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COMPATIBILITY OF EXPLOSIVES WITH POLYMERS

by

Marjorie C. St. Cyr

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SUMMARY

This report is a compilation of data published between 1950 and 1957 on the compatibility of polymeric materials with explosives and propellants. Its contents, which supplement those of Picatinny Arsenal Technical Report 1838 by O. R. Abolafia, are arranged to facilitate the addition of new material based on the chemical composition and structure of the polymers, and also to make easier the comparison of the polymers in terms of their behavior in contact with particular explosives and propellants. The goal of this work is to provide an authoritative and up-to-date handbook which will be useful to design engineers and chemists in selecting polymeric materials for applications involving prolonged contact with explosives and propellants.

A section is included for each of the following classes of polymers: acrylates, cellulose, epoxies, ethylenes and fluorocarbons, furanes, polyamides (nylons), phenolics, polyesters, silicones, styrene polymers and copolymers, synthetic rubbers and rubber derivatives, vinyl polymers and copolymers, and miscellaneous resins.

Each section contains a brief description and evaluation, followed by relevant tables and figures. For propellants and explosives, results of vacuum-stability tests and 100°C heat tests are given. The effects of contact on the polymers are reported chiefly in terms of the results of physical and mechanical properties tests.

DISCUSSION

1. Ordnance personnel frequently have the problem of using polymers in contact with explosives. Usually, design or other criteria limit the selection of the polymer, quite aside from the compatibility aspect. If neither the explosive or polymer adversely affects the other, the compatibility aspect presents no problem. Occasionally, however, a polymer does seriously and adversely affect an explosive. Such a finding is usually considered sufficient justification for rejecting the polymer for use in direct contact with the explosive.

2. At this point, it may be well to explain what is meant by the word "compatibility" as it is used in this report.¹ When a polymer² is in direct contact with an explosive³ the polymer may under certain conditions affect one or more of the properties of the explosive. Conversely, an explosive may affect the properties of a polymer. If neither the explosive nor the polymer is adversely affected by direct contact, then the explosive-polymer combination is considered compatible.

¹Compatibility as defined by the polymer industry has to do with the mutual solubility or the mutual coexistence of materials as evidenced by the clarity, stability, and homogeneity of solutions without phase separation.

²The term polymer, as used in this report, refers to plastics, elastomers, rubbers, adhesives, coatings, potting or encapsulating resins, and all compositions containing a polymeric component of significant proportions.

³The term explosive includes propellants, pyrotechnics, fuze powders, black powder, and all other non-inert components of ammunition items.

3. The vacuum-stability test, the heat test, the impact-sensitivity test, and the Taliani test are the most common means of determining the effect of a polymer on an explosive.

4. The vacuum-stability test, which is more frequently used than any other, is an accelerated test designed to determine whether or not contact with a polymer increases the reactivity of an explosive. Details regarding vacuum-stability and other tests are given in the description of tests methods. In the usual vacuum-stability test, a net increase of 5 milliliters in the amount of gas given off by the explosive is considered evidence of excessive reactivity. The increase is attributed to undesirable interactions between the explosive and the polymer or undesirable reactions induced by the polymer. Ideally, the validity of the 5-ml criterion should be established for each polymer-explosive combination. This has already been done for many polymer-explosive combinations, and the results have been reported (See PATR 1636, 9 December 1946).

5. When the vacuum-stability test is used, a variation in the ratio of the surface area to the volume of the polymer/explosive mixture, a change in the ratio of explosive to polymer, or the presence in the polymer of small amounts of unreacted catalyst can produce confusing and seemingly conflicting results.

6. The heat test is conducted to quickly obtain data indicating deterioration.

The heat test is used instead of the vacuum-stability test when the effect of polymers on the stability of highly sensitive explosives is to be determined. A reported 5% loss in weight during two 48-hour periods or an explosion within 100 hours is considered indicative of excessive deterioration, and the materials are deemed incompatible.

7. When it has been determined that the polymer does not affect the explosive, one or more tests to determine the effect of the explosive on the polymer may be run. In these tests, specimens of the polymer are usually immersed in the explosive and stored at elevated temperatures. The properties of test specimens are determined as a function of time in the explosive and compared with the properties of control specimens stored apart from the explosive. Time periods of from several weeks to several months are usually required. The effects most often measured are: visual changes and changes in weight, hardness, tensile strength, and elongation. End-item requirements determine which properties are of greatest importance in each Ordnance application. Accordingly, the significance of all changes in the properties of the polymer must be interpreted in terms of the particular application under consideration.

8. Fortunately, many end-item applications do not require contact between the polymer and the explosive. For such applications, these tests are usually neither required nor relevant except for the possibility of accidental contact.

9. It should be emphasized that this report was prepared by compiling available data. This data was obtained over a period of several years by numerous investigators in connection with many specific requests for detailed information regarding the compatibility of polymer-explosive combinations. The author is aware that, in some instances, isolated portions of the data appear to be in disagreement with the conclusions. Nevertheless, the author strongly feels that her conclusions are correct and proper, and should prove of considerable benefit to technical personnel who do not have a detailed familiarity with this specialized field.

TEST METHODS

Vacuum-Stability Test

10. Stability tests generally measure the resistance of explosives to decomposition by heat. The vacuum-stability test measures the loss in weight or the volume of gas liberated after a standardized heating period has elapsed.¹ A 5 ± 0.05 -gram portion of the explosive is thoroughly mixed with a 0.5 ± 0.05 -gram portion of the polymer, and the mixture is subjected to the vacuum-stability test according to standard conditions and procedures.² A temperature of 100°C is used for all tests with high explosives.

¹S. Axelrod, *Effects Produced Upon Explosives by Contact with Plastics*, Report No. 1, Picatinny Arsenal Technical Report 1636, 9 December 1946

²W. H. Rinkenbach and A. J. Clear, *Standard Laboratory Procedures for Sensitivity, Brisance, and Stability of Explosives*, Picatinny Arsenal Technical Report 1401, 18 March 1944, pp 9-10

Heat Test

11. A 0.6-gram sample of explosive and a 0.6-gram sample of polymer are heated for two 48-hour periods at 100°C , both alone and in a mixture. It is noted whether the occurrence of an explosion during 100 hours of such heating is recorded.³

Impact-Sensitivity Test

12. A small sample of explosive is subjected to the action of a falling weight, usually 2 kg, and the minimum height at which at least one out of ten trials results in a detonation or in some other evidence of explosive decomposition⁴ is taken as the test value.

DEFINITIONS OF TERMS

13. The following special terms are used in this report:

Tensile Strength

The maximum tensile load per unit area of original cross-section, within the gage boundaries, required to break a test specimen. (The maximum tensile load is the greatest tensile load sustained by the specimen during the test. It may or may not coincide with the tensile load at the moment of rupture.) It is expressed in pounds per square inch.⁵

³O. Sheffield, *Properties of Explosives of Military Interest*, Picatinny Arsenal Technical Report 1740, Revision 1, April 1958.

⁴L. C. Smith and E. A. Eyster, *Physical Testing of Explosives, Part III, Miscellaneous Sensitivity Tests, Performance Tests*, OSRD Report No. 5746, 27 December 1945

⁵ASTM Standards, Part 6, 1955 p. 217

Tensile Stress (True)

The tensile load per unit of minimum cross-sectional area within the gage boundaries carried by the test specimen at any given moment. It is expressed in pounds per square inch.

Strain

The ratio of the extension to the original length of the measured elongation section of the test specimen, that is, the change in length per unit original length. It is expressed as a dimensionless ratio.

Percentage Elongation

The increase in length expressed as a percentage of the original gage length.

Proportional Limit

The greatest stress which a material is capable of developing without a deviation from the law of proportionality of stress to strain (Hooke's Law).

Yield Point

The stress level at which a marked increase in strain occurs without a corresponding increase in stress.

Elastic Modulus

The ratio, within the elastic limit of a material, of stress to corresponding strain.

CONCLUSIONS

14. The degree to which a polymer affects the stability of an explosive varies with the exact composition of the explosive and the polymer. In general, a polymer that has an adverse effect on one explosive is likely to have an adverse effect on others.

15. The effect of an explosive on a polymer is usually qualitatively predictable if the composition and structure of the polymer and the chemistry of the explosive are known. A principal cause of the mechanical deterioration of polymers is the migration of nitroglycerine from double- or triple-base propellants into the polymeric material, which lowers its strength and its modulus. In general, polymers that are degraded by overplasticization caused by nitroglycerine migration begin to show signs of deterioration between the second and fourth weeks of storage.

16. Important general conclusions are given below. More detailed conclusions are contained in the discussions of the various types of polymer.

a. Most explosive-polymer combinations are compatible. Important general exceptions are described in the following paragraphs.

b. Most of the amorphous thermoplastics (unmodified polystyrene is an exception) lose strength and deteriorate when placed in contact with propellants containing nitroglycerine. The rate of

deterioration is dependent on the propellant, the polymer, and the test conditions. Highly crosslinked, or thermoset, and crystalline polymers are resistant to deterioration by propellants containing nitroglycerine.

c. Epoxies cured with aliphatic amines cause excessive reactivity of most explosives. Epoxies cured with polyamides cause excessive reactivity of a few explosives. Such polyamides by themselves also cause excessive reactivity of some explosives.

d. Polysulfide (Thiokol) polymers increase the reactivity of some explosives and propellants. Polysulfides should definitely not be used in direct contact with PETN, Pentolite, Composition B, Amatol, or Tetrytol.

e. Rubber-modified phenolics cause greater reactivity of explosives than other phenolic compositions but such reactivity is not necessarily excessive.

f. Many explosives cause vulcanization of unsaturated rubbers. The amount of vulcanization increases with the unsaturation of the rubber polymer.

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17. The author wishes to acknowledge the valuable assistance rendered by Mr. William Tanner, who provided much helpful advice, and by Mrs. C. Rugger and Mr. E. Duda, who performed much of the experimental work reported herein.

TABLE 1

Composition of Propellants^a
(percent by weight)

M-1		M-7	
Nitrocellulose (13.15% N)	85.00%	Nitrocellulose (13.15% N)	54.60%
Dinitrotoluene	10.00	Nitroglycerine	35.50
Dibutyl phthalate	5.00	Ethyl centralite	0.90
Ash	0.40	Potassium perchlorate	7.80
		Carbon black (dry)	1.20
		Total volatiles	0.80% dry

M-2		M-8	
Nitrocellulose (13.15% N)	77.45%	Nitrocellulose (13.25% N)	52.15%
Nitroglycerine	19.5	Nitroglycerine	42.27
Ethyl centralite	0.6	Diethyl phthalate	5.04
Graphite	0.3	Potassium nitrate	1.09
Potassium nitrate	0.75	Diphenylamine	0.67
Barium nitrate	1.4	Methyl cellulose	0.16
Moisture	0.7	Moisture	0.09
Ash	0.4		

M-6		M-9	
Nitrocellulose	87.0 %	Nitrocellulose (13.25% N)	57.75%
Dinitrotoluene	10.0	Nitroglycerine	40.00
Dibutyl phthalate	3.0	Potassium nitrate	1.5
Diphenylamine	1.0	Ethyl centralite	0.75
Moisture	0.6		
Ash	0.4		

Single-Base

Double-Base

Triple-Base

Composite

M-1	M-2	M-17	M-15	T-13
M-6	M-7	M-18	T-7	T-17
M-10	M-8	T-2		T-21 (Now M-20)
M-12	M-9	T-6		T-22
M-14	M-16	T-8		
	T-16	MRP		
	T-18	UGK		
	T-19	OIO		
	T-28			
	JPN			

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Section 1

ACRYLATES

(Thermoplastic resins including polymethyl methacrylate)

A survey of available data on the compatibility of acrylate-type polymers with explosives and propellants indicates that:

1. Acrylates do not affect the reactivity of explosives and propellants.
2. Explosives have no apparent affect upon the physical appearance of acrylates.
3. The behavior of acrylates in direct contact with double- and triple-base propellants is not altogether satisfactory. Contact with double-base propellants containing 20% and more nitroglycerine results in excessive nitroglycerine absorption with consequent plasticization of the plastic. Other plasticizers and vehicles for propellants, such as triacetin and dibutyl phthalate, may also be absorbed by the acrylate.
4. The M-9 propellant, when used in the vacuum-stability test with Acryloid B-72 (Table 2, p 10), liberates 7.72 ml of gas by itself and is therefore considered to be excessively reactive. Under these conditions, interpreting a net evolution of 5.06 ml as excessive may not be valid.

TABLE 2
Vacuum Stability Test Results for Acrylates

Polymer	Explosive or Propellant	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due To Polymer	Remarks ^a	Picatinny Report No.
Acrylic MF-875	Amatol	100	0.50	0.41	0.94	0.03	Negligible	56-M2-12
	Black powder	100	0.23	1.24	0.46	0.00	None	56-M2-12
	M-7	90	0.47	2.13	1.92	0.00	None	56-M2-12
	M-15	90	0.47	1.98	2.00	0.00	None	56-M2-12
Acryloid B-72	Tetryl	100	0.50	0.45	0.68	0.00	None	56-M2-12
	Black powder	100	0.28	0.44	1.10	0.38	Negligible	56-M2-5
	Composition B	100	0.37	0.46	0.31	0.00	None	52-M2-145
	M-9	90	0.92	7.72	13.70	5.06	Excessive	53-M2-19
Lucite HN-130	Squib mix	100	1.85	6.90	8.30	0.00	None	51-8-4
	Tetryl	100	0.37	0.51	0.81	0.00	None	52-M2-145
	Bullseye No. 2 Flash Powder	90	0.31	1.94	1.84	0.00	None	52-HI-2023
	Halite	—	—	—	—	1.20	Very slight	53-HI-2575
Plexiglas	PETN	—	—	—	—	0.38	Negligible	53-HI-2575
	RDX	—	—	—	—	0.31	Negligible	53-HI-2575
	T-9	—	—	—	—	2.22	Slight	53-HI-2575
	Composition C-4	100	0.97	0.26	0.44	0.00	None	51-8-35
Eastman No. 910	PBX-	100	0.46	0.33	0.48	0.00	None	57-HI-29

^a None = net increase in gas evolution of 0

Negligible = net increase in gas evolution of 0.01 - 1.00

Very slight = net increase in gas evolution of 1.01 - 2.00

Slight = net increase in gas evolution of 2.01 - 3.00

Moderate = net increase in gas evolution of 3.01 - 4.99

Excessive = net increase in gas evolution of 5.00 and above

TABLE 3
Effects of Storage on Physical Properties of Acrylates

Polymer	Explosive or Propellant	Storage, Weeks	Temperature, °C	Effects on Polymer	Picatinny Report No.
Acryloid B-72	Composition B	32	76	No effect	52-M2-145
	M-9	2	50	Softens, loses adhesion, becomes tacky	53-M2-19
	Squib mix	6	50	Becomes brittle and loses adhesion	51-8-4
	Tetryl	32	76	Color fades	52-M2-145

TABLE 4
Properties of Plexiglas II Cast Sheets After 12 Months Storage With Various Propellants

Propellant	Change in Weight	Maximum Tensile psi	Proportional Limits psi	% Elongation at Yield		% Elongation at Break		Modulus of Elasticity psi	Work or Yield, ft lbs	Work to Produce Failure, ft lbs	Impact Strength ft lbs./in. of notch
Original Control		9.1	1462	317	3.7	1.9	3.7	1.9	476 $\times 10^3$	22.1	16.5
Room Temperature Control	-0.0	6.9	432	1050	1.7	0.2	1.7	0.2	440 $\times 10^3$	5.42	1.0
50°C Control	-0.5	6.650	865	479	1.6	0.2	1.6	0.2	462 $\times 10^3$	4.68	1.2
OGK	+24.6	7.830	505	2000	-	4.1	0.5	19.0	301 $\times 10^3$	25.5	3.4
OKO	+34.7	5.910	353	2970	-	5.8	0.6	126.0	228 $\times 10^3$	25.7	5.0
M 2*	+1.7	11.500	482	6510	71	4.1	0.8	4.1	482 $\times 10^3$	26.1	6.8
M 7	+62.6	-	687	1690	-	3.8	1.2	23.0	146 $\times 10^3$	14.0	1.7
M 8	Specimen deteriorated beyond testing in 6 months gaining 96.5% in weight										
M 9	+58.6	4.150	296	2150	-	3.9	0.8	105.0	149 $\times 10^3$	12.1	1.8
M 15*	+33.3	5.320	145	2170	-	4.6	0.5	32.0	196 $\times 10^3$	16.6	0.5
T 6	+45.0	5.360	710	2340	-	5.7	1.9	39.0	205 $\times 10^3$	25.6	8.4
T 8	Specimen deteriorated beyond testing in 2 months (See Fig. 3, p. 17)										
T 16	+37.4	4.380	185	2100	-	4.3	1.2	16.0	224 $\times 10^3$	17.0	1.8
T 18*	+3.2	10.500	531	5120	-	5.7	1.4	12.0	428 $\times 10^3$	45.3	3.4
T 19	+46.0	7.090	438	1620	-	4.8	1.7	75.0	148 $\times 10^3$	33.9	4.1

* Contains 50% nitroglycerine

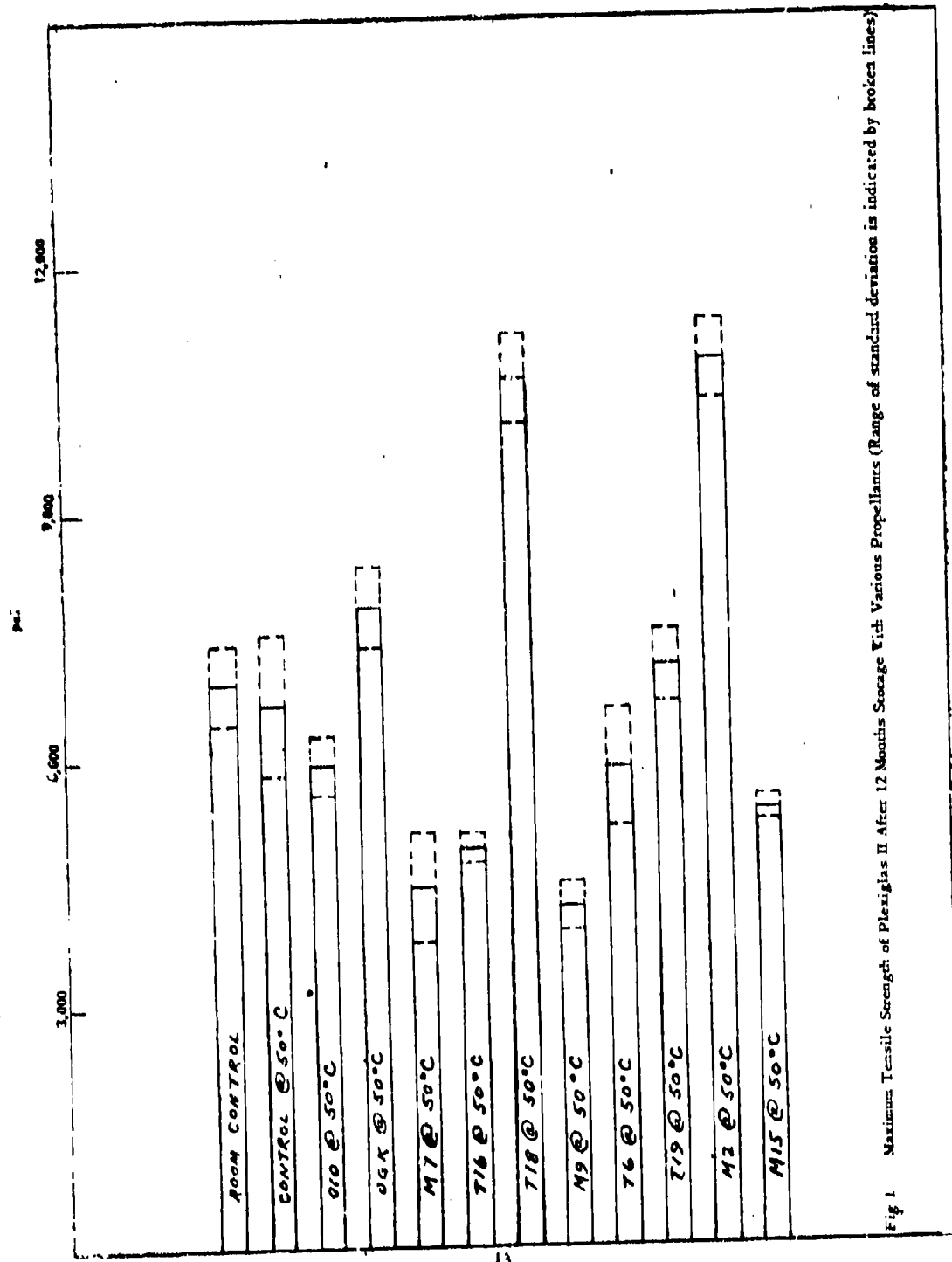


Fig 1 Maximum Tensile Strength of Plexiglas II After 12 Months Storage With Various Propellants (Range of standard deviation is indicated by broken lines)

