CORPORATION, SURFACE COMBUSTION DIV. 2375 DORR STREET TOLEDO, OHIO 43601 (419) 536-4611	X			
FRANKLIN MILLER, INC. 36 MEADOW STREET EAST ORANGE, NEW JERSEY 07017 (201) 673-5550	X		X	
MIL-PAC SYSTEMS, INC. 900 NORTH AVENUE P.O. BOX 2791 PLAINFIELD, NEW JERSEY 07062 (201) 561-4200	X			

APPENDIX F(10)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
MITCHELL & ASSOCIATES, INC. P.O. BOX 5345 EVANSVILLE, INDIANA 47715 (812) 477-2381	X			
MONSANTO ENVIRO-CHEM SYSTEMS, INC. 10 S. RIVERSIDE PLAZA CHICAGO, ILLINOIS 60606 (312) 782-5041	X			
MORSE BOULGER, INC. 53-09 97TH PLACE CORONA, NEW YORK 11368 (212) 669-5000	X		X	
MSI INDUSTRIES, INC. BOX 16067 3800 RACE STREET DENVER, COLORADO 80216 (303) 744-4353	X			
MUNICIPAL EQUIPMENT, DIV. OF ENVIROTECH 100 VALLEY DRIVE BRISBANE, CALIFORNIA 94005 (415) 467-3800	X			
NATIONAL AIR OIL BURNER COMPANY 1284 SEDGLEY AVENUE PHILADELPHIA, PENNSYLVANIA 19134 (215) 743-6300	X		X	
NATIONAL ASSOCIATION OF SECONDARY MATERIAL INDUSTRIES 330 MADISON AVENUE NEW YORK, NEW YORK 10017		X	X	
NATIONAL BUREAU OF STANDARDS GAITHERSBURG, MARYLAND (301) 921-3246		X	X	
NATIONAL CENTER FOR RESOURCE RECOVERY 1211 CONNECTICUT AVENUE, N.W. WASHINGTON, D.C. 20036 (202) 223-6154		X	X	
NATIONAL COMPACTOR & TECHNOLOGY SYSTEMS, INC. 5400 RIO GRANDE AVENUE JACKSONVILLE, FLORIDA 32206	X		X	

APPENDIX F(11)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	ON
NATIONAL INCINERATOR CORPORATION 1500 S. WESTERN AVENUE CHICAGO, ILLINOIS 60608 (312) 733-5500	X			
NICHOLS ENGINEERING & RESEARCH CORPORATION 150 WILLIAM STREET NEW YORK, NEW YORK 10036 (212) 964-9500	X			
NORTH AMERICAN MANUFACTURING COMPANY 4455 E. 71ST STREET CLEVELAND, OHIO 44105 (216) 271-8000	X			
NORTHEAST BURN-ZOL CORPORATION BOX 109 DOVER, NEW JERSEY 07801 (201) 381-5900	X			
THE O'MAC COMPANY, INC. 3530 PETERSON AVENUE CHICAGO, ILLINOIS 60645	X			
ORGNICS, INC. P.O. BOX 543 SLATERSVILLE, RHODE ISLAND 02876 (401) 766-3530	X			
PACKAGING INSTITUTE 342 MADISON AVENUE NEW YORK, NEW YORK 10017 (212) MU 7-8875	X	X	X	
PAPERBOARD PACKAGING COUNCIL 1250 CONNECTICUT AVENUE, N.W. WASHINGTON, D.C. 20036 (202) 872-0180		X	X	
PLYWOOD RESEARCH FOUNDATION 1119 A STREET TACOMA, WASHINGTON 98401 (206) BR 2-2283		X	X	
POLLUTION SOLUTIONS, INC. 14225 VENTURA BOULEVARD SHERMAN OAKS, CALIFORNIA 91403 (213) 981-7107	X			

APPENDIX F(12)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
PRENCO MANUFACTURING COMPANY, PICKANDS MATHER & CO. 700 PENOBSCOT BUILDING DETROIT, MICHIGAN 48226 (313) 962-1560	X			
PRENCO MANUFACTURING COMPANY 29800 STEPHENSON HIGHWAY MADISON HEIGHTS, MICHIGAN 48071 (313) 549-2700	X			
PROCEDYNE CORPORATION 221 SOMERSET STREET N. BRUNSWICK, NEW JERSEY 08903 (201) 249-3347	X			
PYRO INDUSTRIES, INC. 38 WINDSOR AVENUE MINEOLA, NEW YORK 11501 (516) 747-4490	X			
RECLAMATION SYSTEMS INC. P.O. BOX 29 CAMBRIDGE, MASSACHUSETTS 02141 (617) 742-8147	X			
REES-MEMPHIS, INC. P.O. BOX 225 MEMPHIS, TENNESSEE 38103 (901) 527-4443	X		X	
RESEARCH & DEVELOPMENT ASSOCIATES FOR MILITARY FOOD & PACKAGING SYSTEMS 90 CHURCH STREET NEW YORK, NEW YORK 10007 (212) 483-8945		X	X	
REX CHAINBELT, INC. P.O. BOX 2022 MILWAUKEE, WISCONSIN 53201 (414) 384-3000	X		X	
REYNOLDS METALS 6601 WEST BROAD STREET RICHMOND, VIRGINIA 23261 (804) 282-2311	X	X	X	
JUDD RINGER CORPORATION 6860 FLYING CLOUD DRIVE EDEN PRAIRIE, MINNESOTA 55343 (312) 941-4180	X			