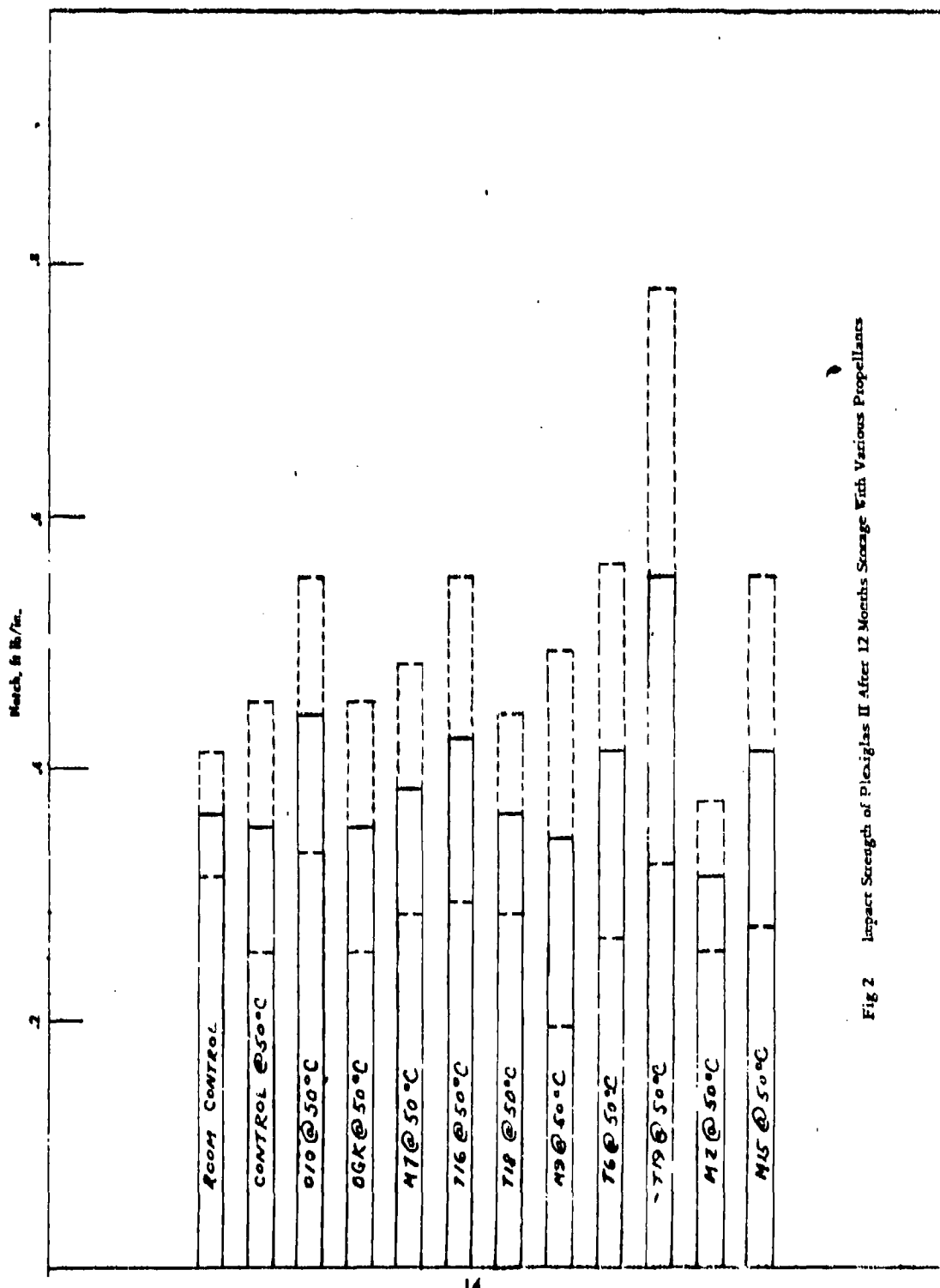


Fig 2 Impact Strength of Plexiglas II After 12 Months Storage With Various Propellants

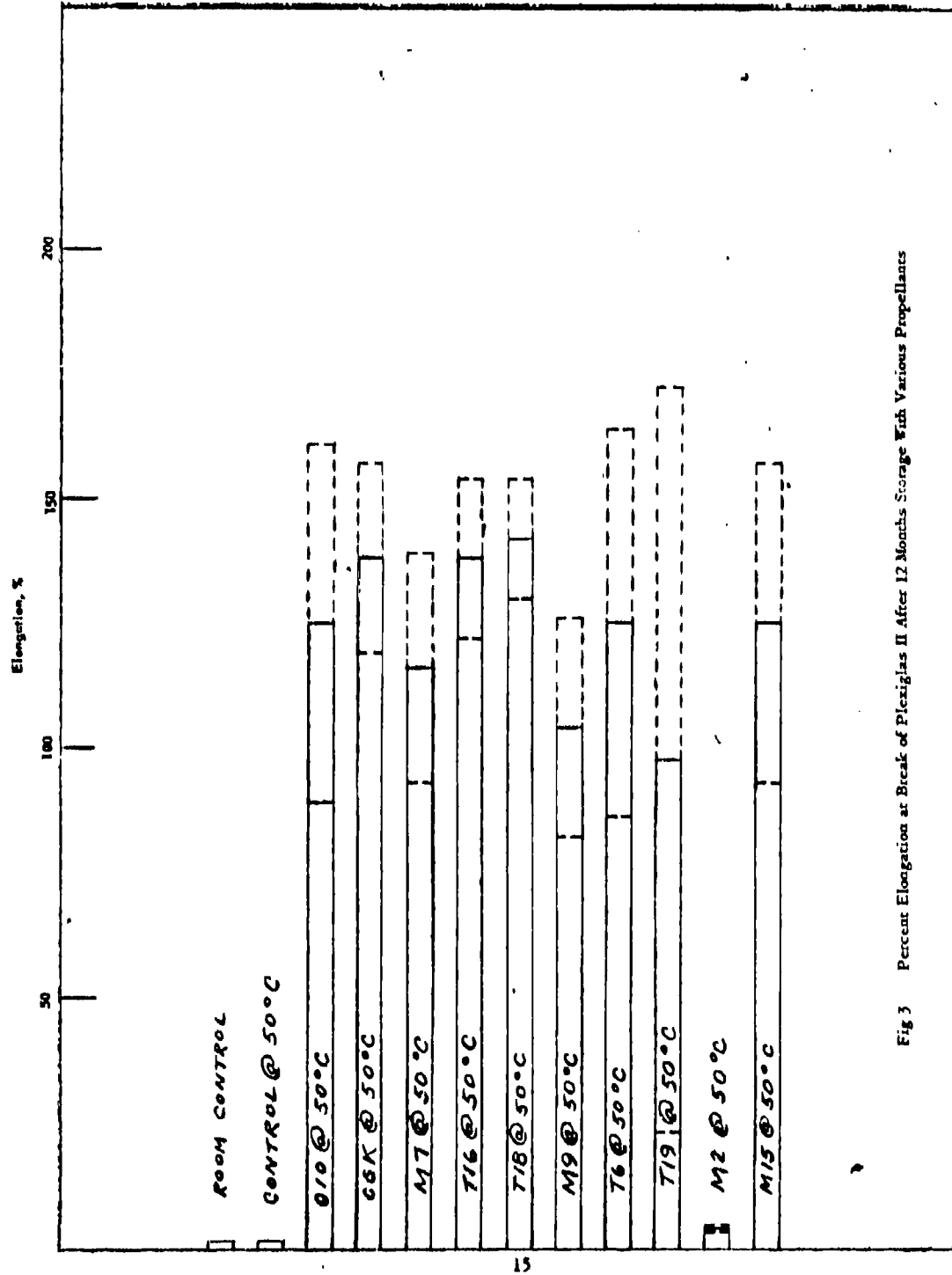


Fig 3 Percent Elongation at Break of Plexiglas II After 12 Months Storage With Various Propellants

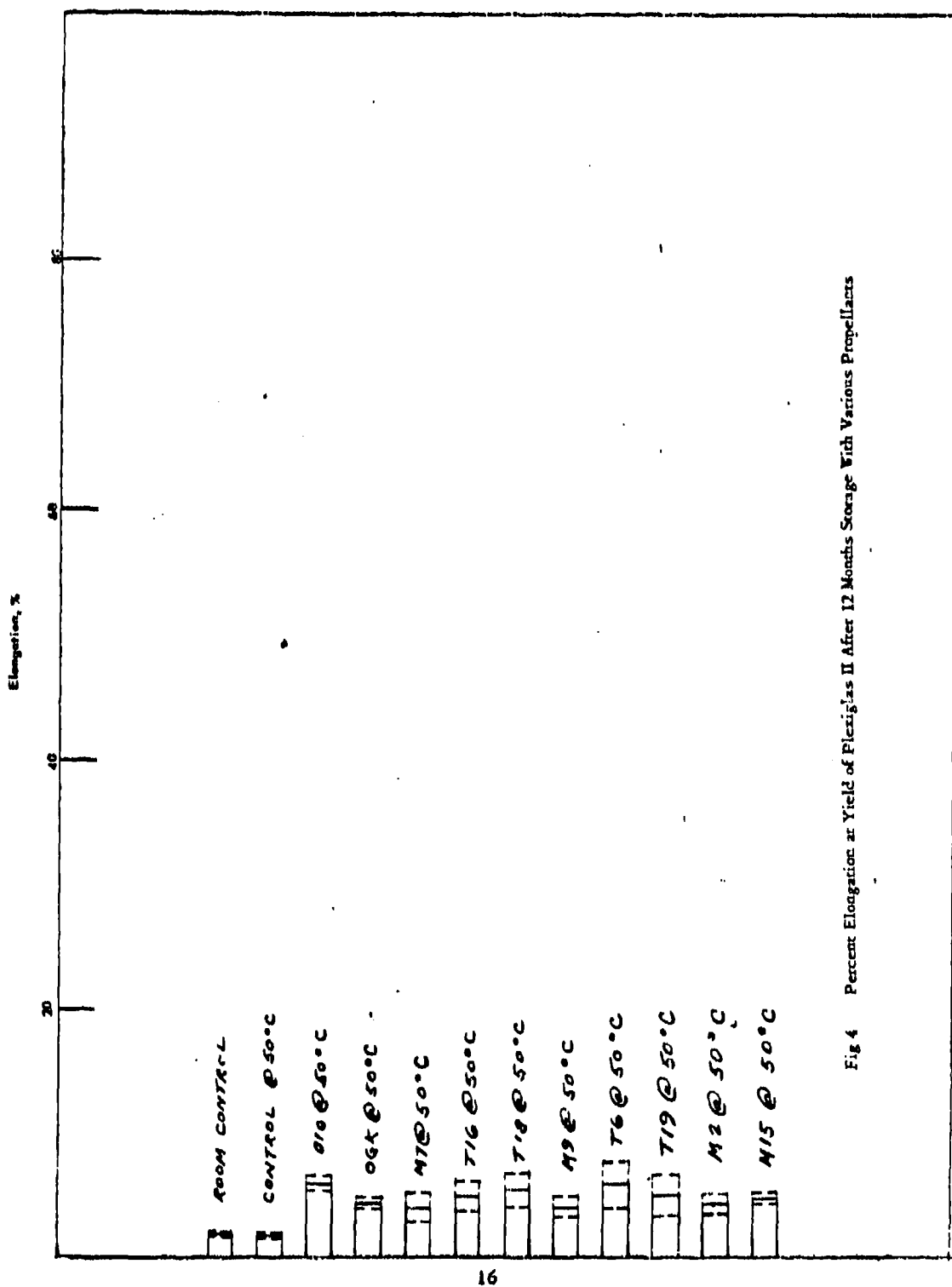


Fig 4 Percent Elongation at Yield of Plexiglas II After 12 Months Storage With Various Propellants



Fig 5 Plexiglas II After Two Months of Contact With T-8

Section 2

CELLULOSICS

Included under the general heading of cellulotics are the cellulose nitrates, cellulose acetates, cellulose acetate butyrates, cellulose propionates, ethyl celluloses, carboxymethyl celluloses, hydroxyethyl celluloses, and regenerated cellulose.

A review of Tables 5 through 24 (pp 19 through 58) indicates that:

1. Cellulotics in general do not affect the reactivity of explosives and propellants.

2. Cellulose polymers in general are extensively weakened by prolonged contact with propellants containing nitroglycerine. Some propellants such as M-2 affect the cellulotics much less than others. Variations in the plastics affect the rate and degree of attack by the propellants.

Tables 25 through 27 (pp 59 through 60) contain information on the compositions of the cellulose acetate, ethyl cellulose, and cellulose acetate butyrate materials tested. Table 1 (p 6) gives compositions of the propellants used.

TABLE 5
Vacuum Stability Test Results for Cellulosics

Polymer	Explosive or Propellant	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
CMC No. 346	JPN	90	0.11	2.36	2.41	0.00	None	53-M2-4
	MRP	90	0.11	1.71	1.59	0.00	None	53-M2-4
	T-2	90	0.11	7.22	5.10	0.00	None	53-M2-4
	T-8	90	0.11	2.04	2.89	0.74	Negligible	53-M2-4
Cellophane No. 300PC	Black powder	100	0.19	0.49	0.37	0.19	Negligible	53-M2-72
Cellophane (Mil-50-11-151)	M-8	90	0.31	2.81	2.71	0.00	None	53-M2-85
Cellophane (M-Sat-84)	M-8	90	0.26	2.40	3.60	0.94	Negligible	54-M2-49
Cellulose acetate	Black powder	100	0.12	0.45	0.37	0.00	None	52-H1-4189
Cellulose acetate S-704	T-31	90	0.05	2.76	2.42	0.00	None	56-M2-46
Cellulose acetate DEP	T-31	90	0.01	2.76	1.73	0.00	None	56-M2-46
Cellulose acetate A-5 sta.	T-31	90	0.01	2.76	2.42	0.00	None	56-M2-46
Cellulose acetate/ Dibutylphthalate	Halcite	-	-	-	-	1.24	Very slight	53-H1-2757
	M-1	-	-	-	-	0.18	Negligible	"
	M-2	-	-	-	-	5.98	Excessive	"
	PETN	-	-	-	-	0.44	Negligible	"
	RDX	-	-	-	-	0.22	Negligible	"
	T-9	-	-	-	-	1.53	Very slight	"
Cellulose nitrate lacquer	T-28	90	0.40	5.29	4.26	0.00	None	56-M2-79

TABLE 5 (Cont)

Polymer	Explosive or Propellant	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Cellulose nitrate (film)	Black powder	100	2.09	0.36	0.94	0.00	None	52-M2-6
	M-1	90	0.64	0.53	0.43	0.00	None	52-M2-6
	M-9	-	-	-	-	0.00	None	51-H1-136287
	M-10	100	0.36	6.99	11.00	3.75	Slight	54-H1-2110
	T-18	90	0.25	3.03	3.50	0.22	Negligible	54-H1-2110
Diacetate cloth (Bale No. 25)	Black powder	100	1.52	-1.10	0.43	0.00	None	57-H1-327
	M-1	100	1.69	-0.96	0.73	0.00	None	57-H1-321
	M-2	100	8.75	-4.08	4.67	0.00	None	57-H1-321
	M-15	100	6.47	-4.38	2.09	0.00	None	57-H1-321
Dobackman (M-Sat. clear)	M-8	90	0.24	2.88	2.68	0.00	None	53-M2-134
Dextrin	T-2	90	0.32	5.87	5.13	0.00	None	134165
Dobackman M-Sat L-86	M-8	90	0.23	2.88	2.68	0.00	None	53-M2-134
Dobackman H50-M Sat. 96	M-8	90	1.32	2.88	11.00	6.80	Excessive	53-M2-134
Duralac No. R-1900	Composition B	100	0.18	0.47	0.58	0.00	None	51-8-12
Ethyl cellulose E-59-NS	Black powder	-	-	-	-	1.05	Very slight	53-H1-2757
	Halite	-	-	-	-	0.22	Negligible	"
	M-1	-	-	-	-	4.50	Moderate	"
	M-2	-	-	-	-	0.29	Negligible	"
	PETN	-	-	-	-	0.35	Negligible	"
	RDX	-	-	-	-	0.28	Negligible	"
	T-9	-	-	-	-	1.64	Very slight	"

TABLE 5 (Cont)

Polymer	Explosive or Propellant	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Ethyl cellulose E-12-S6	Halcite	-	-	-	-	1.28	Very slight	53-H1-2757
	M-1	-	-	-	-	0.20	Negligible	"
	M-2	-	-	-	-	4.20	Moderate	"
	PETN	-	-	-	-	0.30	Negligible	"
	RDX	-	-	-	-	0.25	Negligible	"
	T-9	-	-	-	-	2.31	Slight	"
Ethyl cellulose- 582-JS2	M-9	100	0.00	5.54	6.46	0.92	Negligible	55-M2-45
	M-9	100	0.14	5.54	6.38	0.70	Negligible	55-M2-45
	M-9	90	0.12	2.36	4.15	1.67	Very slight	53-M2-4
Ethyl cellulose No. 346 JPN	MRP	90	0.12	1.71	3.55	1.72	Very slight	53-M2-4
	T-2	90	0.04	3.54	4.91	1.33	Very slight	53-M2-4
	T-8	90	0.12	2.04	3.65	1.49	Very slight	53-M2-4
	T-8	90	0.12	2.04	3.65	1.49	Very slight	53-M2-4
Ethyl cellulose	Igniter							
	Mix K-29	100	0.14	0.14	0.27	0.00	None	52-M2-143
	M-7	90	0.10	1.89	1.91	0.00	None	54-M2-27
	OGK	90	0.10	1.10	1.82	0.32	Negligible	54-M2-27
	T-6	90	0.10	4.56	4.70	0.04	Negligible	54-M2-27
	T-16	90	0.10	2.90	4.18	1.18	Very slight	54-M2-27
	T-19	90	0.10	3.19	3.58	0.29	Negligible	54-M2-27
	M-7	90	0.10	1.89	1.91	0.00	None	56-M2-26
Ethyl cellulose lacquer Spec 3198								
Fortisan	M-10	90	0.27	6.97	5.37	0.00	None	54-M2-54
	T-18	90	0.26	3.30	11.00	7.44	Excessive	54-M2-54

TABLE 5 (Cont)

Polymer	Explosive or Propellant	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Green enamel Spec MIL-E-10687	RDX	100	0.35	0.39	0.89	0.15	Negligible	53-M2-89
	Tetryl	100	0.35	0.28	0.74	0.11	Negligible	53-M2-89
Green lacquer Spec MIL-L-10287	RDX	100	0.61	0.39	0.82	0.00	None	53-M2-89
	Tetryl	100	0.61	0.28	1.52	0.63	Negligible	53-M2-89
Gering (x-6178-87-1)	M-7	90	0.14	2.41	3.18	0.63	Negligible	51-8-13
Hot-Dip No. 215	Black powder	100	0.09	1.72	0.89	0.00	None	56-M2-75
	Cyclotol	100	0.09	0.30	0.89	0.50	Negligible	56-M2-75
	M-8	90	0.35	4.49	6.67	1.93	Very slight	56-M2-75
	M-10	90	0.35	1.65	1.54	0.00	None	56-M2-75
Hot-Dip No. 722	Black powder	100	0.10	1.72	1.15	0.00	None	56-M2-75
	Cyclotol	100	0.10	0.30	0.29	0.00	None	56-M2-75
	M-8	90	0.22	4.49	3.72	0.00	None	56-M2-75
	M-10	90	0.22	1.65	1.35	0.00	None	56-M2-75
Plastracele	Black powder	-	-	-	-	0.63	Negligible	53-H1-2757
	Haleite	-	-	-	-	1.09	Very slight	"
	M-1	-	-	-	-	0.26	Negligible	"
	M-2	-	-	-	-	4.55	Moderate	"
	PEIN	-	-	-	-	0.32	Negligible	"
	RDX	-	-	-	-	0.43	Negligible	"
Purple lacquer Jan-L-296	T-9	-	-	-	-	0.27	Negligible	"
	Black powder	100	1.35	0.16	1.62	0.11	Negligible	52-M2-117
	M-7	90	0.63	2.39	2.45	0.00	None	52-M2-117
	Tetryl	100	1.78	0.31	1.74	0.00	None	56-H1-1564
	Tetryl 75/25	100	1.78	3.84	11.4	5.38	Excessive	56-H1-1564

TABLE 5 (Cont)

Polymer	Explosive or Propellant	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Red enamel Mil-E-10687	RDX Tetryl	100 100	0.41 0.41	0.39 0.28	0.65 0.71	0.00 0.02	None Negligible	53-M2-89 53-M2-89
Red lacquer Mil-L-10287	RDX Tetryl	100 100	0.83 0.83	0.39 0.28	0.91 1.35	0.00 0.24	None Negligible	53-M2-89 53-M2-89
Scotch Tape No. 100	T-6	90	0.35	2.50	2.43	0.00	None	51-8-7
Scotch Tape No. 650	Black powder Composition B M-10	100 100 90	0.03 0.03 0.05	0.42 0.20 2.26	0.31 1.26 1.88	0.00 1.03 0.00	None Very slight None	56-M2-37 56-M2-37 56-M2-37
Shellmar 971-R Shellmar 1037-B	M-8 M-8	90 90	0.19 0.25	2.88 2.88	1.49 2.20	0.00 0.00	None None	53-M2-134 53-M2-134
Tenite II 265 MS	M-7	100	0.05	1.70	1.35	0.00	None	52-M2-140
Tenite II 203A-S2	Black powder Halite M-1 M-2 PETN RDX T-9	- - - - - -	- - - - - -	- - - - - -	- - - - - -	1.70 1.11 0.21 4.48 0.37 0.25 1.64	Very slight Very slight Negligible Moderate Negligible Negligible Very slight	53-H1-2757 " " " " " " " " " "
Tenite II 270A-S2	Black powder Halite M-1 M-2 PETN RDX T-9	- - - - - -	- - - - - -	- - - - - -	- - - - - -	11.00+ 1.14 0.28 4.64 0.32 0.28 1.43	Excessive Very slight Negligible Moderate Negligible Negligible Very slight	53-H1-2757 " " " " " " " " 51-HI-136883 51-HI-136883