APPENDIX F(14)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
SURFACE COMBUSTION, DIV. OF MIDLAND-ROSS CORP. 2375 DORR STREET P.O. BOX 907 TOLEDO, OHIO 43801 (419) 536-4811	X		X	
SYSTEMS ENGINEERING & MANUFACTURING COMPANY, INC. 8330 WASHINGTON AVENUE P.O. BOX 7634 HOUSTON, TEXAS 77007 (713) 869-3583	X		X	
TAILOR & COMPANY, INC. 2403 STATE STREET BETTENDORF, IOWA 52722 (319) 355-2621	X			
TAKUMA COMPANY, LTD. 16 DOJIMA NAKAI KITA-KU OSAKA, JAPAN (06) 348-5161	X			
TECHNICAL ASSOCIATION OF THE PULP & PAPER INDUSTRY 1 DUNWOODY PARK ATLANTA, GEORGIA 30341 (404) 457-6352		X	X	
TEKOLOGY CORPORATION BERGEN & EDSALL BOULEVARDS PALISADES PARK, NEW JERSEY 07650 (201) 944-2221	X			
TEXTILE BAG MANUFACTURER'S ASSOCIATION 518 DAVIS STREET EVANSTON, ILLINOIS 60201 (312) 328-3330		X	X	
THERMAL RESEARCH & ENGINEERING CORPORATION ACORDON INTERNATIONAL COMPANY BROOK ROAD CONSHOHOCKEN, PENNSYLVANIA 19428 (215) 828-5400	X		X	
THERMAL ELECTRIC COMPANY, INC. 109 FIFTH STREET SADDLE BROOK, NEW JERSEY 07662 (201) 843-5800	X			

APPENDIX F(15)

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
TUBAR WASTE SYSTEMS, DIVISION OF UHRDEN, INC. SUGARCREEK, OHIO 44681	X			
UNION CARBIDE CORPORATION, LINDE DIVISION 270 PARK AVENUE NEW YORK, NEW YORK 10017 (212) 551-2345	X			
THE UNITED CORPORATION 1947 N. TOPEKA BOULEVARD TOPEKA, KANSAS 66608 (913) 234-5603	X			
U.S. ENVIRONMENTAL PROTECTION AGENCY OFFICE OF SOLID WASTE MANAGEMENT PROGRAMS 1835 K STREET, N.W. WASHINGTON, D.C. 254-7400		X	X	
VOLAND CORPORATION 27 CENTRE AVENUE NEW ROCHELLE, NEW YORK 10802 (914) 636-2014	X			
WARNER COMPANY 1721 ARCH STREET PHILADELPHIA, PENNSYLVANIA 19103 (215) LO 3-3900	X			
WASTE COMBUSTION CORPORATION 5824 MEADOWBRIDGE ROAD MECHANICSVILLE, VIRGINIA 23111 (703) 746-5264	X			
WASTE CONTROL SYSTEMS, INC. P.O. BOX 22916 HOUSTON, TEXAS 77027 (713) 966-2691	X			
WASTECO, INC. 20675 S.W. 105TH STREET TUALATIN OREGON 97216 (503) 638-6851	X			
WEBSTER MANUFACTURING COMPANY W. HALL STREET TIFFIN, OHIO 44883 (419) 447-8232	X			

APPENDIX F(16).

COMPANY/ORGANIZATION	MEDIUM		RESPONSE	
	LETTER	TELEPHONE	YES	NO
WILLIAMS PATENT CRUSHES & PULVERIZER COMPANY 2701 N. BROADWAY ST. LOUIS, MISSOURI 63102 (314) 621-3348	X		X	
WIREBOUND BOX MANUFACTURERS ASSOCIATION 1211 WEST 22ND STREET OAK BROOK, ILLINOIS 60521 (302) 654-3020		X	X	
WYSSMONT COMPANY, INC. 1476 BERGEN BOULEVARD FORT LEE, NEW JERSEY 07024 (201) 947-4600	X			
ZIMPRO, INC., SUB. OF STERLING DRUG, INC. ROTHSCHILD, WISCONSIN 54474 (715) 359-3166	X			
JOHN ZINK COMPANY, POLLUTION RESEARCH DIVISION 4401 S. PEORIA TULSA, OKLAHOMA 74105 (917) 747-1371	X			
ZURN INDUSTRIES, INC., SWARTWOUT DIVISION 1000 N. TOUBY PIKE KOKOMO, INDIANA 46901 (317) 459-5151	X			
ZURN INDUSTRIES, INC. 1801 PITTSBURGH AVENUE ERIE, PENNSYLVANIA 16512 (814) 455-0921	X			
ZURN INDUSTRIES, INC., SARGENT INCINERATOR DIV. 610 DEVON STREET KEARNY, NEW JERSEY 07032 (201) 991-7200	X		X	

APPENDIX G

GLOSSARY

AERATION - The process of exposing a bulk material, such as compost, to air, or of charging a liquid with a gas or a mixture of gases.

AEROBIC - Able to live and grow only if free oxygen is present.

AFTERBURNER - A device used to burn or oxidize the combustible constituents remaining in the effluent gases.

AIR

Ambient - The surrounding air.

Combustion - Air used for burning a fuel.

Cooling - Ambient air that is added to hot combustion gases to cool them.

Excess Combustion - Air supplied in excess of theoretical air, usually expressed as a percentage of the theoretical air.

Primary Combustion - Air admitted to a combustion system at the point where the fuel is first oxidized.

Secondary Combustion - Air introduced above or beyond a fuel bed by a natural, induced, or forced draft. It is generally referred to as overfire air if supplied above the fuel bed through the side walls or the bridge wall of the primary chamber.

Theoretical - The amount of air, calculated from the chemical composition of a waste, that is required to completely burn the waste. Also referred to as stoichiometric air and theoretical combustion air.

AIR POLLUTANT - A substance that, when present in the atmosphere in large enough concentrations, adversely affects the environment.

AIR POLLUTION - An impaired condition of the atmosphere that results because certain substances present in it are too numerous or are of a noxious character.

AIR QUALITY STANDARDS - Levels below which a specific substance or combination of substances must be kept in the atmosphere as established by legislation.

ANAEROBIC - Able to live and grow in the absence of free oxygen.

AQUIFER - An underground, water-bearing geologic formation.

APPENDIX G(2)

ASH - The incombustible material that remains after a fuel or solid waste has been burned.

ASH-FREE BASIS - The method whereby the weight of ash in a fuel sample is subtracted from its total weight and the adjusted weight is used to calculate the percent of certain constituents present. For example, the percent of fixed carbon (F C) on an ash-free basis is computed as follows:

$$\frac{\text{F C (weight)} \times 100}{\text{Fuel Sample (weight)} - \text{Ash (weight)}} = \% \text{ ash-free F C}$$

ASH PIT - A pit or hopper located below a furnace where residue is accumulated and from which it is removed.

ASH SLUICE - A trench or channel in which water transports residue from an ash pit to a disposal or collection point.

BACKFILL - The material used to refill a ditch or other excavation, or the process of doing so.

BACTERIA - Single-cell, microscopic organisms, that possess rigid cell walls. They may be aerobic, anaerobic, or facultative; they can cause disease; and some are important in the stabilization of solid wastes.

BALER - A machine used to compress and bind solid waste or other materials.

BECCARI PROCESS - A composting process developed by Dr. Giovanni Beccari in 1922. Anaerobic fermentation is followed by a final stage in which decomposition proceeds under partially aerobic conditions; the process was later modified by Verdier and Bordas.

BIODEGRADABLE - The significant breaking down by microorganisms of the physical and/or chemical structure of a compound.

BLOWER - A fan used to force air or gas under pressure.

BOOSTER CYCLE - The period during which additional hydraulic pressure is exerted to push the last charge of solid waste into a transfer trailer or a container attached to a stationary compactor.

BRICK (FIREBRICK) - Refractory brick made from fireclay.

Alumina-Diaspore Fireclay - Brick consisting mainly of diaspore or nodule clay and having an alumina content of 50, 60, or 70 percent (plus or minus 2.5 percent).

High-Duty Fireclay - A fireclay brick that has a pyrometric cone equivalent (PCE) not lower than Cone 31-23, or does not deform more than 1.5 percent at 2,460 F (1,350 C) in the standard local test.

Insulating - A firebrick having a low thermal conductivity and a bulk density of less than 70 pounds per cubic foot: suitable for lining industrial furnaces. Also called insulating block.

Intermediate-Duty Fireclay - A fireclay brick that has a PCE above Cone 29 or does not deform more than 3 percent at 2,460 F (1,350 C) in the standard local test.

APPENDIX G(3)

Super-Duty Fireclay - A fireclay brick that has a PCE above Cone 33 on the fired product, shrinks less than 1 percent in the American Society for Testing Materials permanent linear change test, Schedule C (2,910 F), and does not incur more than 4 percent loss in the panel spalling test (preheated to 3,000 F).

BRIQUETTER - A machine that compresses a material, such as metal turnings or coal dust, into small pellets.

BURNING AREA - The horizontal projection of a grata, a hearth, or both.

BURNING RATE - The quantity of solid waste incinerated or the amount of heat released during incineration. The rate is usually expressed in pounds of solid waste per square foot of burning area per hour or in Btu's per square foot of burning area per hour.

CAPACITY (INCINERATOR)

Design - The number of tons of solid waste that a designer anticipates his incinerator will be able to process in a 24-hour period if specified criteria are met.

Firm - The processing capacity of an incinerator when its largest independent unit is not operating.

Rated - The number of tons of solid waste that can be processed at an incinerator per 24-hour period when specified criteria prevail.

CARBON DIOXIDE (CO₂) - A colorless, odorless, non-poisonous gas that forms carbonic acid when dissolved in water; it is produced during the thermal degradation and microbial decomposition of solid wastes.

CARBON MONOXIDE (CO) - A colorless, poisonous gas that has an exceedingly faint metallic odor and taste. It is produced during the thermal degradation and microbial decomposition of solid wastes when the oxygen supply is limited.

CARBON NITROGEN RATIO (C/N) - The ratio of the weight of carbon to the weight of nitrogen present in a compost or in materials that are being composted.

CATALYTIC COMBUSTION SYSTEM - A process in which a substance is introduced into an exhaust gas stream to burn or oxidize vaporized hydrocarbons or odorous contaminants; the substance itself remains intact.

CELL - Compacted solid wastes that are enclosed by natural soil or cover material in a sanitary landfill.

CELL HEIGHT - The vertical distance between the top and bottom of the compacted solid waste enclosed by natural soil or cover material in a sanitary landfill.

CELL THICKNESS - The perpendicular distance between the cover materials placed over the last working faces of two successive cells in a sanitary landfill.

CHARGE - The quantity of solid waste introduced into a furnace at one time.

APPENDIX G(4)

CHARGING CHUTE - An overhead passage through which waste materials drop into an incinerator.

CHIPPER - A size-reduction device having sharp blades attached to a rotating shaft (mandrel) that shave or chip off pieces of certain objects, such as tree branches or brush.

COLLECTION - The act of removing solid waste from the central storage point of a primary source.

Alley - The picking up of solid waste from containers placed adjacent to an alley.