TABLE 5 (Cont)

Polymer	Explosive or Propellant	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Triacetate cloth Bale No. 26	Black powder	100	0.36	0.09	0.45	0.00	None	57-H1-321
	M-1	100	0.52	-0.09	0.43	0.00	None	57-H1-321
	M-2	100	7.58	-3.53	4.05	0.00	None	57-H1-321
	M-15	100	5.30	-3.37	1.93	0.00	None	57-H1-321
TVA	T-2	90	0.07	6.47	5.68	0.00	None	51-8-6
	Type O prop.	90	0.07	2.04	1.77	0.00	None	51-8-6
Viscose rayon cloth G-14	Black powder	100	0.73	0.23	0.87	0.00	None	57-H1-321
	M-1	100	0.73	0.39	3.10	1.98	Very slight	57-H1-321
	M-2	100	0.73	7.45	11.4	3.82+	Slight	57-H1-321
	M-15	100	0.73	5.17	5.76	0.00	None	57-H1-321
Zapon No. 2360	RDX	100	0.83	0.36	0.45	0.00	None	54-M2-44
	Tetryl	100	0.83	0.09	0.61	0.00	None	54-M2-44
Zapon No. 3-291-A	Lead azide	100	3.40	1.95	3.15	0.00	None	51-8-3
	PEIN	100	1.20	0.66	1.10	0.00	None	51-8-3
	Squib mix	100	1.50	7.15	10.45	1.80	Very slight	51-8-19
Rayon, wax coated	M-9	90	0.33	5.07	4.58	0.00	None	52-M2-169

TABLE 6
Changes in Appearance of Cellulosics After Storage

Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	Appearance of Specimen	Picatinny Report No.
CMC No. 346 (Sodium carboxymethyl cellulose)	JPN	26	50	—	53-M2-4
	MRP	24	50	No change	53-M2-4
	T-2	24	50	No change	53-M2-4
	T-8	24	50	Slightly hardened	53-M2-4
Duralac No. R-1900	Composition B	22	76	Browned, lost adhesion	51-8-12
Ethyl cellulose No. 346	JPN	26	50	—	53-M2-4
	MRP	24	50	Amber, softened	53-M2-4
	T-2	24	50	Amber, softened	53-M2-4
	T-8	24	50	Turned amber and softened	53-M2-4
Ethyl cellulose lacquer Spec 3-198	M-7	10	50	Darkened	54-M2-27
	OGK	10	50	Turned yellow, lost adhesion	54-M2-27
	T-6	10	50	Softened	54-M2-27
	T-16	10	50	Turned yellow, lost adhesion	54-M2-27
	T-19	10	50	Turned yellow, lost adhesion	54-M2-27
	Black powder Composition B	52	76	No change	53-M2-37
Scotch tape No. 650	M-10	52	71	Slightly dried out	53-M2-37
		52	76	Deteriorated	53-M2-37
Hot dip No. 215 Ethyl cellulose	Black powder	32	76	Hardened	56-M2-75
	Cyclotol 75/25	32	71	Hardened and became darker	56-M2-75
	M-8	32	50	Softened, faded	56-M2-75
	M-10	32	76	Hardened	56-M2-75
Hot dip No. 222 Cellulose acetate butyrate	Black powder	32	76	Hardened and became coated	56-M2-75
	Cyclotol 75/25	32	71	Softened and swelled	56-M2-75
	M-8	12	50	Deteriorated	56-M2-75
	M-10	16	76	Deteriorated	56-M2-75

TABLE 6 (Cont)

Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	Appearance of Specimen	Picatinny Report No.
TYA	T-2	15	50	Yellowed, softened	51-8-6
	Type 0 prop.	15	50	Yellowed, softened	51-8-6
Purple lacquer	Black powder	19	76	Turned green and became brittle	52-M2-117
	M-7	19	50	Yellowed, softened, and lost adhesion	52-M2-117
Pettman cement	OGK	10	50	No change	52-M2-43
	T-2	10	50	Lost adhesion, surface became oily	52-M2-43
	T-6	10	50	No change	52-M2-43
	T-8	10	50	Surface became oily	52-M2-43
	T-9	10	50	No change	52-M2-43

TABLE 7
Percent Change in Weight of Cellulosics After Storage

Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	Control	Sample	Picotinny Report No.
CMC No. 346	JPN	26	50	-10.80	- 4.10	53-M2-4
Sodium carboxy methyl cellulose	MRP	24	50	-10.80	- 9.92	53-M2-4
	T-2	24	50	-10.80	- 9.76	53-M2-4
	T-8	24	50	-10.80	- 8.36	53-M2-4
Cellulose nitrate film	Black powder	24	76	+ 8.15	+ 7.45	52-M2-6
	M-1	24	50	+ 0.24	+ 5.27	52-M2-6
Ethocel Lr-51	M-8	4	50	+ 0.12	+19.9	BZ3-11
Ethyl cellulose No. 346	JPN	26	50	- 0.64	+12.90	53-M2-4
	MRP	24	50	- 0.64	+13.20	53-M2-4
	T-2	24	50	- 0.64	+ 9.92	53-M2-4
	T-8	24	50	- 0.64	+ 4.45	53-M2-4
Ethyl cellulose lacquer	K-29 igniter	9	50	- 0.02	- 0.05	52-M2-143
Gering X-6178-87-1	M-7	37	50	- 1.69	+ 2.40	51-8-13
Hot dip No. 215	Black powder	32	76	- 4.23	- 6.37	56-M2-75
Ethyl cellulose	Cyclotol 75/25	32	71	- 4.23	+ 7.49	56-M2-75
	M-8	32	50	- 2.92	+21.3	56-M2-75
	M-10	32	76	- 4.23	- 7.59	56-M2-75
Hot dip No. 222	Black powder	32	76	- 3.39	- 9.89	56-M2-75

TABLE 7 (Cont)

Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	Control	Sample	Picometry Report No.
Cellulose acetate butyrate	Cyclonol 75/25	28	71	-3.39	+28.5	56-M2-75
	M-8	12	50	-3.39	Deteriorated	56-M2-75
	M-10	20	76	-2.12	Deteriorated	56-M2-75
Shellmar No. 971-R	M-8	8	50	-6.19	+14.9	53-M2-134
Shellmar No. 1037-B	M-8	8	50	-5.07	- 1.19	53-M2-134
Tenite II - 265 MS	M-7	9	50	-0.21	+20.10	52-M2-140
TVA	T-2	15	50	-1.7	Powder adhered	51-8-6
	Type O	15	50	-1.7	Powder adhered	51-8-6

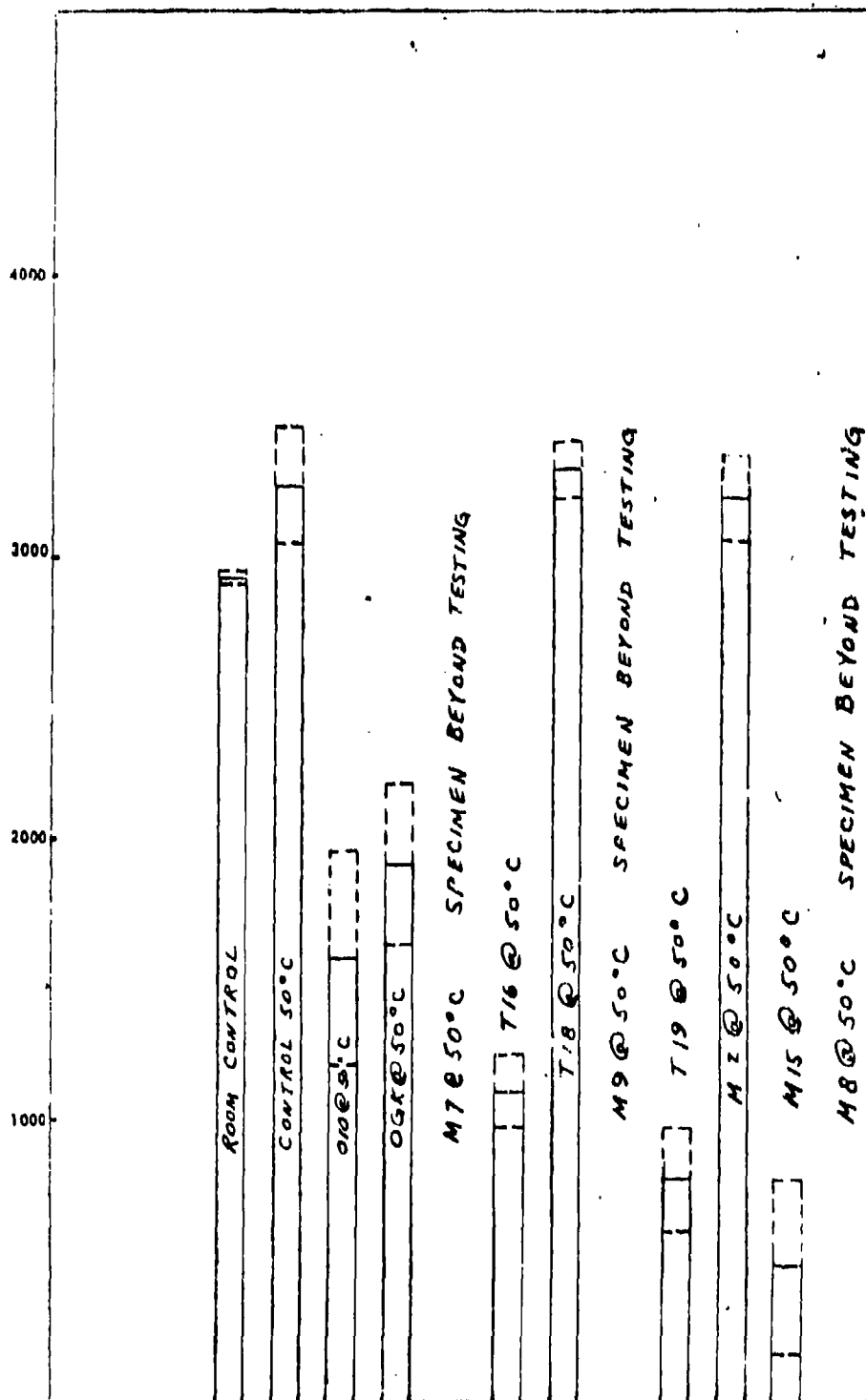


Fig 6 Maximum Tensile of Cellulose Acetate 632 x 59 H-MS After 12 Months Storage With Various Propellants (Range of standard deviations is indicated by broken lines)

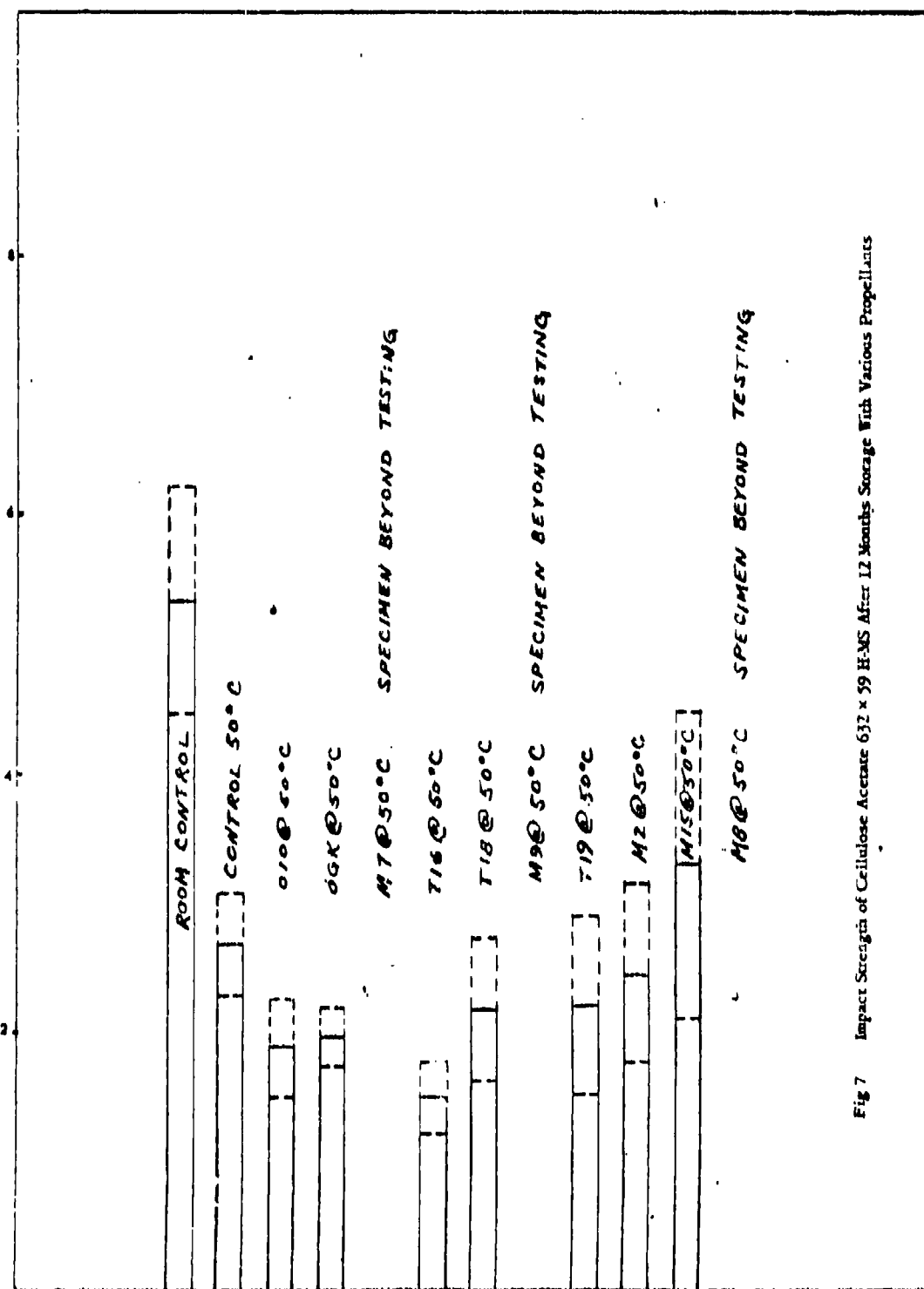


Fig 7 Impact Strength of Cellulose Acetate 632 x 59 H-MS After 12 Months Storage With Various Propellants

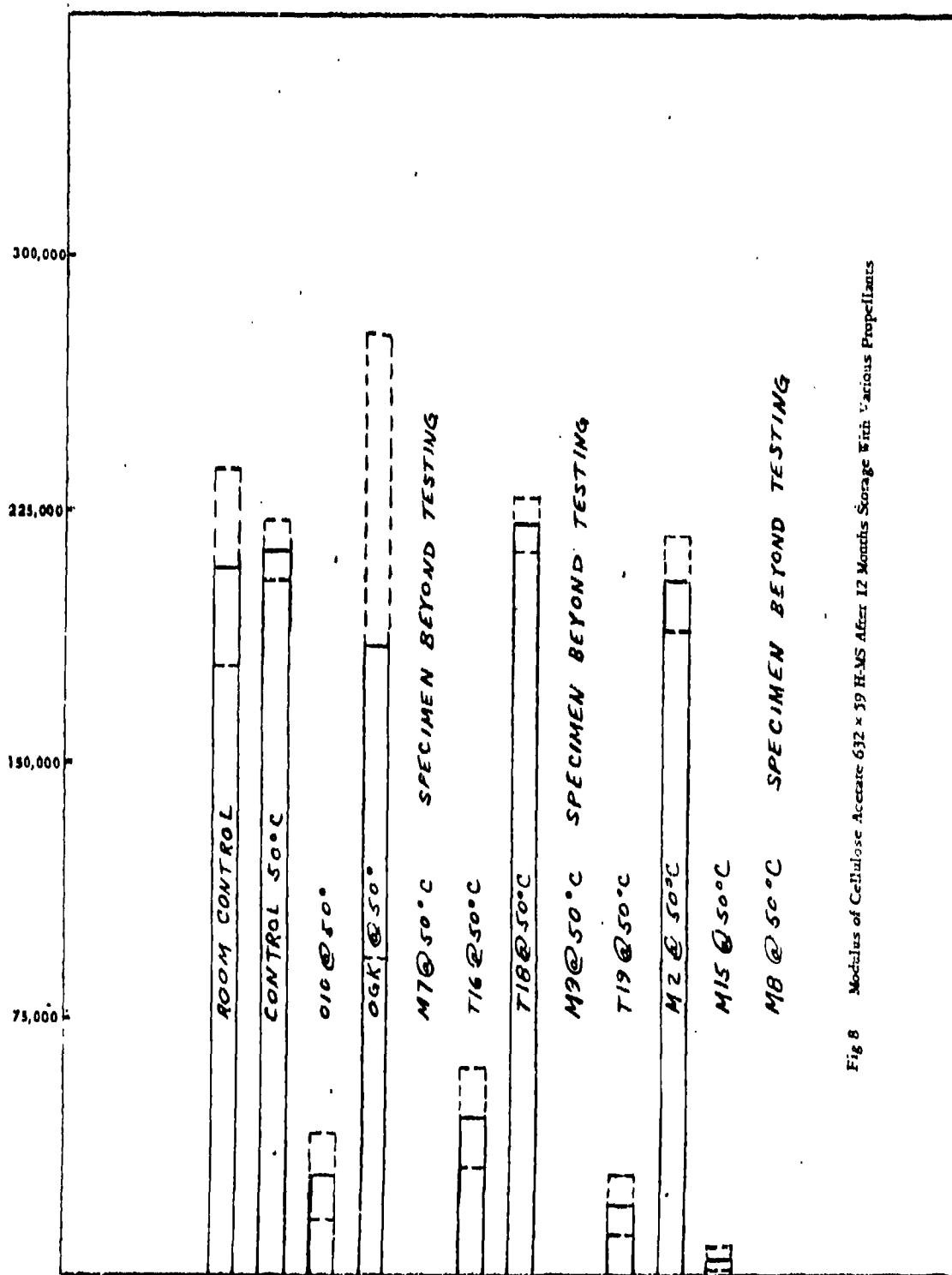


Fig 8 Modulus of Cellulose Acetate 632 x 39 H-MS After 12 Months Storage With Various Propellants

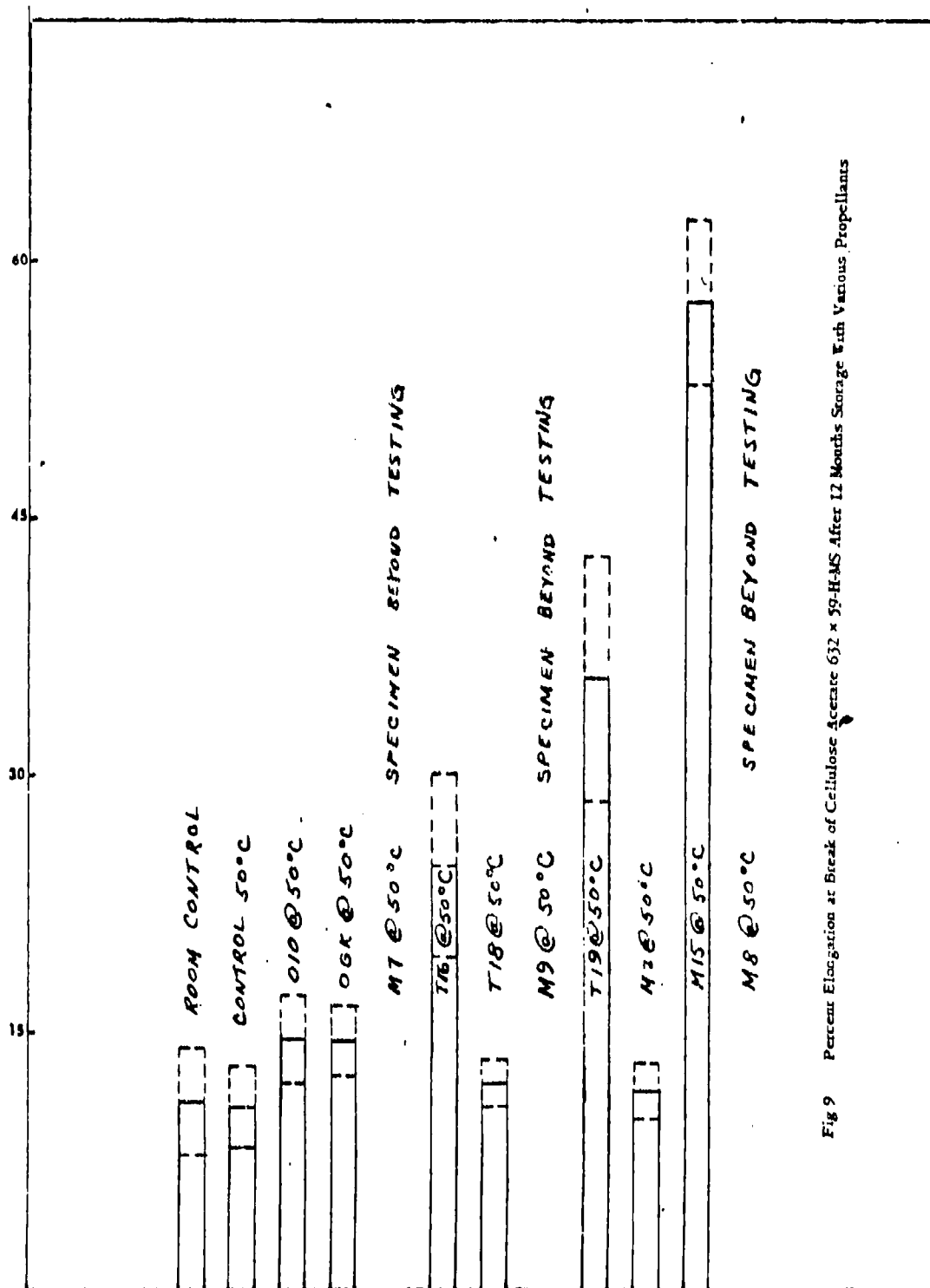


Fig 9 Percent Elongation at Break of Cellulose Acetate 632 x 59-H4S After 12 Months Storage With Various Propellants