Carryout - Crew collection of solid waste from an on-premise storage area using a carrying container, carry-cloth, or a mechanical method.

Contract - The collection of solid waste carried out in accordance with a written agreement in which the rights and duties of the contractual parties are set forth.

Curb - Collection of solid waste from containers placed adjacent to a thoroughfare.

Franchise - Collection made by a private firm that is given exclusive right to collect for a fee paid by customers in a specific territory or from specific types of customers.

Municipal - The collection of solid waste by public employees and equipment under the supervision and direction of a municipal department or official.

Private - The collection of solid waste by individuals or companies from residential, commercial, or industrial premises; the arrangements for the service are made directly between the owner or occupier of the premises and the collector.

Setout/Setback - The removal of full and the return of empty containers between the on-premise storage point and the curb by a collection crew.

COMBUSTION - The chemical combining of oxygen with a substance that results in the production of heat and usually light.

COMBUSTION GASES - The mixture of gases and vapors produced by combustion.

COMPACTION PIT TRANSFER SYSTEM - A transfer system in which solid waste is compacted in a storage pit by a crawler tractor before being pushed into an open-top transfer trailer.

COMPACTOR

Mobile - A vehicle with an enclosed body containing mechanical devices that convey solid waste into the main compartment of the body and compress it.

Sanitary Landfill - A vehicle equipped with a blade and with rubber tires sheathed in steel or hollow steel cores; both types of wheels are equipped with load concentrations to provide compaction and a crushing effect.

Stationary - A machine that reduces the volume of solid waste by forcing it into a container.

APPENDIX G(5)

COMPOST - Relatively stable decomposed organic material.

COMPOSTING - A controlled process of degrading organic matter by microorganisms.

Mechanical - A method in which the compost is continuously and mechanically mixed and aerated.

Ventilated Cell - A composting method in which the compost is mixed and aerated by being dropped through a vertical series of ventilated cells.

Windrow - An open-air method in which compostable material is placed in windrows, piles, or ventilated bins or pits and is occasionally turned or mixed. The process may be anaerobic or aerobic.

COVER MATERIAL - Soil that is used to cover compacted solid waste in a sanitary landfill.

CULLET - Clean, color-sorted, crushed glass that is used in glassmaking to speed up the melting of silica sand.

DECOMPOSITION - The reduction of the net energy level and change in chemical composition of organic matter, as by microorganisms.

DENSITY

Sanitary Landfill - The ratio of the combined weight of solid waste and soil cover to the combined volume of the solid waste and the soil cover. $(W_{SW} + W_{soil}) / (V_{SW} + V_{soil})$

Bulk or Solid Waste - The number obtained by dividing the weight of solid waste by its volume.

DESTRUCTIVE DISTILLATION - The airless heating of organic matter that results in the evolution of volatile substances and produces a solid char consisting of fixed carbon and ash. See LANTZ PROCESS

DISPOSAL

Ocean - The deposition of waste into an ocean or estuarine body of water.

On-Site - The utilization of methods or processes to eliminate or reduce the volume or weight of solid waste on the property of the generator.

Waste - The ordinary process of discarding useless or unwanted material.

DUMP - A land site where solid waste is disposed of in a manner that does not protect the environment.

DUMPING - An indiscriminate method of disposing of solid waste. Meaning the unloading or emptying of a container: use *discharging*.

DUST - Fine-grain particulate matter that is capable of being suspended in air.

APPENDIX G(6)

- ECOLOGY** - The science that deals with the interrelationships of organisms and their living and non-living surroundings.
- ECOSYSTEM** - The interdependence of organisms and their surroundings.
- EFFLUENT** - The substances that flow out of a designated source.
- EFFLUENT SEEPAGE** - Diffuse discharge onto the ground of liquids that have percolated through solid waste or another medium; they contain dissolved or suspended materials.
- EMISSIONS** - Material that is released into the air either by a discrete source (primary emission) or as the result of a photochemical reaction or chain of reactions (secondary emission).
- EMISSION STANDARD** - A rule or measurement established to regulate or control the amount of a given pollutant that may be discharged into the outdoor atmosphere from its source.
- ENVIRONMENT** - The conditions, circumstances, and influences surrounding and affecting the development of an organism or group of organisms.
- ENVIRONMENTAL SYSTEM** - The interaction of an organism or group of organisms with its natural and manmade surroundings.
- FACULTATIVE** - Able to live and grow with or without free oxygen.
- FAIRFIELD-HARDY DIGESTER (COMPOSTING)** - A patented product of Fairfield Engineering Company, Marion, Ohio, which decomposes garbage, sewage sludge, industrial, and other organic wastes by a controlled continuous aerobic-thermophilic process.
- FIELD CAPACITY (OF SOLID WASTE)** - The amount of water retained in solid waste after it has been saturated and has drained freely. Also known as moisture-holding capacity.
- FLUE** - Any passage designed to carry combustion gases and entrained particulates.
- FLUE DUST** - Solid particles (smaller than 100 microns) carried in the products of combustion.
- FLUE GAS** - Waste gas from a combustion process.
- FLUE GAS SCRUBBER OR WASHER** - A type of equipment that removes fly ash and other objectionable materials from flue gas by the use of sprays, wet baffles, or other means that require water as the primary separation mechanism.
- FLUIDIZED BED TECHNIQUE** - A combustion process in which heat is transferred from finely divided particles, such as sand, to combustible materials in a combustion chamber. The materials are supported and fluidized by a column of moving air.
- FLY ASH** - All solids, including ash, charred paper, cinders, dust, soot, or other partially incinerated matter, that are carried in a gas stream.
- FUEL BED** - The layer of solid fuel or solid waste on a furnace grate or hearth.

APPENDIX G(7)

FUME - Suspended particles in a gas; one micron or less in diameter.

FUNGI - Simple plants that lack a photosynthetic pigment. The individual cells have a nucleus surrounded by a membrane, and they may be linked together in long filaments called hyphae, which may grow together to form a visible body. Simpler fungi are involved in the stabilization of solid waste and sewage.

FURNACE - The chambers of an incinerator where drying, ignition, and combustion occur.

GASIFICATION - The process of converting a solid or liquid fuel into a gaseous fuel.

GENERATION - The act or process of producing solid waste.

GRADER - A gas- or diesel-powered, pneumatic-wheeled machine equipped with a centrally located blade that can be angled to cast to either side.

GRATE - A device used to support the solid fuel or solid waste in a furnace during drying, ignition, or combustion. Openings in it permit air to pass through it.

GROUNDWATER - Water present in the saturated zone of an aquifer.

Free - Groundwater in aquifers that are not bounded by or confined in impervious strata.

GROUNDWATER RUNOFF - That part of the groundwater that is discharged into a stream channel as spring or seepage water.

HAMMERMILL - A broad category of high-speed equipment that uses pivoted or fixed hammers or cutters to crush, grind, chip, or shred solid wastes.

HEAT OF COMBUSTION - The heat released, measured in Btu's, when a unit quantity of waste or fuel is burned.

HEAT RELEASE RATE - The amount of heat liberated during complete combustion; it is usually expressed in Btu's per hour per cubic foot of the internal volume of the furnace where the combustion takes place.

HEAT VALUE

High - The Btu's liberated when a pound of solid waste is burned completely and the products of combustion are cooled to the initial temperature of the solid waste, as in a calorimeter.

Low - The high heat value minus the latent heat of vaporization of the water that is formed by burning the hydrogen in the fuel.

HYDROGEN SULFIDE (H₂S) - A poisonous gas with the odor of rotten eggs that is produced from the reduction of sulfates in and the putrefaction of a sulfur-containing organic material.

IGNITION TEMPERATURE - Lowest temperature of a fuel at which combustion becomes self-sustaining.

APPENDIX G(8)

IMPACT MILL - A machine that grinds material by throwing it against heavy metal projections rigidly attached to a rapidly rotating shaft.

INCINERATION - The controlled process by which solid, liquid, or gaseous combustible wastes are burned and changed into gases and the residu produced contains little or no combustible material.

INCINERATOR - An engineered apparatus used to burn waste substances and in which all the factors of combustion—temperature, retention time, turbulence, and combustion air—can be controlled.

Batch Fed - An incinerator that is periodically charged with solid waste; one charge is allowed to burn down or burn out before another is added.

Cell-type - An incinerator whose grate areas are divided into cells, each of which has its own ash drop, underfire air control, and ash grates.

Central - A conveniently located facility that burns solid waste collected from many different sources.

Chute Fed - An incinerator that is charged through a chute that extends two or more floors above it.

Continuous Feed - An incinerator into which solid waste is charged almost continuously to maintain a steady rate of burning.

Controlled-Air - An incinerator with two or more combustion areas in which the amounts and distribution of air are controlled. Partial combustion takes place in the first zone, and gases are burned in a subsequent zone or zones.

Direct Fed - An incinerator that accepts solid waste directly into its combustion chamber.

Flue Fed - An incinerator that is charged through a shaft that functions as a chute for charging waste and has a flue to carry the products of combustion.

Industrial - An incinerator designed to burn a particular industrial waste.

Multiple Chamber - An incinerator consisting of two or more chambers, arranged as in-line or retort types, interconnected by gas passage ports or ducts.

Municipal - A privately or publicly owned incinerator primarily designed and used to burn residential and commercial solid wastes.

On-Site - An incinerator that burns solid waste on the property utilized by the generator thereof.

Open Pit - A burning device that has an open top and a system of closely spaced nozzles that place a stream of high-velocity air over the burning zone.

Retort-type - A multiple-chamber incinerator in which the gases travel from the end of the ignition chamber, then pass through the mixing and combustion chamber.

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INDORE PROCESS - An anaerobic composting method that originated in India; it is similar to the Bangalore process and was modified by Van Maanen. Organic wastes are placed in alternate layers with human or animal excreta in a pit or pile. The piles are turned twice in six months and drainage is used to keep the compost moist.

INOCULUM - Microorganisms placed in a culture medium, soil, compost, etc.

LANTZ PROCESS - A destructive distillation technique, in which the combustible components of solid waste are converted into combustible gases, charcoal, and a variety of distillates.

LEACHATE - Liquid that has percolated through solid waste or other medium and has extracted dissolved or suspended materials from it.

LITTER - Wantonly discarded material.

METALS - In the secondary materials industry, metals include all ferrous, nonferrous, and alloy materials.

METHANE (CH₄) - An odorless, colorless, and asphyxiating gas that can explode under certain circumstances; can be produced by solid waste undergoing anaerobic decomposition.

MILLED REFUSE - Solid waste that has been mechanically reduced in size.

ODOR THRESHOLD - The lowest concentration of an airborne odor that a human can detect.

OPEN BURNING - Uncontrolled burning of wastes in the open or in an open dump.

ORGANISM - Any living thing.

Microorganism - Any living thing that is microscopic or submicroscopic in size.

PATHOGEN - An organism capable of producing disease.