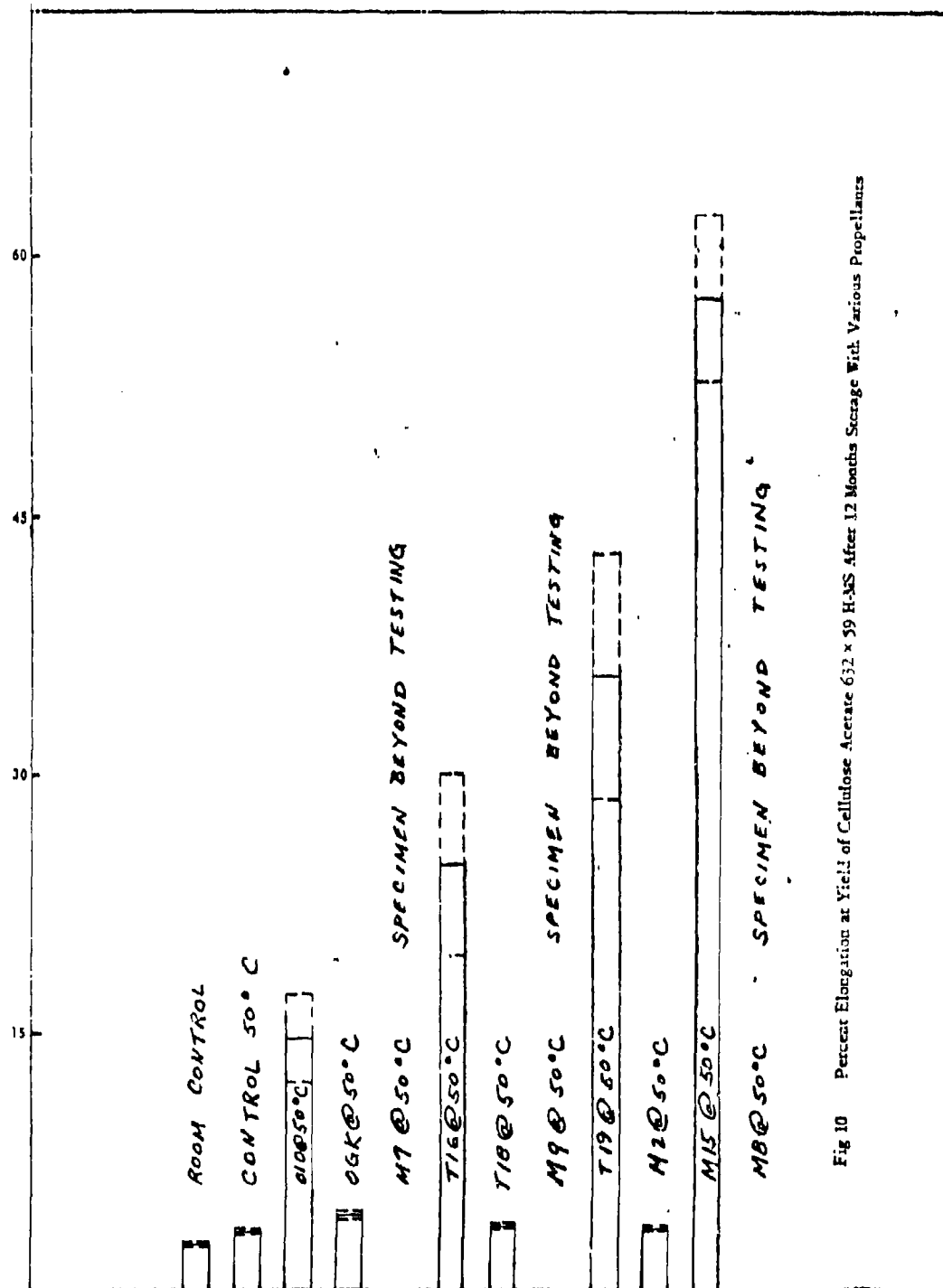


Fig 10 Percent Elongation at Yield of Cellulose Acetate 652 x 59 H-MS After 12 Months Storage With Various Propellants

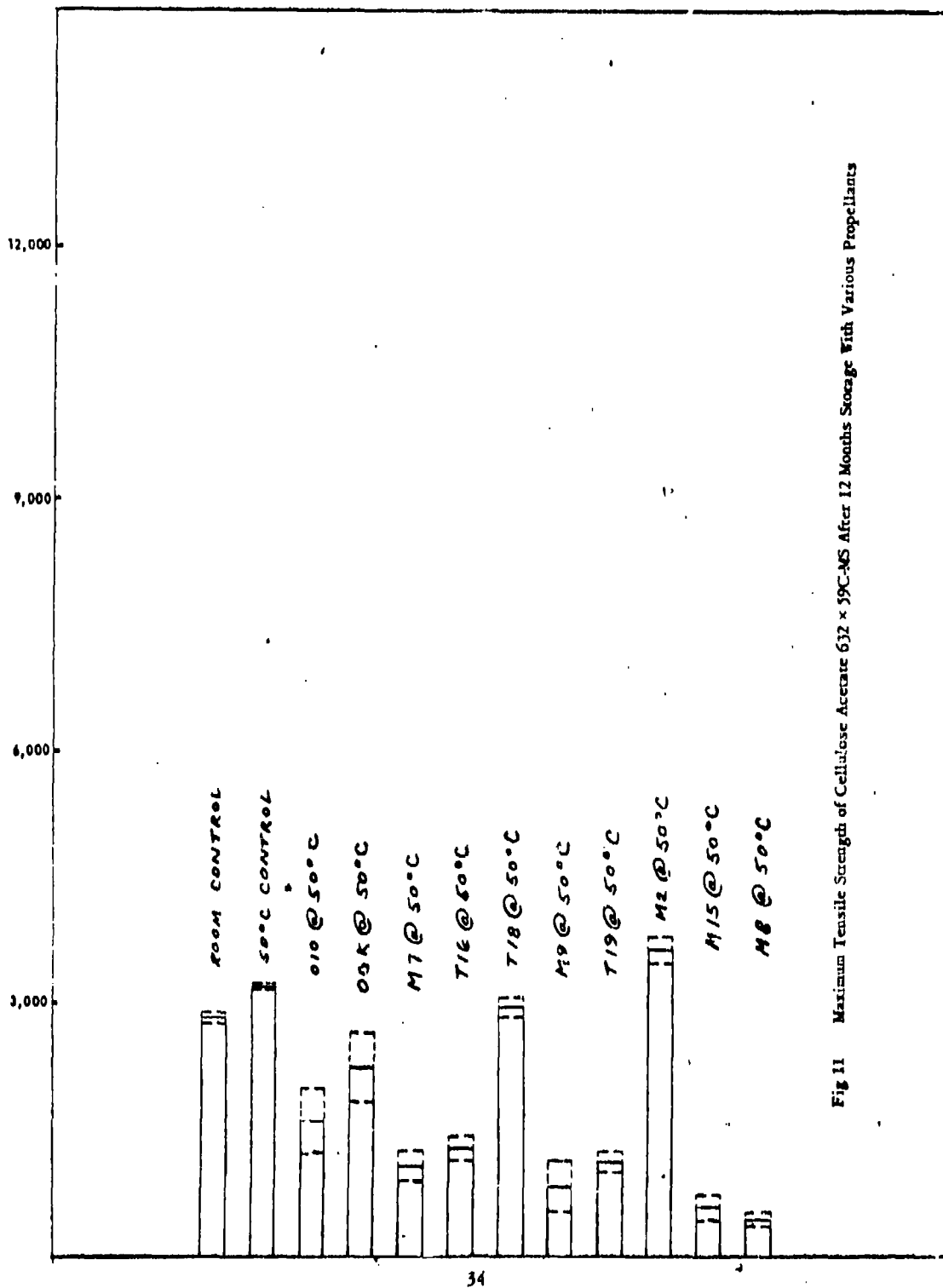


Fig 11 Maximum Tensile Strength of Cellulose Acetate 632 x 39C-MS After 12 Months Storage With Various Propellants

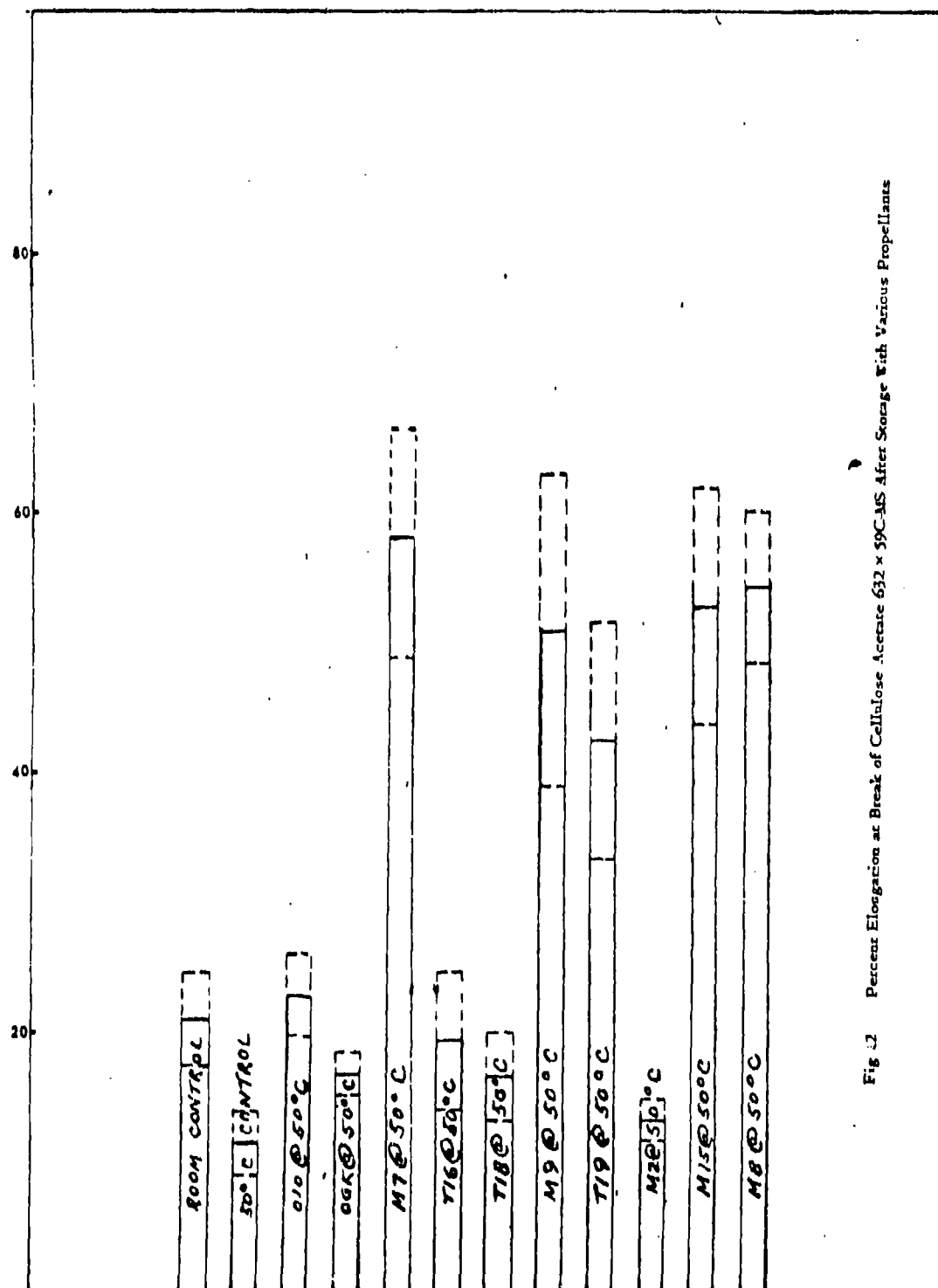


Fig. 12 Percent Elongation at Break of Cellulose Acetate 632 x 59C-MS After Storage With Various Propellants

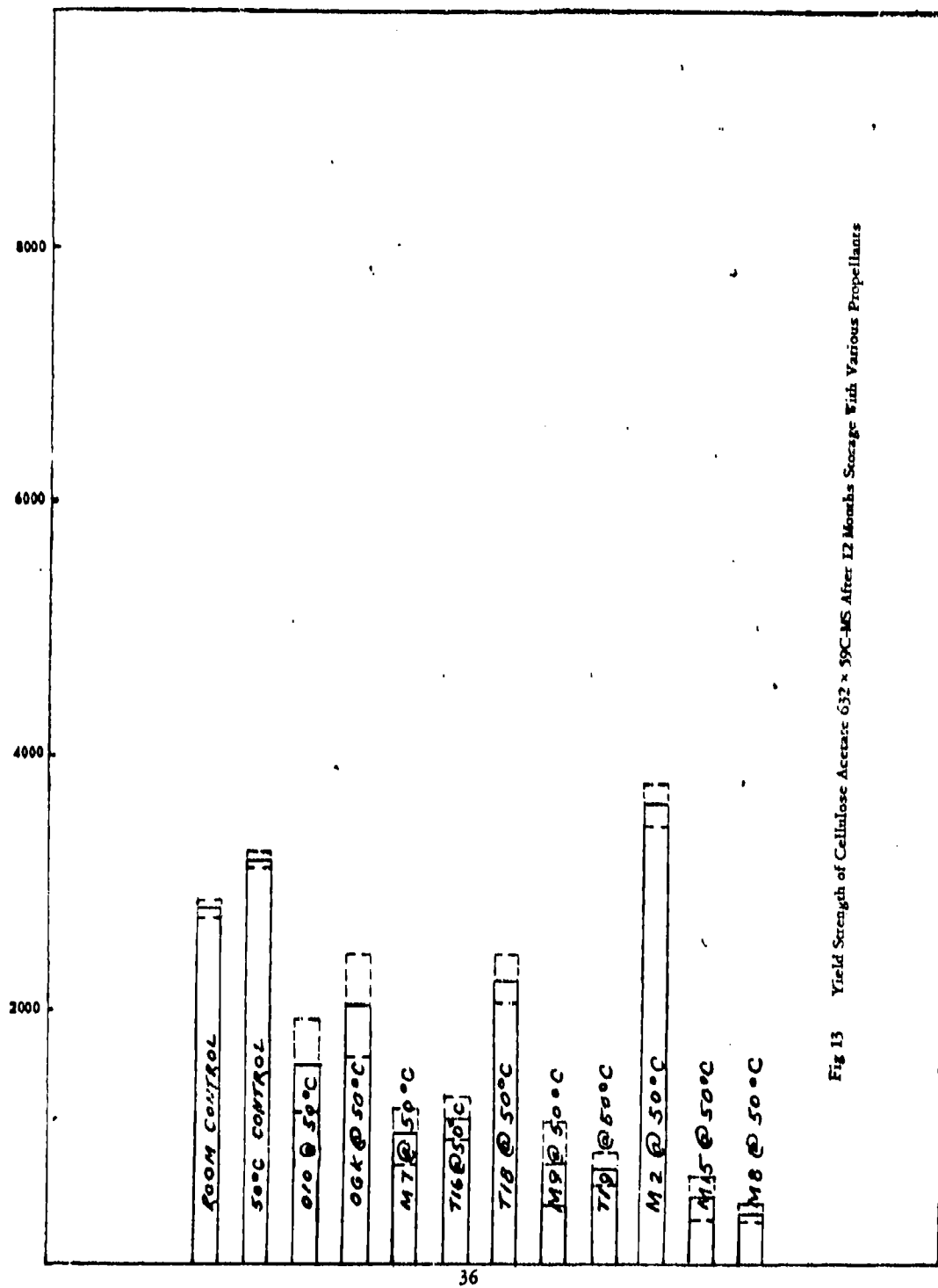


Fig 13 Yield Strength of Cellulose Acetate 632 x 39C-MS After 12 Months Storage With Various Propellants

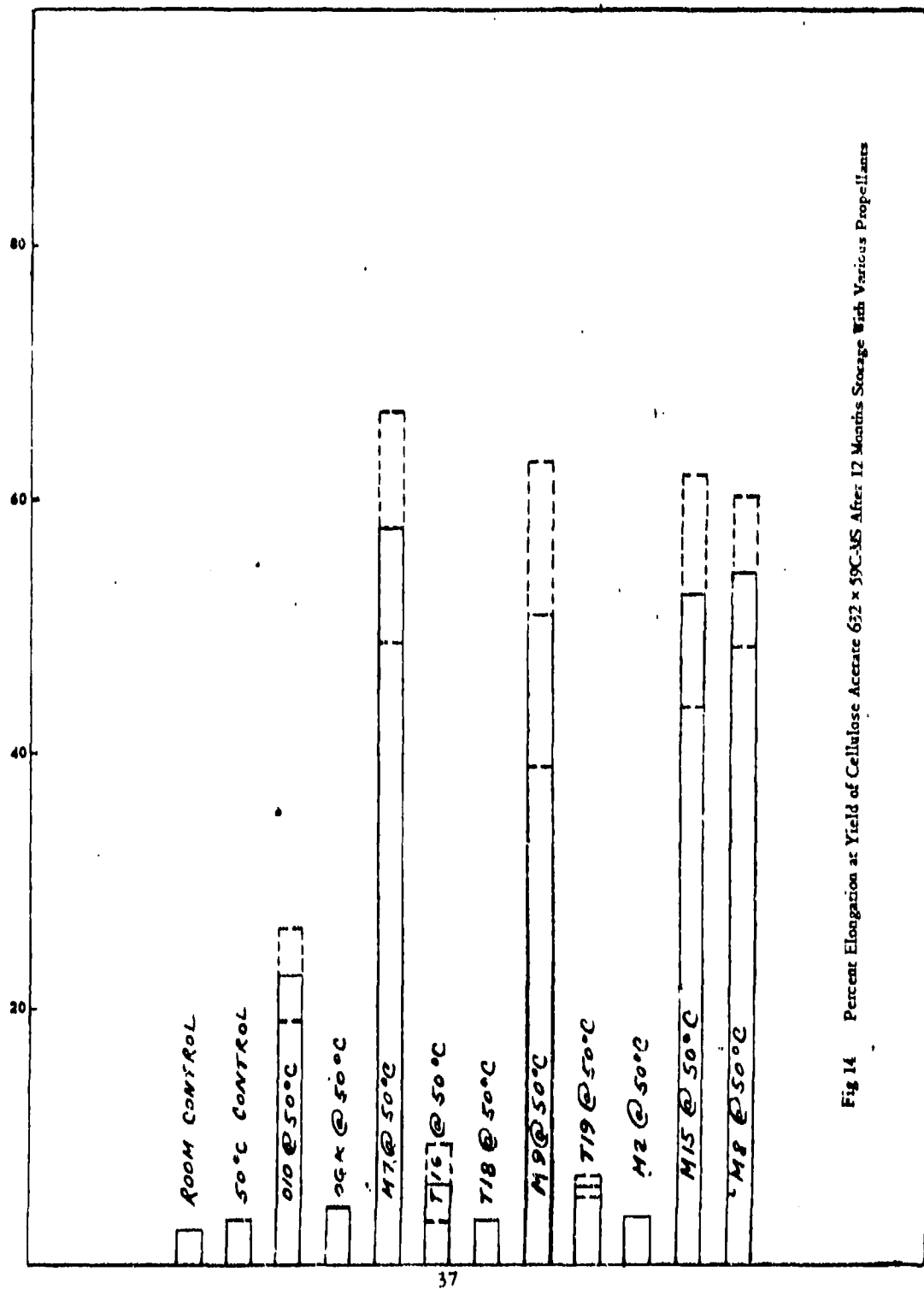


Fig 14 Percent Elongation at Yield of Cellulose Acetate 672 x 59C-MS After 12 Months Storage With Various Propellants

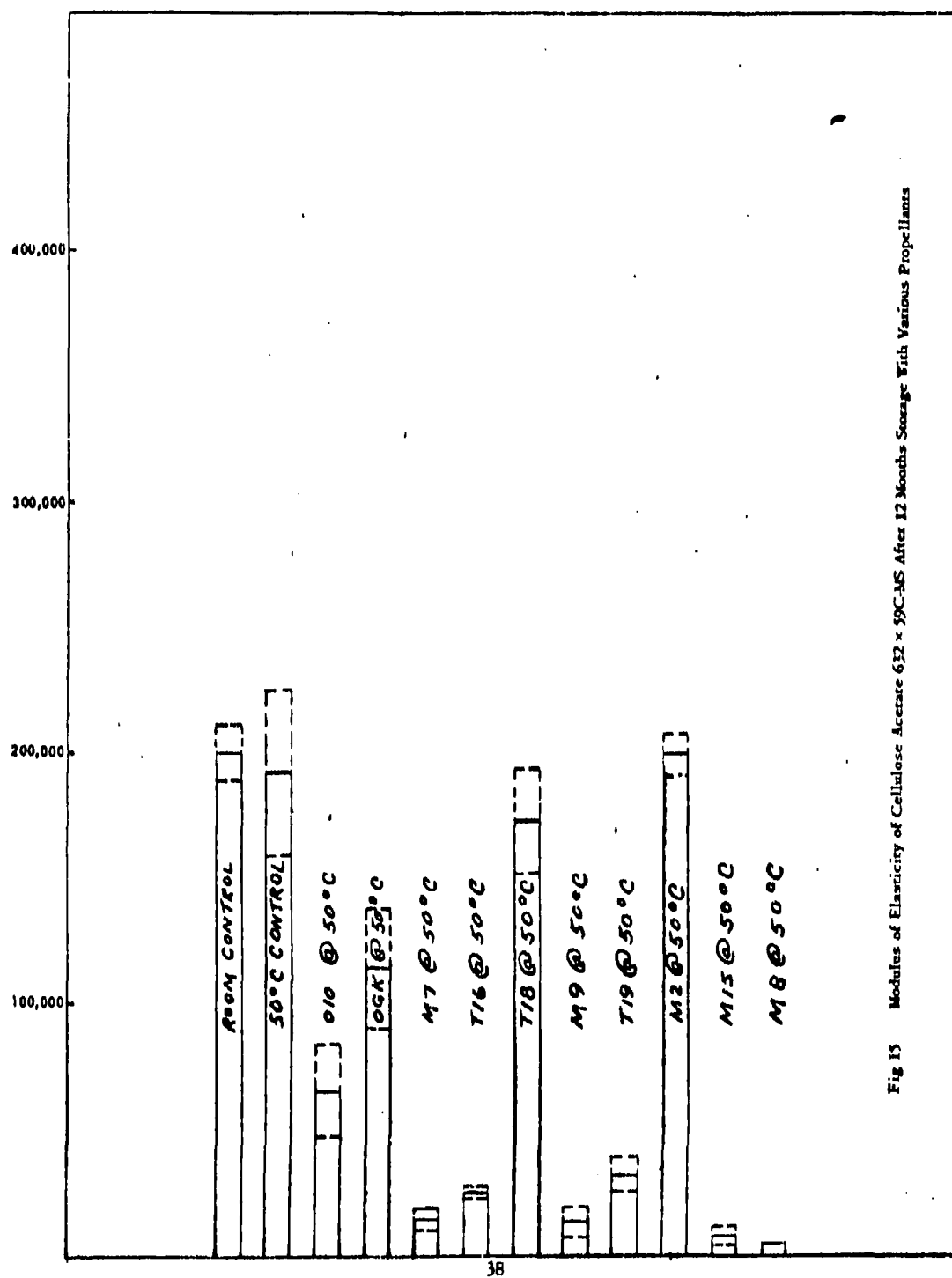


Fig 15 Modulus of Elasticity of Cellulose Acetate 632 x 59C-MS After 12 Months Storage With Various Propellants

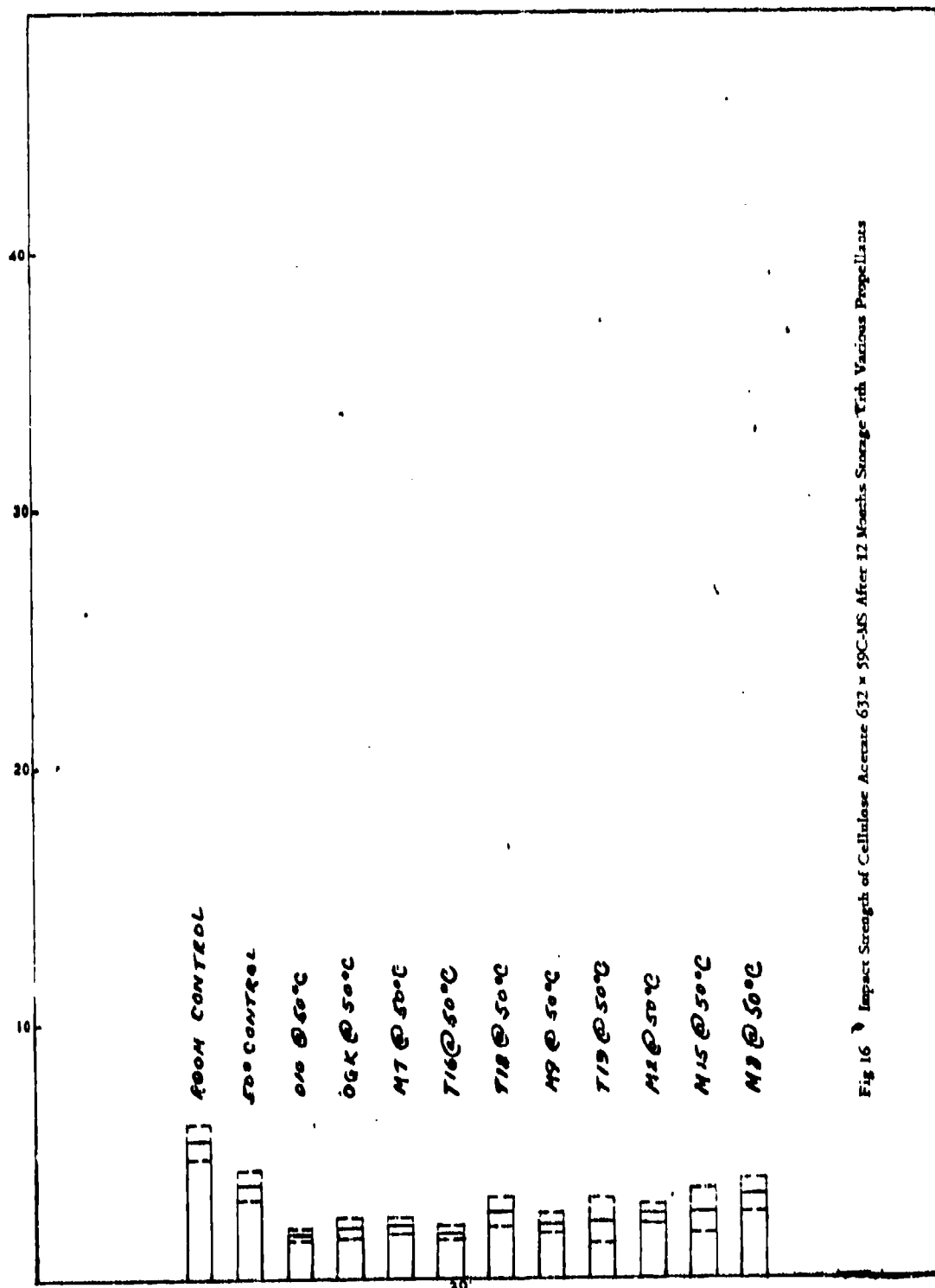


Fig 16 Impact Strength of Cellulose Acetate 632 x 59C-MS After 12 Months Storage With Various Propellants

TABLE 8
100°C Heat Test Results for Cellulosics

Material and Weight, Gm	Explosive and Weight, Gm	1st 48 Hrs Gm	%	2nd 48 Hrs Gm	%	Explosion in 160 Hrs	Picatinny Report No.
Cellophane-300 PC.	Primer Mix F.A. 70						
0.6	0.6	0.0482	4.03	0.0050	0.43	None	53-M2-72
0.6	-	0.0492	8.20	0.0074	0.60	None	53-M2-72
-	0.6	0.0009	0.10	0.0001	0.02	None	53-M2-72
Green enamel	Primer Mix M-20						
0.6	0.6	0.0128	1.07	0.0015	0.12	None	53-M2-89
0.6	-	0.0100	1.67	0.0016	0.27	None	53-M2-89
-	0.6	0.0019	0.32	0.0004	0.06	None	53-M2-89
	Lead Azide						
0.6	0.6	0.0144	1.20	0.0019	0.14	None	53-M2-89
0.6	-	0.0100	1.67	0.0016	0.27	None	53-M2-89
-	0.6	0.0043	0.72	0.0006	0.00	None	53-M2-89
	Primer Mix-100						
0.6	0.6	0.0127	1.06	0.0017	0.14	None	53-H2-89
0.6	-	0.0100	1.67	0.0016	0.27	None	53-H2-89
-	0.6	0.0006	0.19	0.0000	0.00	None	53-H2-89
	Primer Mix-Nol 130						
0.6	0.6	0.0239	1.99	0.0033	0.28	None	53-M2-89
0.6	-	0.0100	1.67	0.0016	0.27	None	53-M2-89
-	0.6	0.0083	1.38	0.0015	0.25	None	53-M2-89
Green lacquer	Lead Azide						
0.6	0.6	0.1979	16.49	0.0083	0.69	None	53-M2-89
0.6	-	0.0033	0.55	0.0056	0.93	None	53-M2-89
-	0.6	0.0043	0.72	0.0000	0.00	None	53-M2-89

TABLE 8 (Cont)

Material and Weight, Gm	Explosive and Weight, Gm	1st 48 Hrs Gm	%	2nd 48 Hrs Gm	%	Explosion in 100 Hrs	Picatinny Report No.
Green lacquer	Primer Mix M-20						
0.6	0.6	0.0104	0.87	0.0060	0.50	None	53-M2-89
0.6	-	0.0033	0.55	0.0056	0.93	None	53-M2-89
-	0.6	0.0019	0.32	0.0004	0.06	None	53-M2-89
	Primer Mix-100						
0.6	0.6	0.0053	0.44	0.0042	0.35	None	53-M2-89
0.6	-	0.0033	0.55	0.0056	0.93	None	53-M2-89
-	0.6	0.0006	0.10	0.0000	0.00	None	53-M2-89
	Primer Mix-No1 130						
0.6	0.6	0.0181	1.50	0.0073	0.61	None	53-M2-89
0.6	-	0.0033	0.55	0.0056	0.93	None	53-M2-89
-	0.6	0.0083	1.38	0.0015	0.25	None	53-M2-89
	Lead Azide						
Red enamel MIL-E-10687							
0.6	0.6	0.0106	0.88	0.0017	0.14	None	53-M2-89
0.6	-	0.0100	1.66	0.0011	0.18	None	53-M2-89
-	0.6	0.0043	0.72	0.0000	0.00	None	53-M2-89
	Primer Mix M-20						
0.6	0.6	0.123	1.02	0.0117	0.14	None	53-M2-89
0.6	-	0.0100	1.66	0.0011	0.18	None	53-M2-89
-	0.6	0.0019	0.32	0.0004	0.06	None	53-M2-89
	Primer Mix-100						
Red enamel							
0.6	0.6	0.0101	0.84	0.0020	0.17	None	53-M2-89
0.6	-	0.0100	1.66	0.0011	0.18	None	53-M2-89
-	0.6	0.0006	0.10	0.0000	0.00	None	53-M2-89

TABLE 8 (Cont)

Material and Weight, Gm	Explosive and Weight, Gm	1st 48 Hrs Gm	2nd 48 Hrs Gm	Explosion in 100 Hrs	Picotomy Report No.
Red enamel	Primer Mix-Nol 130				
0.6	0.6	0.0232	0.0028	None	53-M2-89
0.6	-	0.0100	0.0011	None	53-M2-89
-	0.6	0.0083	0.0015	None	53-M2-89
Red lacquer	Lead Azide				
0.6	0.6	0.0125	0.0079	None	53-M2-89
0.6	-	0.0039	0.0030	None	53-M2-89
-	0.6	0.0043	0.0000	None	53-M2-89
	Primer Mix-100				
0.6	0.6	0.0055	0.0040	None	53-M2-89
0.6	-	0.0039	0.0030	None	53-M2-89
-	0.6	0.0006	0.0000	None	53-M2-89
	Primer Mix M-70				
0.6	0.6	0.0059	0.0044	None	53-M2-89
0.6	-	0.0039	0.0030	None	53-M2-89
-	0.6	0.0019	0.0004	None	53-M2-89
	Primer Mix Nol-130				
0.6	0.6	0.0095	0.0065	None	53-M2-89
0.6	-	0.0039	0.0030	None	53-M2-89
-	0.6	0.0083	0.0015	None	53-M2-89

TABLE 9
Physical Property Changes in Material 632X59 H-465
(Cellulose acetate, plate)

	Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Yield Strength, psi	Elongation at Yield, %	Proportional Limit, psi	Modulus of Elasticity, psi	Work at Yield, ft-lbs	σ
Original Control	0	0.0	2350	342	2350	342	1650	145×10^3	8.109	0.3
Room Control	12	-0.6	2970	29	2970	29	1850	210×10^3	27.274	0.5
90°C Control	12	-3.4	3300	215	3300	215	1750	215×10^3	8.573	0.51
In contact with OGK at 90°C	7	+17.1	1940	290	1940	290	918	187×10^3	92.729	0
In contact with OGK at 107°C	7	+19.8	1600	186	1600	186	892	28.5×10^3	11.021	-
In contact with M2 at 90°C	12	+3.6	2260	154	2260	154	1310	206×10^3	14.056	0.45
In contact with M2 at 107°C	7	+31.6								
In contact with M2 at 107°C	3	+68.1								
In contact with M2 at 107°C	7	+33.8								
In contact with M2 at 107°C	7	+40.4	495	114	485	114	87.8	4.42×10^3	3.450	-
In contact with T16 at 107°C	7	+26.3	1220	131	1120	131	493	46.4×10^3	14.980	0.34
In contact with T18 at 90°C	12	+7.3	3350	100	3350	100	1640	223×10^3	8.194	0.60
In contact with T19 at 107°C	7	+29.6	851	186	801	186	380	19.8×10^3	9.043	-

Specimens determined beyond testing

Specimens determined beyond testing

Specimens determined beyond testing

TABLE 10
Physical Property Changes in Mineral GIXSY D-MS
(Cellulose acetate, grams)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Tensile Strength, psi	Elongation at Yield, %	Proportional Limit, psi	Modulus of Elasticity, psi	Area of Yield, in. in.	Modulus of Elasticity, in. in.	Modulus of Elasticity, in. in.
Original Control	0	1400	145	145	145	145	145	145	145	145
Heat Control	12	4210	42	4210	42	4210	42	4210	42	4210
90°C Control	12	4760	231	4760	231	4760	231	4760	231	4760
In contact with OGE at 90°C	12	3600	297	3600	297	3600	297	3600	297	3600
In contact with OGE at 90°C	12	3850	301	3850	301	3850	301	3850	301	3850
In contact with MO at 90°C	12	3970	127	3970	127	3970	127	3970	127	3970
In contact with B ₂ O ₃ at 90°C	6	3570	217	3570	217	3570	217	3570	217	3570
In contact with MO at 90°C	4	321	176	321	176	321	176	321	176	321
In contact with MO at 90°C	5	1600	310	1600	310	1600	310	1600	310	1600
In contact with B ₂ O ₃ at 90°C	6	1710	397	1710	397	1710	397	1710	397	1710
In contact with TiO ₂ at 90°C	12	2460	386	2460	386	2460	386	2460	386	2460
In contact with TiO ₂ at 90°C	12	4710	236	4710	236	4710	236	4710	236	4710
In contact with TiO ₂ at 90°C	6	2350	297	2350	297	2350	297	2350	297	2350

TABLE II
Physical Property Changes in Material 62X59 C-45
(Cellulose acetate, amber)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	σ , %	Elongation at Break, %	Tensile Strength, psi	Elongation at Yield, %	Proportional Limit, psi	Modulus of Elasticity, psi	Modulus of Rupture, psi	Modulus of Torsion, psi
Original Control	0.0	3125	68	16.7	3125	4.8	2348	1.87×10^5	11,375	9.4
Room Control	-0.6	2860	24	21.3	2860	7.4	1898	2.02×10^5	11,944	0.24
50°C Control	-2.5	3180	48	11.6	3240	4.7	2665	1.94×10^5	11,712	0.64
In contact with O ₂ at 50°C	-16.6	2260	47	17.8	2070	6.0	1210	1.15×10^5	24,205	9.90
In contact with O ₂ at 50°C	-22.1	1605	85	27.6	1562	3.5	691	61.9×10^3	18,571	-
In contact with O ₂ at 50°C	-2.6	3670	53	13.4	3670	3.7	2290	2.01×10^5	8,576	9.13
In contact with H ₂ O at 50°C	-6.6	1062	17	18.6	1062	17	274	16.1×10^3	4,290	-
In contact with H ₂ O at 50°C	-8.8	415	72	44.7	415	72	117	4.77×10^3	1,576	-
In contact with H ₂ O at 50°C	-11.2	811	118	51.7	411	51.7	232	13.2×10^3	6,961	-
In contact with H ₂ O at 50°C	-7.4	512	157	51.6	512	51.6	198	7.94×10^3	2,365	-
In contact with H ₂ O at 50°C	-7.7	1283	153	19.6	1150	16.7	782	26.7×10^3	2,601	9.87
In contact with H ₂ O at 50°C	-4.1	2990	127	16.7	2250	13.7	1720	17.9×10^3	20,718	3.81
In contact with H ₂ O at 50°C	-14.9	1106	127	41.1	714	12.9	489	32.2×10^3	6,601	0.25

TABLE 12
Physical Property Changes in Material GDX59 B-NZ
(Cellulose acetate, water-calder)

Sample Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Yield Strength, psi	Elongation at Yield, %	Proportional Limit, psi	Modulus of Elasticity, psi	Work or Yield, in lbs	Work to Fracture, in lbs	σ : Fracture, in lbs	σ :
Original Control	0.0	5140	16.6	1110	2.9	2990	197	37,000	24,300	6.6	17.2
Room Control	-0.5	6440	11.5	6440	11.5	1770	292	17,100	4,820	0.6	12.1
50°C Control	-1.6	6610	15.7	6610	15.7	1870	159	14,100	21,000	3.1	9.6
In contact with OCE at 50°C	-19.4	6450	27.6	6450	27.6	2370	182	21,000	20,800	0.54	6.4
In contact with OHO at 50°C	-24.4	4130	58.6	4130	58.6	2430	264	23,100	19,300	1.19	6.7
In contact with M2 at 50°C	-8.1	5850	17.2	5850	17.2	1450	126	24,100	11,000	0.5	12.3
In contact with M7 at 50°C	-40.9	3120	77.8	3120	77.8	2760	427	179,000	12,500	1.33	3.1
In contact with M8 at 50°C	-47.1	1110	412	1110	412	824	474	61,000	25,000	1.21	1.9
In contact with M9 at 50°C	-49.1	1140	226	1140	226	1070	248	105,000	17,300	2.79	6.0
In contact with M15 at 50°C	-54.9	1780	152	1780	152	1080	491	121,000	25,000	8.78	4.1
In contact with L1 control with 7% at 50°C	-42.8	1510	409	1510	409	2160	294	253,000	51,000	0.94	9.3
In contact with T18 at 50°C	-8.8	4910	107	4910	107	2640	183	27,100	4,720	0.37	7.6
In contact with T19 at 50°C	-37.5	2660	145	2660	145	1460	149	140,000	16,100	0.79	4.6

TABLE 13

Physical Property Changes in Material 612X59 A-MZ
(Callicene concrete, red)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Yield Strength, psi	Elongation at Yield, %	Proportional Limit, psi	Modulus of Elasticity, psi	Work or Yield, ft-lbs	Work to Fracture, ft-lbs	σ
Original Control	0.0	5180	279	5180	2.9	3240	378×10^3	21,600	21.5	3.6
Room Control	0.0	7070	183	7070	3.4	4460	401×10^3	9	23.2	2.0
50°C Control	-1.8	7540	351	7540	3.7	4150	374×10^3	14,800	23.4	3.4
In contact with OGC at 50°C	+19.9	5190	281	5190	4.1	2930	252×10^3	9,470	27.3	3.7
In contact with OGC at 10°C	+27.1	4510	487	4510	4.1	2810	227×10^3	50,100	23.7	7.3
In contact with M2 at 50°C	+6.4	6270	143	6270	3.9	3520	318×10^3	9,247	26.3	1.9
In contact with M2 at 50°C	+41.6	3510	311	3510	3.9	2060	188×10^3	39,800	21.8	4.1
In contact with M8 at 50°C	+61.4	1710	179	1790	6.5	1660	104×10^3	16,700	12.9	4.0
In contact with M8 at 50°C	+42.4	3580	435	3580	4.3	2190	163×10^3	94,700	20.3	2.3
M15 at 50°C	+46.3	2890	159	2890	1.4	1800	170×10^3	11,900	17.4	4.1
M15 at 50°C	+36.7	3510	171	3590	3.6	2240	190×10^3	11,900	19.3	4.9
T16 at 50°C	+9.6	5190	336	5590	3.8	3350	283×10^3	19,560	23.3	4.3
T19 at 50°C	+17.7	3190	192	3190	3.6	1940	178×10^3	27,500	18.8	2.7