PERCENT MOISTURE CONTENT (SOLID WASTE) - The percent of moisture contained in solid waste; it can be calculated on a dry or wet basis.

$$1. \text{ Wet} = \frac{100 (\text{water content of sample})}{\text{Dry weight of sample} + \text{water content of sample}}$$

$$2. \text{ Dry} = \frac{100 (\text{water content of sample})}{\text{Dry weight of sample}}$$

PERMEABILITY - The capacity of a porous medium to conduct or transmit fluids.

PICKING TABLE OR BELT - Table or belt on which solid waste is manually sorted and certain items are removed. It is normally used in composting and salvage operations.

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POLLUTION - The condition caused by the presence in the environment of substances of such character and in such quantities that the quality of the environment is impaired or rendered offensive to life.

PROCESSING - Any method, system, or other treatment designed to change the physical form or chemical content of solid waste.

PRODUCTS OF COMBUSTION - The gases, vapors, and solids that result from the combustion of a fuel.

PULVERIZATION - The crushing or grinding of material into small pieces.

PUTREFACTION - The decomposition of organic matter by microorganisms and oxidation, resulting in odors.

PUTRESCIBLE - Organic matter capable of being decomposed by microorganisms.

PYROLYSIS - The chemical decomposition of a material by heat in the absence of oxygen.

RASPER - A grinding machine in the form of a large vertical drum containing heavy hinged arms that rotate horizontally over a rasp-and-sieve floor.

RECLAMATION - The restoration to a better or more useful state, such as land reclamation by sanitary landfilling, or the obtaining of useful materials from solid waste.

RECOVERABLE RESOURCES - Materials that still have useful physical or chemical properties after serving a specific purpose and can, therefore, be reused or recycled for the same or other purposes.

RECOVERY - The process of obtaining materials or energy resources from solid waste. Synonyms: Extraction, Reclamation, Salvage.

Energy Energy available from the heat generated when solid wastes are incinerated.

RECYCLING - The process by which waste materials are transformed into new products in such a manner that the original products may lose their identity.

REFUSE See **SOLID WASTE**.

REPROCESSING - The action of changing the condition of a secondary material.

RESIDUE - Material that remains after gases, liquids, or solids have been removed.

Incinerator Residue All of the solid material collected after an incineration process is completed.

REUSE - The reintroduction of a commodity into the economic stream without any change.

RUBBISH - A general term for solid waste—excluding food waste and ashes—taken from residences, commercial establishments, and institutions.

SALVAGE - The utilization of waste materials.

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SALVAGING - The controlled removal of waste materials for utilization.

SANITARY LANDFILL - A site where solid waste is disposed using sanitary landfilling techniques.

SANITARY LANDFILLING - An engineered method of disposing of solid waste on land in a manner that protects the environment, by spreading the waste in thin layers, compacting it to the smallest practical volume, and covering it with soil by the end of each working day.

SANITARY LANDFILLING METHOD

Area - A method in which the wastes are spread and compacted on the surface of the ground and cover material is spread and compacted over them.

Quarry - A variation of the area method in which the wastes are spread and compacted in a depression; cover material is generally obtained elsewhere.

Ramp - Another variation of the area method in which a cover material is obtained by excavating in front of the working face. A variation of this method is known as the progressive slope sanitary landfilling method.

Trench - A method in which the waste is spread and compacted in a trench. The excavated spoil is spread and compacted over the waste to form the basic cell structure.

Wet Area - A method used in a swampy area where precautions are taken to avoid water pollution before proceeding with the area landfilling technique.

SANITATION - The control of all the factors in man's physical environment that exercise or can exercise a deleterious effect on his physical development, health, and survival.

SATELLITE VEHICLE - A small collection vehicle that transfers its loads into a larger vehicle operating in conjunction with it.

SCREEN

Rotary - An inclined, meshed cylinder that rotates on its axis and screens material placed in its upper end.

Vibrating - An inclined screen that is vibrated mechanically and screens material placed on it.

SEPARATOR - A separating device that throws mixed material onto a rotating shaft; heavy and resilient materials bounce off one side of the shaft, while light and inelastic materials land on the other and are cast in the opposite direction.

SECONDARY MATERIAL - A material that is utilized in place of a primary or raw material in manufacturing a product.

SEEPAGE - Movement of water or gas through soil without forming definite channels.

SEPARATION - The systematic division of solid waste into designated categories.

SEPARATOR

Ballistic - A device that drops mixed materials having different physical characteristics onto a high-speed rotary impeller; they are hurled off at different velocities and land in separate collecting bins.

Inertial - A material separation device that relies on ballistic or gravity separation of materials having different physical characteristics.

Magnetic - Any device that removes ferrous metals by means of magnets.

SHEAR SHREDDER - A size reduction machine that cuts material between two large blades or between a blade and a stationary edge.

SHREDDER - A machine that reduces discarded automobiles and other low-grade sheet and coated metal in a continuous operation to fist-size pieces.

SLAG - A mineral substance formed by chemical action and fusion at furnace operating temperatures.

SMOKE - An aerosol consisting of all the dispersible particulates produced by the incomplete combustion of carbonaceous materials entrained in flue gas.

SOLID WASTE - Useless, unwanted, or discarded material with insufficient liquid content to be free flowing. *See also* WASTE.

Agricultural - The solid waste that results from the rearing and slaughtering of animals and the processing of animal products and orchard and field crops.

Commercial - Solid waste generated by stores, offices and other activities that do not actually turn out a product.

Industrial - Solid waste that results from industrial processes and manufacturing.

Institutional - Solid wastes originating from educational, health care, and research facilities.

Municipal - Normally, residential and commercial solid waste generated within a community.

Pesticide - The residue resulting from the manufacturing, handling, or use of chemicals for killing plant and animal pests.

Residential - All solid waste that normally originates in a residential environment. Sometimes called domestic solid waste.

SOLID WASTE MANAGEMENT - The purposeful, systematic control of the generation, storage, collection, transport, separation, processing, recycling, recovery, and disposal of solid wastes.

STACK - A vertical passage through which products of combustion are conducted to the atmosphere.

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STORAGE - The interim containment of solid waste, in an approved manner, after generation and prior to ultimate disposal.

SULFUR OXIDES (SO_x) - Compounds of sulfur combined with oxygen that have a significant influence on air pollution.

TRANSFER STATION - A site at which solid waste is concentrated and then taken to a processing facility or sanitary landfill.

TRANSPORT - The movement of solid waste subsequent to collection.

WASTE *See also* **SOLID WASTE.**

Bulky Waste - Items whose large size precludes or complicates their handling by normal collection, processing, or disposal methods.

Construction and Demolition Waste - Building materials and rubble resulting from construction, remodeling, repair, and demolition operations.

Hazardous Waste - Those wastes that require special handling to avoid illness or injury to persons or damage to property.

Wood Pulp Waste - Those wastes that require special handling to avoid illness or injury to persons or damage to property.

Special Waste - Those wastes that require extraordinary management.

Yard Waste - Plant clippings, prunings, and other discarded material from yards and gardens. Also known as yard rubbish.

WASTE PROCESSING - An operation such as shredding, compaction, composting, and incineration, in which the physical or chemical properties of wastes are changed.

WET MILLING - The mechanical size reduction of solid wastes that have been wetted to soften the paper and cardboard constituents.

APPENDIX H
INDEX TO SUMMARY FACT SHEETS

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	FACT SHEET PAGE NUMBER
	<u>CHEMICALS</u>		
1	ACETONE	ACETONE (LIQUID)	III-1
2	BENZENE	BENZOL (LIQUID)	III-2
3	CARBON TETRA-CHLORIDE	CARBON TETRACHLORIDE (LIQUID)	III-3
4	CORROSION PREVENTIVE	CORROSION PREVENTIVE (FLUID)	III-4
5	CORROSION PREVENTIVE	DESSICANT (POWDER)	III-5
6	CORROSION PREVENTIVE	OIL TYPE VOLATILE CORROSION INHIBITOR (FLUID)	III-6
7	CORROSION PREVENTIVE	VCI (SOLID)	III-7
8	DETERGENT	ALKALI CLEANING COMPOUND (LIQUID)	III-8
9	DETERGENT	DETERGENT (LIQUID)	III-9
10	GREASE	GREASE (FLUID)	III-10
11	LUBRICATING OIL	LUBRICATING OIL (LIQUID)	III-11
12	METHANOL	WOOD ALCOHOL (LIQUID)	III-12
13	PETROLATUM	PETROLATUM (LIQUID)	III-13
14	PETROLEUM CLEANING SOLVENT	STODDARD SOLVENT (LIQUID)	III-14

APPENDIX H(2)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	FACT SHEET PAGE NUMBER
15	PETROLEUM DISTILLATE	MINERAL SPIRITS (LIQUID)	III-15
16	TETRACHLORO-ETHYLENE	PERCHLORO-ETHYLENE (LIQUID)	III-18
17	TRICHLORO-ETHYLENE	PERCHLORO-ETHYLENE (LIQUID)	III-17
	GLASSES		
18	GLASS	FIBERGLASS (FIBER)	III-18
19	GLASS/ PLASTIC	FIBERGLASS (SHEET)	III-19
20	GLASS	GLASS (SOLID STOCK)	III-20
21	MINERAL	VERMICULITE (FIBER)	III-21
	METALS		
22	ALUMINUM	ALUMINUM (FOIL)	III-22
23	ALUMINUM	ALUMINUM (SHEET)	III-23
24	LEAD	LEAD (SHEET)	III-24
25	STEEL, IRON	METAL CYLINDERS (SOLID STOCK)	III-25
26	STEEL, IRON	METAL DRUMS (SHEET)	III-26
27	STEEL, IRON	METAL STRAPPING (STRAPS)	III-27
28	TIN-PLATED STEEL	TIN CANS (SHEET)	III-28
29	TIN-PLATED STEEL/ ALUMINUM	BIMETALLICS (SHEET)	III-29
30	VARIOUS METALS	AEROSOLS (SHEET)	III-30

APPENDIX H(3)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	USE
	<u>PAPERS</u>		
31	FIBER-BOARD	COATED CORRUGATED CONTAINERBOARD (SHEET)	III-31
32	FIBER-BOARD	CORRUGATED AND SOLID BOARD OR CONTAINER-BOARD (SHEET)	III-32
33	FIBER-BOARD	WAX IMPREGNATED CORRUGATED BOARD (SHEET)	III-33
34	PAPER	BAG AND SACK (SHEET)	III-34
35	PAPER	COATED, IMPREGNATED (SHEET)	III-35
36	PAPER	CONVERTING, ENVELOPE (SHEET)	III-36
37	PAPER	NEWSPRINT (SHEET, SHREDS)	III-37
38	PAPER	PULP (MOLDED)	III-38
39	PAPER	TISSUE (SHEET)	III-39
40	PAPER	VCI TREATED PACKAGING MATERIALS (SHEET)	III-40
41	PAPER	WAX PAPER (SHREDS)	III-41
42	PAPER	WRAPPING (SHEET)	III-42
43	PAPER-BOARD	CHIPBOARD, BOXBOARD (SHEET)	III-43
44	PAPER-BOARD	SPIRALLY WOUND FIBER CAN (TUBE)	III-44
45	PAPER/ FOIL LAMI-NATION	POLYOLEFIN - FOIL- PAPER (SHEET)	III-45