TABLE 14
Physical Property Changes in Material 632X59 E-M
(Cellulose acetate, blue)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	σ : ϵ	Elongation at Break, %	σ : ϵ	Yield Strength, psi	σ : ϵ	Elongation at Yield, %	Proportional Limit, psi	σ : ϵ	Modulus of Elasticity, psi	σ : ϵ	Work or Yield, ft-lbs	Work to Fracture, ft-lbs	σ : ϵ
Original Control	0	4400	215	8.0	2.4	4400	215	3.1	2200	1.8	28.1×10^3	29,000	7.2	25.6	3.19
Room Control	12	4240	58	16.7	3.8	4240	58	3.2	2500	0.8	25.4×10^3	13,900	7.63	47.6	10.3
90°C Control	12	4560	162	16.3	3.1	4560	162	3.7	2650	0.1	2.91×10^4	8,190	9.61	32.5	10.6
In contact with GOK at 90°C	5	2890	145	14.9	3.5	2890	145	3.8	4660	0.2	1.19×10^4	5,240	6.63	30.9	7.3
In contact with ORO at 50°C	6	2370	416	19.0	3.0	2370	416	3.8	1670	0.3	1.10×10^3	15,400	5.90	26.1	3.7
In contact with 102 at 90°C	12	4450	222	16.4	2.3	4450	222	4.1	2770	0.1	2.24×10^3	8,060	10.0	30.7	6.2
In contact with 107 at 50°C	2	2240	245	19.4	2.5	2240	245	3.7	1220	0.2	1.14×10^3	10,750	4.91	25.6	4.0
In contact with 108 at 50°C	2	1170	162	11.5	1.4	1170	162	4.7	907	0.8	4.01×10^3	8,060	2.79	25.9	3.9
In contact with 109 at 40°C	2	1020	49	23.3	1.7	1020	49	4.6	329	0.2	3.4×10^3	2,640	2.91	16.9	1.3
In contact with 1015 at 90°C	2	2100	161	14.0	1.4	2100	161	3.8	1360	0.2	1.14×10^4	33,020	5.94	28.5	11.0
In contact with 1116 at 90°C	6	2090	341	17.4	1.6	2090	341	3.9	1390	0.3	1.17×10^3	25,000	4.70	26.8	6.2
In contact with 1118 at 90°C	12	3040	179	14.7	2.7	3040	179	3.9	2030	0.4	1.4×10^3	4,660	6.93	31.6	7.1
In contact with 1119 at 90°C	4	1560	246	20.1	2.9	1560	246	4.8	—	0.5	56.7×10^3	17,800	1.47	17.9	1.7

TABLE 15

Physical Property Changes in Material 632X59 C-MS
(Cellulose acetate, dent on-ber)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Yield Strength, psi	Elongation at Yield, %	Proportional Limit, psi	σ : Elasticity, psi	Modulus of Elasticity, psi	σ :
Original Control	0.0	3730	10.6	3730	34	2870	173	2.29×10^5	29,300
Room Control	-0.4	4410	8.1	4410	26	3240	141	2.82×10^5	27,400
50°C Control	-3.1	4870	6.6	4870	10	3270	355	2.85×10^5	547
In contact with OGX at 50°C	+13.3	3730	10.5	3730	197	2350	249	203	12,500
In contact with OHO at 50°C	+17.2	3980	12.1	3980	278	2300	133	1.84×10^5	23,600
In contact with M1 at 50°C	+2.5	4750	7.9	4750	82	2740	165	2.61×10^5	10,700
In contact with M7 at 50°C	+36.2	1860	13.8	1860	207	1120	111	90.9×10^3	9,350
In contact with M8 at 50°C	+61.3	1300	37.1	1300	229	575	228	32.1×10^3	18,700
In contact with M9 at 50°C	+50.2	1090	13.2	1090	238	929	115	74.2×10^3	15,500
In contact with M15 at 50°C	+12.7	2040	13.3	2040	236	1240	187	92.8×10^3	16,900
In contact with T16 at 50°C	+21.0	3280	11.4	3280	248	1990	255	1.65×10^5	13,900
In contact with T18 at 50°C	+4.4	4890	9.9	4890	57	3020	179	2.67×10^5	18,400
In contact with T19 at 50°C	+26.8	2360	12.5	2360	384	1350	247	1.15×10^5	23,400

TABLE 14
Physical Property Changes in Material 632X39 FH
(Cellulose acetate, average pink)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Yield Strength, psi	Elongation at Yield, %	Proportional Limit, psi	σ :	Modulus of Elasticity, psi	σ :
Original Control									
0	0.0	40,000	9.2	4070	9.3	2830	0.0	249×10^3	135
12	+0.1	30,400	15.9	3840	78	1480	0.3	285×10^3	257
12	-0.3	5460	13.9	5460	80	3610	2.3	279×10^3	232
12	+25.6	3170	13.2	3170	303	1890	0.3	167×10^3	279
10	+36.3	2780	16.1	2780	281	1400	0.2	133×10^3	366
12	+7.3	4650	16.8	4650	127	3040	0.1	237×10^3	112
3	+46.3	1270	19.1	1270	131	800	0.3	66.6×10^3	172
4	+49.3	784	33.1	704	371	374	3.4	22×10^3	169
3	+46.4	1440	15.0	1440	286	899	0.4	71.9×10^3	171
3	+36.7	1030	22.6	1030	154	630	0.4	49.7×10^3	108
8	+35.2	1760	35.2	1760	242	1130	0.3	9.32×10^3	283
12	+9.3	3370	8.1	3370	218	2160	1.0	175×10^3	152
3	+41.3	1270	19.9	1270	91	787	2.6	62.6×10^3	78

TABLE 10
Physical Property Changes in C.A.2 Group B

Sample Period, weeks	Change in Weight, %	Max. Tensile, psi	Prop. Limit, psi	Elong. at Yield, %	Elong. at Break, %	Modulus, psi	Work at Yield, lb./sq. in.	Work to Failure, lb./sq. in.	Impact Strength, ft.-lb. (Charpy, degrees)						
Base Control	-0.035	172	220	97	2.5	0.14	11.2	4.3	2.6×10^5	6.61	0.29	16.1	1.5	1.56	87%
M ² C Control	-1.00	195	225	101	3.41	0.11	8.99	1.9	2.7×10^5	6.182	7.9	15.1	1.5	1.53	8.87
with OCE	-26.491	1515	18	78	2.39	0.35	3.24	0.56	10.3×10^5	6.889	1.80	2.75	0.69		
with OMO	-31.874	882	250	494	15	5.7	4.79	1.07	56×10^5	16.975	1.99	2.79	0.27		
with M2	-6.156	2605	58	1700	88	0.16	11.3	1.5	2.6×10^5	7.771	1.57	22.7	8.1	5.36	2.52
with M ²	-25.990	864	156	645	227	0.01	6.8	4.50	56×10^5	16.474	1.55	2.31	0.47	1.95	15
with M6	-22.195														
with M9	-25.773														
with M15	-14.541														
with T10	-27.180	45	109	17	3.27	1.28	6.55	2.37	36×10^5	12.221	1.11	1.95	0.52		
with T18	-12.225	2607	171	1495	105	0.14	10.6	2.6	154×10^5	17.295	1.56	21.5	6.8	6.29	11
with T19	-24.046														

No other tests.

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TABLE 3

APPROXIMATELY 17 YEARS AGO

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SECRETARY: Mr. [redacted]

TABLE 22
Physical Property Changes in E. C. 1048-92-A, Item D

Sample Period, minutes	Change in Weight, %	Min. Temp., °F	Prop. Limit, psi	Elong. at Yield, %	Elong. at Break, %	Modulus, psi	Mod. at Yield, psi	Mod. at Failure, psi	Mod. at Break, psi	Impact Strength, ft-lbs				
Room Control	+0.81%	5465	156	4.39	6.68	1.24	293 × 10 ³	19,791	15.0	2.9	23.1	5.9	3.14	0.9
30°C Control	-0.37%	7959	73	4.74	8.27	0.23	308 × 10 ³	15,564	17.6	1.6	20.1	5.0	2.68	0.7
with OGE	+12.81%	1310	79	5.58	8.44	0.44	192 × 10 ³	42,380	11.5	1.1	11.5	1.1	3.4	0.2
with OHO	+18.79%	3032	79	6.07	6.82	0.62	141 × 10 ³	6,987	11.4	1.7	11.4	1.7	2.93	0.4
with M2	+5.17%	6683	61	3.87	8.22	0.42	249 × 10 ³	10,249	12.9	1.2	12.2	1.4	2.78	0.6
with M7	+18.91%	2610	90	4.43	8.34	0.49	139 × 10 ³	8,732	7.26	0.86	8.19	1.1	2.22	0.5
with M8	+27.60%	1475	62	4.65	8.46	0.47	28.5 × 10 ³	4,864	4.79	0.66	5.24	0.95	No clean breaks	
with M9	+22.19%	2440	41	4.73	8.40	0.58	131 × 10 ³	5,612	7.34	0.83	8.13	0.99	No clean breaks	
with M1	-22.02%	2750	57	4.37	8.37	0.79	155 × 10 ³	3,609	6.77	1.29	7.22	1.61	No clean breaks	
with T1a	+21.01%	2310	82	4.14	8.61	0.77	139 × 10 ³	5,459	6.04	1.23	6.46	1.62	4.48	2 breaks
with T1b	+4.818%	3220	62	5.91	9.21	0.18	213 × 10 ³	20,245	7.98	0.42	7.89	0.92	2.35	1 break
with T1c	+21.21%	2109	49	4.68	8.33	0.42	115 × 10 ³	3,817	6.22	0.68	6.95	0.89	3.23	1 break

TABLE 24
Physical Property Changes in E.C. 1242-97-1, from A*

	Change in Weight, %	Moist. Tensile, psi	Prop. Limit, psi	Elong. at Yield, %	Elong. at Break, %	Modulus, psi	Work at Yield, ft.-lbs.	Work to Fracture, ft.-lbs.	Impact Strength, ft.-lbs.
Base Control	-0.410	6740	1460	3.49	8.24	8.73×10^5	21,652	21,652	2.1
50°C Control	-0.196	6790	1360	4.03	8.17	8.17×10^5	11,917	20.6	2.34
with OGE	-12.124	4430	111	4.2	8.38	8.68×10^5	4,979	15.4	3.62
with GHO	-0.220	4800	113	3.7	8.28	8.4×10^5	29,777	14.8	3.99
with M2	+2.120	6130	185	3.1	8.19	8.3×10^5	7,042	17.8	3.89
with M7	+0.855	4610	104	4.02	9.37	2.15×10^5	2,574	15.0	3.79
with M8	-12.749	3720	72	3.3	8.26	8.4×10^5	4,933	6.61	No clean breaks
with M9	-13.244	3750	145	3.64	4.32	1.86×10^5	10,805	10.3	3.69
with M15	+12.177	4360	136	5.67	4.35	1.99×10^5	6,656	11.4	3.55
with T16	+9.403	4990	85	3.72	4.45	2.07×10^5	2,735	11	4.24
with T18	+2.553	6180	197	3.84	4.51	6.17×10^5	5,899	17.2	3.56
with T19	+11.715	3770	60	3.75	4.55	1.83×10^5	3,100	10.6	3.41

*Storage period, 12 months

TABLE 25
Cellulose Acetate (Tenite I) Formulations*

Designation	Color	Composition, pbw	
632X59-H-MS	Pink	E-400-25	100 parts
		DEP	30
		DMP	10
		TPP	20
632X59-A-H2	Red	E-394-30	100
		DMP	10.8
		DEP	24.3
632X59-B-H2	Colorless	E-400-25	100
		DMP	10.8
		DEP	24.3
632X59-C-MS	Amber	E-394-30	100
		DMP	14.4
		DEP	33.7
632X59-D-MS	Green	E-400-25	100
		DMP	14.4
		DEP	33.7
632X59-FH	Orange Pink	E-400-25	100
		DEP	22.8
		DMP	7.6
		TPP	15.2
632X59-G-MS	Dark Amber	E-394-30	100
		DEP	30
		DMP	10
		TPP	20
632X59-E-M	Blue	E-394-30	100
		DEP	22.8
		DMP	7.6
		TPP	15.2

* All formulations were obtained from Eastman Kodak Company.

TABLE 26

Ethyl Cellulose (Hercocel E) Compositions

Designation	Color	Composition, pbw	
E.C. 1048-92-4	Clear	Ethyl cellulose K-70	80 parts
		Dow 276V2	14
		Tricresyl phosphate	6
		Diamyl phenol	2
E.C. 1048-92-3		Ethyl cellulose K-70	90
		Dow 276V2	7
		Tricresyl phosphate	3
		Diamyl phenol	2
E.C. 1048-92-2		Ethyl cellulose K-70	80
		Dow 276V2	14
		Triphenyl phosphate	6
		Diamyl phenol	2
E.C. 1048-92-1		Ethyl cellulose K-70	90
		Dow 276V2	7
		Triphenyl phosphate	3
		Diamyl phenol	2
E.C. 1048-92-5		Ethyl cellulose K-70	84
		Dow P-1099	8
		Mineral oil	8
		Diamyl phenol	2

TABLE 27

Cellulose Acetate Butyrate (Tenite II) Compositions*

Designation	Composition, pbw	
T.E. 64621-1 (Compound A)	Cellulose acetate butyrate	100 parts
	Dibutyl sebacate	5
T.E. 64622-1 (Compound B)	Cellulose acetate butyrate	100
	Dibutyl sebacate	14.5
T.E. 64623-1 (Compound C)	Cellulose acetate butyrate	100
	Triphenyl phosphate	6

* All of the compositions listed have identical acetyl, butyl, and hydroxy contents.

Section 3

EPOXY RESINS

One useful property of epoxy resins is the ability to transform readily from the liquid state to tough, hard thermoset materials with low shrinkage. This hardening is accomplished by the addition of a chemically active reagent known as a curing agent (also, a hardener, activator, or catalyst). Some curing agents promote cure by catalytic action, others participate directly in the reaction and become a part of the final polymer. Depending upon the particular curing agent used, cure of the epoxy resin may require external application of heat. The principal types of curing agents are primary and secondary amines, acid anhydrides, dibasic acids, and resins, the last category including phenol-formaldehyde, urea-formaldehyde, the polyamides, and melamine-formaldehyde.

A survey of available data on the compatibility of epoxy resins with explosives and propellants reveals the following information:

1. The reactivity of explosives caused by contact with epoxy resins is dependent upon the hardener or curing agent utilized for cure.
2. Epoxy resins cured with aliphatic amines cause a majority of explosives and propellants to be excessively reactive.
3. Explosives and propellants when stored in direct contact with epoxy resins, that were cured with acid anhydrides, alkaline or phenolic resins, exhibit little or no reactivity.
4. Epoxy resins cured with polyamides, such as Versamide, cause some explosives to be excessively reactive.

TABLE 28

Vacuum Stability Test Results for Epoxies

Polymer	Explosive	Temperature, °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Araldite AN-102 with 951 hardener	M-2	90	0.61	2.48	9.70	6.61	Excessive	52-M2-84
Araldite AN-111	Composition B	100	0.27	0.26	0.28	0.00	None	54-M2-32
Araldite AN-111	Tetryl	100	0.27	0.21	0.34	0.00	None	54-M2-32
Araldite AN-111	T8	90	0.37	2.20	11 ⁺	8.43	Excessive	51-H1-2419
Araldite-CN-503 with 951 hardener	Black powder	100	0.02	0.42	0.25	0.00	None	55-H1-1112
with 951 hardener	Composition B	100	0.00	2.26	1.90	11 ⁺ 16 hrs	Excessive	55-H1-1112
with HN-901	M-10	90	0.07	3.47	3.34	0.00	None	55-H1-1112
Araldite resin 33/900 with polyamide PA 115	T-19	90	0.19	0.28	11.00	0.00	None	56-M2-14
Araldite 20005	Composition B	100	0.38	0.28	0.57	10.53 16 hrs	Excessive	55-M2-41
Araldite F with phthalic anhydride	Composition B	100	0.31	0.28	0.82	0.00	None	55-M2-41
tertiary amine	Composition B	100	0.31	0.28	0.82	0.23	Negligible	55-M2-41
Araldite F with methylene diamine	Composition B	100	0.36	0.28	0.36	0.00	None	55-M2-41
Araldite AN-100 with HN-901	T-19	90	0.14	3.01	11 ⁺ 40 hrs	7.85 ⁺ 40 hrs	Excessive	56-M2-14
Araldite E-107	T-19	90	0.08	3.04	3.45	0.33	Negligible	54-M1-1740

TABLE 28 (Cont)

Polymer	Explosive	Temperature, °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Remarks	Picotiny Report No.
Armstrong A-1	JPN	50	0.91	2.57	11.00 ⁺	7.58 ⁺	Excessive	53-M2-4
	MRP	50	0.91	1.99	11.00 ⁺	8.10 ⁺	Excessive	53-M2-4
	T-2	50	0.57	3.54	11.00 ⁺	6.89 ⁺	Excessive	53-M2-4
	T-8	50	0.91	2.13	11.00 ⁺	7.96 ⁺	Excessive	53-M2-4
Armstrong A-3 (Activator A)	M-2	90	0.31	2.48	5.56	2.77	Very slight	52-M2-84
Armstrong A-4 Hardener A	RDX	100	0.13	0.31	5.61	5.17	Excessive	52-H1-632
Armstrong A-6 with hardener E	Composition B	100	0.51	0.20	5.48	4.77	Moderate	55-M2-33
	Composition B	100	0.40	0.20	6.13	5.53	Excessive	55-M2-33
	Cyclorol 75/25	100	0.62	0.34	4.63	3.67	Moderate	56-M2-10
	Tetryl	100	0.51	0.45	1.56	0.60	Negligible	55-M2-33
Armstrong C-4	Tetryl	100	0.40	0.39	2.32	1.53	Very slight	55-M2-33
	Cyclorol 75/25	100	0.16	0.26	11.00 ⁺ 15 hrs	10.58 ⁺ 16 hrs	Excessive	55-M2-38
Armstrong N-111	Fuze powder	100	0.45	0.35	0.40	0.00	None	54-M2-14
Bakelite BR-18795 with BR-18793 (cured) (uncured) (cured) (uncured) (cured) (uncured)	Black powder	100	0.32	0.52	0.88	0.04	Negligible	53-H1-499
	Composition A-3	100	0.34	0.41	0.43	0.00	None	53-M2-76
	Composition B	100						54-H1-2763
	Composition C-3	100	0.32	1.29	11.00 ⁺	10.39 ⁺	Excessive	53-H1-496
	Composition C-3	100	0.09	1.29	11.00 ⁺	8.62	Excessive	53-H1-496
	Cyclorol 75/25	100	0.35	0.31	1.26	0.61	Negligible	53-M2-76
	H-6 Navy Explosive	100	0.32	0.13	11.00 ⁺	10.55	Excessive	53-H1-496
	MOX-2B	100	0.09	0.13	11.00 ⁺	10.78	Excessive	53-H1-496
	MOX-2B	100	0.32	0.20	3.96	3.44	Moderate	53-H1-496
	MOX-2B	100	0.09	0.20	2.35	2.06	Very slight	53-H1-496
Bakelite BR-18795 with BR-18793 (cured) (uncured)	RDX-Hystine	100	0.34	0.35	0.55	0.00	None	53-M2-76
	Tetryl	100	0.32	0.41	3.13	2.40	Very slight	53-H1-496
	Tetryl	100	0.09	0.41	—	—	—	53-H1-496

TABLE 28 (Cont)