APPENDIX H(4)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	FACT SHEET PAGE NUMBER
46	PAPER-BOARD/ METAL	METAL-EDGED PAPER-BOARD (SHEET)	III-46
47	PAPER-BOARD/ METAL	METAL-EDGED PAPER-BOARD (SHEET)	III-47
48	FIBER-BOARD/ WOOD	WOOD-CLEATED FIBER-BOARD (SHEET)	III-48
	<u>PLASTICS</u>		
49	ACRYLONITRILE BUTADIENE STYRENE	ABS (SOLID STOCK, SHEET)	III-49
50	CELLULOSICS	CELLOPHANE (FILM)	III-50
51	CELLULOSICS	CELLULOSE ACETATE (FOAM)	III-51
52	CELLULOSICS	CELLULOSE ACETATE (SHEET, FILM)	III-52
53	CELLULOSICS	CELLULOSE ACETATE BUTYRATE (SOLID STOCK)	III-53
54	CELLULOSICS	STRIPPABLE PLASTIC COATING - COLD (FILM)	III-54
55	CELLULOSICS	STRIPPABLE PLASTIC COATING - HOT (FILM)	III-55
56	EPOXY	EPOXY RESIN (FILM)	III-56
57	IONOMER	SURLYN (FILM, SHEET)	III-57
58	IONOMER	SURLYN (FOAM)	III-58
59	PHENOLICS	BAKELITE (SOLID STOCK)	III-59
60	PLASTIC/FOIL LAMINATION	POLYOLEFIN/ ALUMINUM/ POLYESTER, MARPLEX (SHEET)	III-60

APPENDIX H(5)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	FACT SHEET PAGE NUMBER
61	POLYACRYLICS	LUCITE, PLEXIGLAS (SOLID STOCK, SHEET)	III-61
62	POLYAMIDS	NYLON (CLOTH)	III-62
63	POLYAMIDS	NYLON (FIBER)	III-63
64	POLYCAR- BONATE	POLYCARBONATE (SHEET)	III-64
65	POLYCAR- BONATE	POLYCARBONATE (SOLID STOCK)	III-65
66	POLYESTER	DACRON (FIBER)	III-66
67	POLYESTER	MYLAR (FILM)	III-67
68	POLYOLE- FIN	POLYETHYLENE (FILM)	III-68
69	POLYOLE- FIN	POLYETHYLENE (SOLID STOCK)	III-69
70	POLYOLE- FIN	POLYPROPYLENE (FIBER)	III-70
71	POLYOLE- FIN	POLYPROPYLENE (FILM)	III-71
72	POLYOLE- FIN	POLYPROPYLENE (FOAM)	III-72
73	POLYOLE- FIN	POLYPROPYLENE (SOLID STOCK)	III-73
74	POLYSTYRENE	POLYSTYRENE (SHEET, FILM)	III-74
75	POLYSTYRENE	POLYSTYRENE (SOLID)	III-75
76	POLYSTYRENE	STYROFOAM (FOAM)	III-76
77	POLYSTYRENE	STYROFOAM (FOAM)	III-77

APPENDIX H(6)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	FACT SHEET PAGE NUMBER
78	POLYSTYRENE	STYROFOAM (PELLETS)	III-78
79	POLYSULPHONE	POLYSULPHONE (SOLID STOCK)	III-79
80	POLYTETRA-FLUOROETHYLENE	TEFLON (SHEET, FILM)	III-80
81	POLYTETRA-FLUOROETHYLENE	TEFLON (SOLID STOCK)	III-81
82	POLYURETHANE	POLYURETHANE (FILM)	III-82
83	POLYURETHANE	POLYURETHANE (FOAM)	III-83
84	POLYURETHANE	POLYURETHANE (SOLID STOCK)	III-84
85	POLYVINYL ALCOHOL	PVA (SHEET)	III-85
86	POLYVINYL ALCOHOL	PVAC (SHEET)	III-86
87	POLYVINYL CHLORIDE	PVC (FILM)	III-87
88	POLYVINYL CHLORIDE	PVC (SOLID STOCK)	III-88
89	POLYVINYLIDENE CHLORIDE	SARAN, PVDC (FILM)	III-89
90	RUBBER	LATEX (FOAM)	III-90
	<u>TEXTILES</u>		
91	BOUND FIBER	RUBBERIZED HAIR (FIBER)	III-91
92	CANVAS, RUBBERIZED	TARP (CLOTH)	III-92

APPENDIX H(7)

MATERIAL NUMBER	CATEGORY/ NAME	COMMON NAME (FORM)	FACT SHEET PAGE NUMBER
93	COTTON	COTTON (CLOTH)	III-93
94	COTTON	COTTON (CLOTH)	III-94
95	COTTON	COTTON (CLOTH)	III-95
96	FELT	FELT (SHEET)	III-96
97	JUTE	BURLAP (CLOTH)	III-97
98	SCRIM/FOIL LAMINATION	POLYOLEFIN/ ALUMINUM/SCRIM (SHEET)	III-98
	WOODS		
99	WOOD	COOPERAGE (BOARD)	III-99
100	WOOD	EXCELSIOR (SHREDS)	III-100
101	WOOD	PLYWOOD (SHEET)	III-101
102	WOOD	VENEER (SHEET)	III-102
103	WOOD	WOOD (BOARD)	III-103
104	WOOD/ METAL	NAILED OR WIREBOUND (BOARD)	III-104