Polymer	Explosive	Temperature, °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Remarks	Picinity Report No.
Bakelite BR-1874 with B.R. 18507	Bacalol	100	0.37	0.14	0.48	0.00	None	53-M2-13
Bondmaster No. 698	Composition B	100	0.66	0.35	0.71	0.00	None	56-M2-40
Bondmaster No. 698 coated	Composition B	100	0.80	0.11	0.86	0.00	None	56-M2-40
Chemotex No. 823	Composition B	100	0.71	0.30	3.52	2.51	Slight	53-M2-67
Chemotex No. 825	Composition B	100	0.52	0.27	11*	10.21	Excessive	53-M2-67
Ciba No. 502 with hardener 951	OTO	90	0.09	0.73	11*	10.18	Excessive	53-M2-90
Cycleweld C-14	Composition A-3	100	0.36	0.37	1.21	0.48	Negligible	53-M2-82
	Bacalol	100	0.30	0.14	3.55	3.12	Moderate	53-M2-13
	Composition B	100	0.19	0.25	11*	10.56	Excessive	56-M2-34
	Black powder	100	0.19	0.63	0.53	0.06	None	56-M2-34
	Barium Nitrate	100	0.26	0.08	0.05	0.00	None	55-M2-55
	Bullseye No. 2							
	Flash Powder	90	0.32	1.94	11* 16 hrs	7.74	Excessive	52-H1-2023
	HMX-6	100	0.22	0.67	11* 16 hrs	10.11	Excessive	56-M2-4
	IM-142 Incendiary Composition	100	0.22	0.36	0.17	3.00	None	53-M2-99
	IMR-4879 Propellant	100	0.22	2.93	2.34	0.00	None	53-M2-99
	M-8	90	0.08	4.13	11*	6.79*	Excessive	57-TM2-15
	M-9	90	0.08	5.72	11*	5.28*	Excessive	57-TM2-15
	M-10	100	0.19	2.36	2.13	0.00	None	56-M2-34
	Penolite 55 50	100	0.36	2.06	11*	8.38*	Excessive	53-M2-82
Inert Mat.	Silicon	100	0.26	0.08	0.05	0.00	None	54-M2-55
	TNT	100	0.26	0.08	11*	10.66*	Excessive	56-M2-34
	Tetryl	100	0.26	0.40	8.41	7.75	Excessive	56-M2-34
	Tetrazolite							
Inert Mat.	carbazole	100	0.26	0.28	0.26	0.00	None	55-M2-55
	Zirconium-hydride	100	0.26	0.41	0.26	0.00	None	55-M2-55
Epon VI with hardener A	Composition B	100	0.13	0.29	11*	10.58*	Excessive	55-H1-2116
with hardener Z	Composition B	100	0.12	0.26	3.55	3.17	Moderate	55-H1-2372
with A	T-19	90	0.40	3.04	11*	7.56*	Excessive	54-H1-1740
with A	TNT	100	0.54	0.14	2.12	1.44	Very Slight	54-M2-45
with A	Tetryl	100	0.54	0.16	0.96	0.26	Negligible	54-M2-45
with A	Tetryl 65.35	100	0.54	1.48	5.45	3.43	Moderate	54-M2-45
Shell No. 422	M-6	100	1.24	1.49	1.74	0.00	None	55-M2-44

TABLE 28 (Cont)

Polymer	Explosive	Temperature, °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Experimental Epon stabilized material	M-10	100	1.24	6.85	7.56	0.00	None	55-M2-44
Epon 828								
with C	Black powder	100	0.08	0.42	0.24	0.00	None	55-HI-1122
with A	Black powder	100	2.48	0.42	0.32	0.00	None	55-HI-1122
with D	Composition B	100	0.18	0.18	11 ⁺	10.64 ⁺	Excessive	55-M2-5
with CI	Composition B	100	0.17	0.18	0.32	0.00	None	56-M2-15
with A	Composition B	100	0.48	0.20	11 ⁺	10.32 ⁺	Excessive	VS-32
with Z	Composition B	100	0.01	0.18	2.16	1.97	Very slight	56-HI-139
with diethylene triamine	Flash Composition	100	0.18	0.11	2.63	2.34	Slight	55-H-620
with A	HEX-6	100	0.57	0.64	11 ⁺	10.79 ⁺	Excessive	55-M2-49
with CI	HBX-6	100	0.26	0.76	0.54	0.00	None	56-M2-70
with Versamid 125	HBX-6	100	0.37	0.14	11 ⁺	10.49	Excessive	57-HI-772
with Versamid 115	HBX-6	100	0.37	0.00	11	10.63	Excessive	57-HI-772
with Z	HBX-6	100	0.01	0.24	1.04	0.79	Negligible	56-HI-139
with A	M-10	90	0.43	2.26	2.26	0.00	None	55-HI-1122
with CI	M-10	90	0.06	2.26	2.23	0.00	None	55-HI-1122
with D	OIO	90	0.09	0.57	11 ⁺	10.34 ⁺	Excessive	54-M2-26
with Z	RDX	100	0.17	0.61	0.51	0.00	None	57-TM2-18
with A	TNT	100	0.54	0.22	5.36	4.60	Moderate	56-M2-19
with CI	TNT	100	0.05	0.22	0.24	0.00	None	56-M2-19
with A	Tetryl	100	0.48	0.5	0.43	1.57	Very slight	56-M2-19
with CI	Tetryl	100	0.05	0.43	0.36	0.00	None	56-M2-19
with Thiokol LP-3	Tetryl	100	0.34	0.23	2.43	1.96	Very slight	54-M2-47
with fiberglass	T-131	90	0.16	0.94	5.59	4.49	Moderate	55-HI-1115
with Cycloeld + LP-3	Yellow flare	100	0.07	0.47	0.19	0.00	None	56-HI-938
Hysol No. 6000	JPN	50	0.17	2.51	1.91	0.00	None	53-M2-4

TABLE 28 (Cont)

Polymer	Explosive	Temperature, °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Hysol No. 6000	MRP	50	0.17	1.99	1.59	0.00	None	53-M2-4
	T-2	50	0.17	5.37	4.45	0.00	None	53-M2-4
	T-8	50	0.17	2.13	1.58	0.00	None	53-M2-4
Hysol No. 6020 (cast) with C (film) with C with C with C with C (cast) with C	HBX-6	100	0.01	0.66	11 ⁺	10.33 ⁺	Excessive	56-M2-60
	HBX-6	100	0.27	0.66	2.96	2.03	Slight	56-M2-60
	Pentolite	100	0.82	1.56	5.50	3.12	Moderate	54-M2-48
	Swiss Prop	90	0.11	0.72	11 ⁺	10.17 ⁺	Excessive	52-M2-174
	Tetryl	100	0.82	0.17	3.91	2.92	Slight	54-M2-48
	Tetryl	100	0.01	0.37	11 ⁺	10.62 ⁺	Excessive	56-M2-60
MF-876 Epoxy with diethylene triamine	Amatol	100	0.72	0.41	5.53	4.40	Moderate	56-M2-12
	M-7	90	0.60	2.13	6.69	3.96	Moderate	56-M2-12
	M-15	90	0.60	1.98	8.97	6.39	Excessive	56-M2-12
	Tetryl	100	0.72	0.45	0.96	0.00	None	56-M2-12
Bondmaster No. M-620	Composition B	100	0.38	0.38	0.49	0.00	None	56-M2-54

TABLE 29
Effects of Storage on the Physical Properties of Epoxies

Polymer	Explosive	Storage, Weeks	Temperature, °C	Effects on the Polymer	Picatinny Report No.
Araldite AN-102 with 951 hardener	M-2	8	50	Turned yellow	52-M2-84
	Composition B Tetryl	15	76	No effect	54-M2-32
Araldite AN-111		15	76	Roughened surface	54-M2-32
	JPN	26	50	Slight adherence	54-M2-32
Armstrong A-1	MRP	26	50	No effect	54-M2-32
	T-2	26	50	No effect	54-M2-32
	T-8	26	50	Slight adherence	54-M2-32
	M-2	8	50	No effect	52-M2-84
Armstrong A-3	Baratol	8	76	No effect	53-M2-13
Bakelite-BR-18794 with BRR-18807					
Bondmaster No. No. 698 coarse	Composition B	24	71	Darkened slightly	56-M2-40
	Composition B	24	71	Explosive adhered, was etched	56-M2-40
Cycleweld C-14	Baratol	8	76	No effect	53-M2-13
	Black powder	24	76	Darkened slightly	56-M2-34
	M-10	24	76	Darkened slightly	56-M2-34
	TNT	24	76	TNT adhered tenaciously	56-M2-34
	Tetryl	24	70	Darkened	56-M2-34

TABLE 29 (Cont)

Polymer	Explosive	Storage, Weeks	Temperature, °C	Effect on the Polymer	Picatinny Report No.
Epon 828 with CI	Composition B	24	71	No effect	56-M2-15
with Z	HBX-6	36	71	Turned dark	57-TM2-18
with Z	RDX	36	76	Darkened	57-TM2-18
with A	TNT	36	71	Slight adherence	56-M2-19
with CI	TNT	36	71		
with A	Tetryl	36	76	Turned darker	56-M2-19
with CI	Tetryl	36	76		
with spun fiberglass	T-131	24	50	Turned orange	56-M2-23
Hysol No. 6000	JPN	26	50	No effect	53-M2-4
	MRP	26	50	No effect	53-M2-4
	T-2	26	50	No effect	53-M2-4
	T-8	26	50	No effect	53-M2-4
Shell No. 422	M-6	24	76	Darkened	55-M2-44
	M-10	24	76	No effect	55-M2-44

TABLE 30

Percent Change in Weight of Epoxies After Storage

Polymer	Explosive	Storage, Weeks	Temperature, °C	% Weight Change, Control	% Weight Change, Contact	Picatinny Report No.
Armstrong A-1	JPN	26	50	-0.14	+1.61	53-M2-4
	MRP	26	50	-0.14	+1.20	53-M2-4
	T-2	26	50	-0.14	+1.11	53-M2-4
	T-8	26	50	-0.14	+0.57	53-M2-4
Bondmaster No. No. 698 coated with Composition B acid proof Black Paint	Composition B	24	71	-2.53	-1.89	53-M2-40
		24	71	-0.79	Explosive adheres after 12 wks, prohibiting further weighing	53-M2-40
Ciba No. 502 hardener 951	OIO	14	50	-4.22	-3.68	53-M2-90
Cycleweld C-14	Black powder	24	76	-0.02	+0.10	56-M2-34
	M-10	24	76	-0.02	-1.12	56-M2-34
	TNT	24	76	-0.02	TNT prohibited weighing	56-M2-34
	Tetryl	24	76	-0.02	+0.46	56-M2-34
Epon 828 with CI with Z with Z with A with A with spun fiberglass	Composition B	24	71	-0.13	-0.09	56-M2-15
	HEX-6	36	71	-0.33	+0.15	57-TM2-18
	RDX	36	76	-0.33	-0.09	57-TM2-18
	TNT	36	71	-0.33	-0.24	56-M2-19
	Tetryl	36	76	-0.33	-0.34	56-M2-19
	I-131	24	50	-0.09	-0.08	56-M2-23

TABLE 30 (Cont)

Polymer	Explosive	Storage, Weeks	Temperature, °C	% Weight Change, Control	% Weight Change, Contact	Picatinny Report No.
Hysol No. 6000	JPN	26	50	-0.04	+0.70	52-M2-4
	MRP	26	50	-0.04	+0.69	53-M2-4
	I-2	26	50	-0.04	+0.70	53-M2-4
	I-8	26	50	-0.04	+0.37	53-M2-4
Shell No. 422	M-6	24	76	+0.19	+0.22	55-M2-44
	M-10	24	76	+0.19	-0.97	55-M2-44

TABLE 31
100°C Heat Test Results for Epoxies

Material and Weight in Gm	Explosive and Weight in Gm	1st 48 Hrs. Gm	%	2nd 48 Hrs. Gm	%	Explosion in 100 Hrs.	Picatinny Report No.
Armstrong C-4 with J Cyclotol 75/25							
0.6	0.5	0.0722	6.02	0.0067	0.56	None	55-M2-38
0.6	-	0.0355	5.92	0.0076	1.27	None	55-M2-38
-	0.6	0.0040	0.67	0.0000	0.00	None	55-M2-38
Bakelite BR-18795 Composition A-3							
0.6	0.6	0.0036	0.30	0.0006	0.05	None	53-M2-76
0.6	-	0.0015	0.25	0.0000	0.00	None	53-M2-76
-	0.6	0.0000	0.02	0.0000	0.00	None	53-M2-76
Cyclotol 75/25							
0.6	0.6	0.0055	0.46	0.0031	0.26	None	53-M2-76
0.6	-	0.0015	0.25	0.0000	0.00	None	53-M2-76
-	0.6	0.0007	0.12	0.0000	0.00	None	53-M2-76
RDX-Hystine							
0.6	0.6	0.0086	0.72	0.0089	0.74	None	53-M2-76
0.6	-	0.0015	0.25	0.0000	0.00	None	53-M2-76
-	0.6	0.0001	0.02	0.0000	0.00	None	53-M2-76

TABLE 31 (Cont)

Material and Weight in Gm	Explosive and Weight in Gm	1st 48 Hrs. Gm	%	2nd 48 Hrs. Gm	%	Explosion in 100 Hrs.	Picatinny Report No.
Cycleweld C-14	Barium Nitrate						
0.6	0.6	0.0947	0.39	0.0000	0.00	None	55-M2-55
0.6	—	0.0053	0.88	0.0000	0.00	None	55-M2-55
—	0.6	0.0000	0.00	0.0000	0.00	None	55-M2-55
	Primer Mix-FA-70						
0.6	0.6	0.0130	1.08	0.0040	3.34	None	56-HI-140
0.6	—	0.0110	1.83	0.0041	0.68	None	56-HI-140
—	0.6	0.0011	0.18	0.0002	0.03	None	56-HI-140
Epon 828 with dichylene triamine	Lead Azide						
0.6	0.6	0.0093	0.77	0.0000	0.00	None	55-HI-620
0.6	—	0.0040	0.66	0.0000	0.00	None	55-HI-620
—	0.6	0.0065	1.08	0.0000	0.00	None	55-HI-620

TABLE 32

Curing Agents

Commercial Designation	Chemical Compound
C-14B	Diethylene triamine
A (fast reacting)	Diethylene propylamine
Diapi	Diethylamino propylamine
HN-951	Triethylene tetraamine
D	Tri (2-ethyl hexoic acid) salt of tridimethylamino methyl phenol
Cl	Metaphenylene diamine
HN-901	Phthalic anhydride
L (slow reacting)	2,6-diamine pyridine
Z	Aromatic amine mixture

Section 4

ETHYLENES AND FLUOROCARBONS

Included in this section are the polyethylenes, fluorocarbons (Teflon and Kel-F), and chlorosulfonated polyethylene (Hypalon). Because of their chemical inertness, these materials are not affected by contact with explosives and propellants.

Explosives and propellants show little or no reactivity in the presence of these polymers, according to the results of vacuum stability tests.

TABLE 33

Vacuum Stability Test Results for Ethylenes and Fluorocarbons

Polymeric Material	Explosive or Propellant	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
DE No. 3422-Bakelite	JPN	90	0.12	2.36	2.68	0.20	Negligible	53-M2-4
	MRP	90	0.12	1.71	1.82	0.00	None	53-M2-4
	T-2	90	0.12	7.22	7.16	0.00	None	53-M2-4
	T-8	90	0.12	2.04	2.07	0.00	None	53-M2-4
"Ca Plugs"	Tetryl	100	0.13	0.26	0.26	0.00	None	52-M2-21
DYNH-Bakelite	Ammonium Perchlorate	100	0.13	0.21	0.20	0.00	None	54-M2-39
Film-Polyethylene Film (chlorinated) Film with Plicbond	T-18	90	0.21	5.64	4.77	0.00	None	54-M2-35
	T-18	90	0.23	5.64	5.69	0.00	None	54-M2-35
	T-18	90	0.25	5.64	5.88	0.00	None	54-M2-35
Dylan-KPD-190	RDX	120	0.28	0.63	0.68	0.00	None	55-M2-50
	Tetryl	100	0.26	0.39	0.37	0.00	None	56-HI-748
	TNT	100	0.26	0.62	0.51	0.00	None	56-HI-748
Hypalon S-2 (chlorosulfonated)	Fuze Powder	100	0.90	0.36	0.48	0.00	None	53-M2-87
	RDX	100	0.70	0.39	0.01	0.00	None	53-M2-89
	Tetryl	100	0.70	0.28	0.93	0.00	None	53-M2-89
Kcl-F	JPN	90	0.19	2.36	2.43	0.00	None	53-M2-4
	MRP	90	0.19	1.71	1.69	0.00	None	53-M2-4
	T-2	90	0.19	7.22	6.87	0.00	None	53-M2-4
	T-8	90	0.18	2.04	2.03	0.00	None	53-M2-4

TABLE 33 (Continued)

Polymeric Material	Explosive or Prepellant	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Polyethylene—Straight	Black Powder	100	0.17	0.37	0.34	0.00	None	53-M2-18
	K-29 Igniter Mix	100	0.10	0.30	0.29	0.00	None	51-S-17
	Tetryl					0.00	None	52-M2-73
	T-2	90	0.13	7.04	6.45	0.00	None	52-M2-14
	T-6	90	0.10	4.12	3.83	0.00	None	53-H1-502
	C-3	100	0.11	1.10	1.41	0.20	Negligible	133744
	C-4	100	0.07	0.22	0.19	0.00	None	133744
	M9	90	0.34	-9.48	10.40	0.58	Negligible	131219
Teflon	JPN	90	0.11	2.36	2.45	0.00	None	53-M2-4
	MRP	90	0.11	1.71	1.61	0.00	None	53-M2-4
	T-2	90	0.11	7.22	7.77	0.00	None	53-M2-4
	T-8	90	0.11	2.04	1.94	0.00	None	53-M2-4
	Aluminum	100	0.08	0.56	0.16	0.00	None	57-TM2-42
	Ammonal	100	0.08	0.36	0.45	0.01	Negligible	57-TM2-42
	DBX	100	0.08	0.49	0.61	0.04	Negligible	57-TM2-42
	HBX	100	0.08	1.38	0.64	0.00	None	57-TM2-42
	Tritonal	100	0.08	0.24	0.22	0.00	None	57-TM2-42

TABLE 34

Percent Change in Weight of Ethylenes and Fluorocarbons After Storage

Polymeric Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	% Weight Change, Control	% Weight Change, Control	Picatinny Report No.
DE No. 3422 Bak.	JPN	26	50	+0.80	+0.40	53-M2-4
	MRP	24	50	+0.80	+0.48	53-M2-4
	T-2	24	50	+0.80	+0.79	53-M2-4
	T-8	24	50	+0.80	+0.67	53-M2-4
"Ca Plugs"	Tetryl	8	76	+0.38	+0.43	52-M2-21
Film Polyethylene Film (chlorinated)	T-18	25	50	+0.17	+0.38	54-M2-35
	T-18	25	50	+0.33	+0.62	54-M2-35
Kel-F	JPN	26	50	0.00	0.00	53-M2-4
	MRP	24	50	0.00	-0.03	53-M2-4
	T-2	24	50	0.00	-0.03	53-M2-4
	T-8	24	50	0.00	0.00	53-M2-4
Polyethylene-Straight	T-2	54	50	0.32	2.44	52-M2-14
Teflon	JPN	26	50	0.00	0.00	53-M2-4
	MRP	24	50	0.00	-0.03	53-M2-4
	T-2	24	50	0.00	0.00	53-M2-4
	T-8	24	50	0.00	0.00	53-M2-4
	Aluminum	3	71	-0.03	-0.04	57-TM2-42
	Ammonal	3	71	-0.03	-0.03	57-TM2-42
	DBX	3	71	-0.03	-0.02	57-TM2-42
	HBX	3	71	-0.03	-0.03	57-TM2-42
	Tritonal	3	71	-0.03	-0.03	57-TM2-42

TABLE 35
Effects of Storage on the Appearance of Ethylenes and Fluorocarbons

Polymeric Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	Appearance of Polymer	Pictorial Report No.
DE No. 3422-Bakelite	JPN	26	50	No report	53-M2-4
	MRP	24	50	Yellowed	53-M2-4
	T-2	24	50	Yellowed	53-M2-4
	T-8	24	50	Yellowed	53-M2-4
Hypalon S-2	Fuze Powder	9	76	No change	53-M2-87
Kel-F	MRP	24	50	No change	53-M2-4
	T-2	24	50	No change	53-M2-4
	T-8	24	50	No change	53-M2-4
Teflon	MRP	24	50	No change	53-M2-4
	T-2	24	50	No change	53-M2-4
	T-8	24	50	No change	53-M2-4
	Aluminum	3	71	Became a little gray	57-TM2-42
	Ammonal	3	71	Slight browning at edges	57-TM2-42
	DBX	3	71	Slight browning at edges	57-TM2-42
	BDX	3	71	Slight browning at edges	57-TM2-42
	Tritonal	3	71	Slight browning at edges	57-TM2-42

TABLE 36
100°C Heat Test Results for Ethylenes and Fluorocarbons

Material and Weight, in gms	Explosive and Weight, in gms	1st 48 Hrs.		2nd 48 Hrs.		Explosion at 100 Hrs.	Picatinny Report No.
		Gms	%	Gms	%		
Hypolon S-2							
0.6	Lead Azide						
0.6	0.6	0.0098	0.82	0.0022	0.18	None	53-M2-89
-	-	0.0060	1.00	0.0016	0.27	None	53-M2-89
-	0.6	0.0043	0.72	0.0000	0.00	None	53-M2-89
Primer Mix-M-20							
0.6	0.6	0.0105	0.87	0.0024	0.19	None	53-M2-89
0.6	-	0.0060	1.00	0.0016	0.27	None	53-M2-89
-	0.6	0.0019	0.32	0.0004	0.00	None	53-M2-89
Primer Mix-100							
0.6	0.6	0.0076	0.63	0.0018	0.15	None	53-M2-89
0.6	-	0.0060	1.00	0.0016	0.27	None	53-M2-89
-	0.6	0.0006	0.10	0.0000	0.00	None	53-M2-89
Primer Mix-Nol 130							
0.6	0.6	0.0190	1.58	0.0027	0.23	None	53-M2-89
0.6	-	0.0060	1.00	0.0016	0.27	None	53-M2-89
-	0.6	0.0083	1.38	0.0015	0.25	None	53-M2-89
Straight Polyethylene K-29 Igniter Mix							
0.6	0.6	0.0006	0.05	0.0004	0.04	None	51-8-17
0.6	-	0.0005	0.09	0.0000	0.00	None	51-8-17
-	0.6	0.0006	0.10	0.0003	0.05	None	51-8-17

Section 5

FURANES

There are many types of furane resins, including partially polymerized furfuryl alcohol and furfuryl alcohol reacted with furfural, formaldehyde, ketones, phenols, and ureas.

This section deals with the resins produced by the reaction of furfuryl alcohol with furfural.

Observation of available data indicates that:

1. Double-base propellants in contact with furanes cured with Z1A catalyst show excessive reactivity.
2. HMX shows mild reactivity in the presence of furanes when cured with PC and is excessively reactive when cured with CM catalyst.
3. Furanes show little or no deterioration of physical properties in the presence of explosives or propellants.

TABLE 37
Vacuum Stability Test Results for Furane Resins

Material	Catalyst	Explosive or Propellant	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Furane X-2	CM	Cyclotol 75/25	100	5.94	0.30	4.04	0.00	None	56-HI-867
	ZIA	Cyclotol 75/25	100	0.79	0.30	0.81	0.00	None	56-HI-867
	PC	Cyclotol 75/25	100	1.03	0.23	0.72	0.00	None	57-HI-32
	CM	HMX	100	6.26	0.41	11 ⁺	4.33 ⁺		57-HI-19
	PC	HMX	100	1.03	0.56	4.54	2.95	Slight	57-HI-32
	CM	HMX/Exon 90/10	100	0.30	7.44	6.97	0.77	Negligible	57-HI-1301
Duralon 31	PC	HMX/Exon 90, 10	100	0.30	0.69	0.65	0.00	None	57-HI-1301
	ZIA	JPN	90	1.05	2.31	11 ⁺	7.44 ⁺	Excessive	53-M2-4
		MRP	90	1.05	1.99	11 ⁺	7.96 ⁺	Excessive	53-M2-4
		T-2	90	0.47	3.54	4.91	0.90	Negligible	53-M2-4
		T-8	90	1.05	2.13	11 ⁺	7.44 ⁺	Excessive	53-M2-4
	CM	PBX	100	6.33	0.33	5.15	0.00	None	57-HI-20
	PC	PBX	100	1.03	0.24	0.99	0.00	None	57-HI-32
	CM	PETN	100	0.84	0.45	1.54	0.25	Negligible	57-HI-1302
	ZIA	PETN	100	6.08	0.45	6.51	0.00	None	57-HI-1302
	CM	Tetryl	100	0.84	0.45	1.27	0.00	None	57-HI-1302
	ZIA	Tetryl	100	6.08	0.45	5.80	0.00	None	57-HI-1302
	CM	HMX	100	0.37	4.76	4.76	0.00	None	57-HI-1105
	PC	HMX	100	6.12	1.35	11.00 ⁺	3.53 ⁺	Slight	57-HI-1105

TABLE 38

Appearance of Furanes After Storage

Material	Catalyst	Explosive or Propellant	Storage, Weeks	Temperature, °C	Effects on the Polymer	Picatinny Report No.
Furane X-2	Z1A	JPN	26	50	No change	53-M2-4
		MRP	26	50	Hardens	53-M2-4
		T-2	26	50	No change	53-M2-4
		T-8	26	50	Hardens	53-M2-4

% Change in Weight of Furanes After Storage

Material	Catalyst	Explosive or Propellant	Storage, Weeks	Temperature, °C	Control Change, %	Specimen Change, %	Picatinny Report No.
Furane X-2	Z1A	JPN	26	50	-2.50	-4.06	53-M2-4
		MRP	26	50	-2.50	-2.80	53-M2-4
		T-2	26	50	-2.50	-3.29	53-M2-4
		T-8	26	50	-2.50	-2.78	53-M2-4

Section 6

POLYAMIDES

The nylon polyamide resins evaluated had little or no appreciable effect on the explosives and propellants. Conversely, the nylon polyamides appeared to be essentially unaffected by the explosives and propellants used in the evaluations.

Certain low-molecular-weight polyamides, such as the Versamids, were found to cause excessive reactivity of some explosives when used by themselves. These polyamides are essentially the reaction products of unsaturated fatty acids and aryl or alkyl polyamines. Such low-molecular-weight polyamides are usually not used by themselves in Ordnance application but are often used as hardeners for epoxy resins. The behavior of polyamide-epoxy mixtures is reported in the section dealing with epoxies.

TABLE 39

Vacuum Stability Test Results for Polyamides

Material	Explosive or Propellant	Test Temp, °C	Polymer Control	Explosive Control	Polymer & Explosive	Net Increase Due to Polymer	Remarks	Picotiny Report No.
FM-1 Nylon	MRP	90	0.27	1.71	2.37	0.39	Negligible	134S29
	T-2	90	0.27	7.22	7.73	0.24	Negligible	134S29
	T-8	90	0.27	2.04	2.30	0.00	None	134S29
FM-3 Nylon	JPN	90	0.20	2.36	4.11	1.55	Very slight	53-M2-4
	MRP	90	0.20	1.71	2.99	1.08	Very slight	53-M2-4
	T-2	90	0.20	7.22	8.11	0.69	Negligible	53-M2-4
	T-8	90	0.20	2.04	2.70	0.46	Negligible	53-M2-4
FM-10001 Nylon	Composition B	100	0.23	0.21	0.35	0.00	None	52-M2-99
	RDX	100	0.23	0.24	0.23	0.00	None	52-M2-99
	Tetryl	100	0.23	0.26	0.30	0.00	None	52-M2-99
	Tetrytol	100	0.23	2.97	2.35	0.00	None	52-M2-99
	TNT	100	0.23	0.03	0.24	0.00	None	52-M2-99
	HMX	100	0.21	0.29	1.03	0.53	Negligible	55-H1-1117
6501-Nylon	RDX	100	0.21	0.30	1.07	0.56	Negligible	55-H1-1117
	TNT	100	0.29	0.16	0.45	0.00	None	56-M2-51
	Black powder	100	0.13	0.36	6.43	0.60	None	52-M2-6
Silk Grade E	M-1	90	0.13	0.53	0.61	0.60	None	52-M2-6
	M-9	90	0.14	9.48	7.08	0.00	None	131219
Polyamide Hot Dip No. 220	Black powder	90	0.40	1.72	0.97	0.00	None	56-M2-75
	Cyclotol 75-25	100	0.40	0.30	1.37	0.67	Negligible	56-M2-75
	M-8	90	0.43	4.49	9.14	4.23	Moderate	56-M2-75
	M-10	90	0.43	1.60	1.65	0.00	None	56-M2-75

TABLE 40
Percent Change in Weight of Polyamides after Storage

Polymer	Explosive	Storage, wks	Test Temp, °C	% Weight Change, Control	% Weight Change, Contact	Picatinny Report No.
FM-3 Nylon	JPN	26	50	-0.92	-0.26	53-M2-4
	MRP	24	50	-0.92	-0.78	53-M2-4
	T-2	24	50	-0.92	-0.67	53-M2-4
	T-8	24	50	-0.92	-0.80	53-M2-4
FM-10001-Nylon	Composition B	8	76	-1.71	-1.43	52-M2-99
	RDX	8	76	-1.71	-1.60	52-M2-99
	Tetryl	8	76	-1.71	-1.58	52-M2-99
	Tetrytol	8	76	-1.71	-1.30	52-M2-99
	TNT	8	76	-1.71	-0.08	52-M2-99
6501-Nylon	TNT	24	71	-3.16	-2.67	56-M2-51
Polyamide Box Dip No. 220	Black powder	32	76	+0.25	+6.30	56-M2-15
	Cyclotol 75-25	32	76	+0.25	+10.4	56-M2-15
	M-8	32	50	-0.18	+21.4	56-M2-15
	M-10	20	76	+0.25	-0.39	56-M2-15
Silk Grade E	Black powder	11	76	-4.93	-6.29	52-M2-6
	M-1	11	50	-3.53	-4.36	52-M2-6

TABLE 41
Appearance of Polyamides after Storage

Material	Expl or Prop	Storage, wks	Temp, °C	Appearance of Specimens	Picotinny Report No.
FM-3 Nylon	JPN	26	50	No change	53-M2-4
	MRP	24	50	No change	53-M2-4
	T-2	24	50	No change	53-M2-4
	T-8	24	50	No change	53-M2-4
6501-Nylon	TNT	24	71	Turns brown, becomes slightly tacky	56-M2-51
Polyamide Her Dip No. 220	Black powder	32	100	Turns black	56-M2-75
	Cycletol 75/25	32	100	Blackens, hardens, becomes opaque	56-M2-75
	M-8	32	50	Softens, becomes slightly tacky	56-M2-75
	M-10	20	50	Deteriorates	56-M2-75

TABLE 42

Physical Property Changes in Nylon 6503 (Zyrel 63)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Yield Strength, psi	Elongation at Yield, %	Proportional Limit, psi	Modulus of Elasticity, psi	Work or Yield, in lbs	σ :
Original Control	0	7560	353	444	213	2160	84.9×10^3	36.2	12.8
Room Control	+0.3	8920	456	29.0	53	1250	61.4×10^3	28.8	5.6
10°C Control	-1.5	8190	341	49.0	162	2110	64.2×10^3	31.1	8.2
In contact with JPN at 10°C	-0.5	4990	336	16	100	1730	104×10^3	55.9	7.1
In contact with OIL at 10°C	-0.5	8140	297	60	4190	2940	86.5×10^3	49.8	4.9
In contact with GIO at 10°C	-0.8	7040	344	12	4830	2290	113×10^3	58.7	8.6
In contact with M2 at 10°C	-2.6	7490	240	187	7200	3500	210×10^3	38.1	10.0
In contact with M7 at 10°C	-0.3	6640	321	18	4750	1830	109×10^3	53.1	5.3
In contact with M9 at 10°C	-2.0	7010	954	3.7	7030	4510	218×10^3	20.7	4.8
In contact with M10 at 10°C	-0.1	4080	145	145	4340	178	95×10^3	36.1	9.3
In contact with M15 at 10°C	-1.3	6310	543	2.4	6510	3460	219×10^3	20.7	6.9
In contact with T6 at 10°C	-0.8	8170	407	74	4420	1490	90.1×10^3	32.7	7.4
In contact with T7 at 10°C	-0.8	8110	362	25	4470	1680	101×10^3	48.6	10.2
In contact with T16 at 10°C	-0.3	5150	117	73	4410	1840	114×10^3	99.7	12.1
In contact with T18 at 10°C	-1.2	3470	41	1.0	3270	1570	126×10^3	10.1	2.6
In contact with T19 at 10°C	-0.4	5030	1220	15	4430	1410	90×10^3	31.6	2.1

TABLE 43
Physical Property Changes in Nylon 1001 (Zyrel 101)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Yield Strength, psi	Elongation at Yield, %	Proportional Limit, psi	Modulus of Elasticity, psi	Weight at Yield, lb/in.	σ
Original Control	0.0	10,700	115	8.1	10,700	115	5.86	1.9	11.0
Room Control	0.1	9,500	63	20.0	7,600	223	19.0	112	11.0
50°C Control	-0.9	9,410	26	10.1	9,410	26	16.1	117	13.0
In contact with JPW at 10°C	-0.1	9,210	92	41	9,210	92	13.5	101	17.0
In contact with CCA at 50°C	-0.1	9,360	92	7	9,360	92	16.3	133	12.0
In contact with Gly at 50°C	-0.1	9,510	155	34	9,510	155	17.3	123	13.0
In contact with 90% at 50°C	-0.9	11,700	225	7.5	11,700	225	4.9	93.4	2.7
In contact with 90% at 50°C	-0.2	9,550	71	52	9,550	71	21.4	154	46.0
In contact with 90% at 50°C	-0.1	11,100	70	2.3	11,100	70	4.8	29.7	1.8
In contact with 90% at 50°C	-0.2	9,400	74	42	9,400	74	16.1	122	11.0
In contact with 90% at 50°C	-0.9	11,700	405	10	11,700	405	4.7	31.1	2.3
In contact with 90% at 50°C	-0.1	9,270	229	80	9,270	229	9.5	66.8	42.8
In contact with 90% at 50°C	-0.1	9,870	90	2	9,870	90	2.9	140	12.0
In contact with 90% at 50°C	-0.7	9,960	94	47	9,960	94	16.8	123	3.0
In contact with 90% at 50°C	-0.1	9,500	66	70	9,500	66	15.1	115	11.0
In contact with 90% at 50°C	-0.2	9,000	170	41	9,000	170	13.5	104	10

TABLE 44

Physical Property Changes in Nylon 6501 (Z-tyl 61)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Yield Strength, psi	Elongation at Yield, %	Proportional Limit, psi	Modulus of Elasticity, psi	Work at Yield, ft-lb	σ
Original Control	0	6425	314	2930	15.6	1990	58,900	30.7	2.81
Room Control	-1.4	6340	41	6890	41	3030	127×10^3	33.2	3.6
50°C control	-0.3	8150	64	4860	117	2740	98.9×10^3	32.1	2.3
In contact with JP-4 at 50°C	-0.5	8440	81	4380	63	2170	78.5×10^3	34.3	3.3
In contact with G-17 at 50°C	-0.1	8420	437	4630	91	1860	94.4×10^3	61.0	5.4
In contact with O-10 at 50°C	0.0	7630	325	5190	46	2210	121×10^3	60.6	10.6
In contact with M-2 at 50°C	-2.5	9370	358	7150	110	6250	197×10^3	31.0	2.8
In contact with M-7 at 50°C	-0.6	8275	322	4910	64	2290	104×10^3	64.2	9.6
In contact with M-4 at 50°C	-1.9	6540	94	6500	102	5040	105×10^3	35.6	9.5
In contact with M-9 at 50°C	-0.8	8009	125	4200	151	1870	87.6×10^3	58.4	6.6
In contact with M-15 at 50°C	-1.7	5940	337	5650	283	3140	133×10^3	57.9	12.9
In contact with T-6 at 50°C	-0.2	8400	108	4510	94	1870	9.4×10^3	30.2	9.9
In contact with T-8 at 50°C	-0.1	7110	1670	4600	59	1870	91×10^3	34.9	3.9
In contact with T-10 at 50°C	-0.6	8310	203	4140	55	1950	83.8×10^3	55.5	3.8
In contact with T-18 at 50°C	-0.2	5120	455	4490	12	1540	9.4×10^3	32.2	3.5
In contact with T-19 at 50°C	-0.5	5120	455	4490	12	1540	9.4×10^3	32.2	3.5

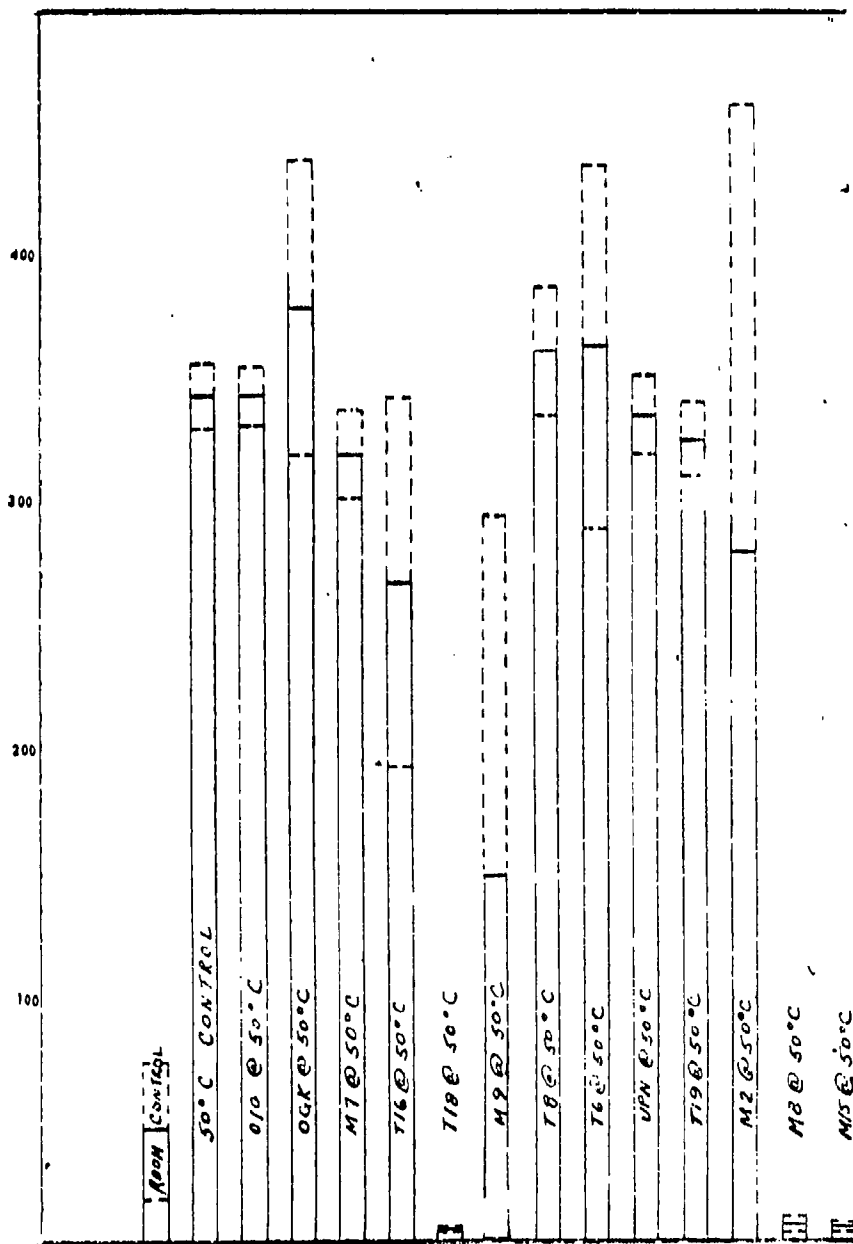


Fig 17 Percent Elongation at Break of Nylon 6503 (Zytel 63) after 12 Months Storage with Various Propellants (Range of standard deviations is indicated by broken lines)

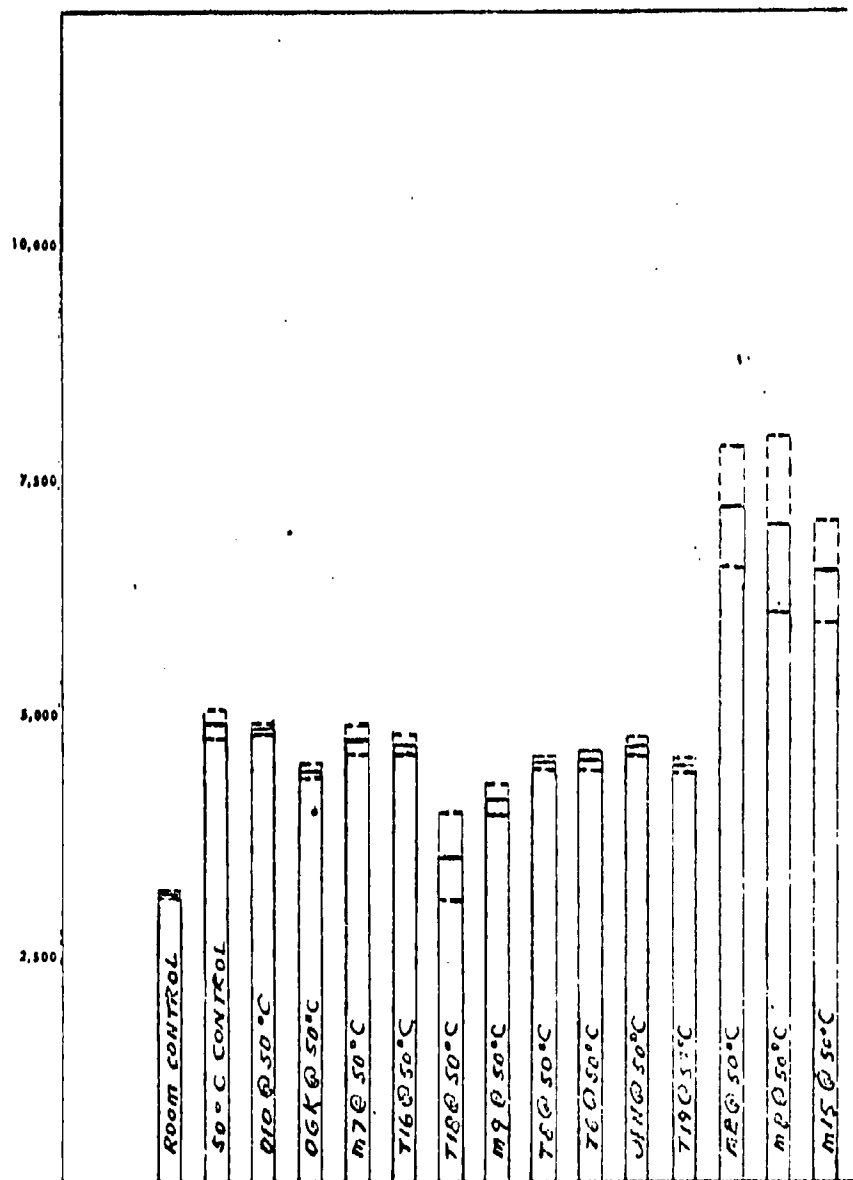


Fig 18 Yield Strength of Nylon 6503 (Zytel 63) after 12 Months Storage with Various Propellants

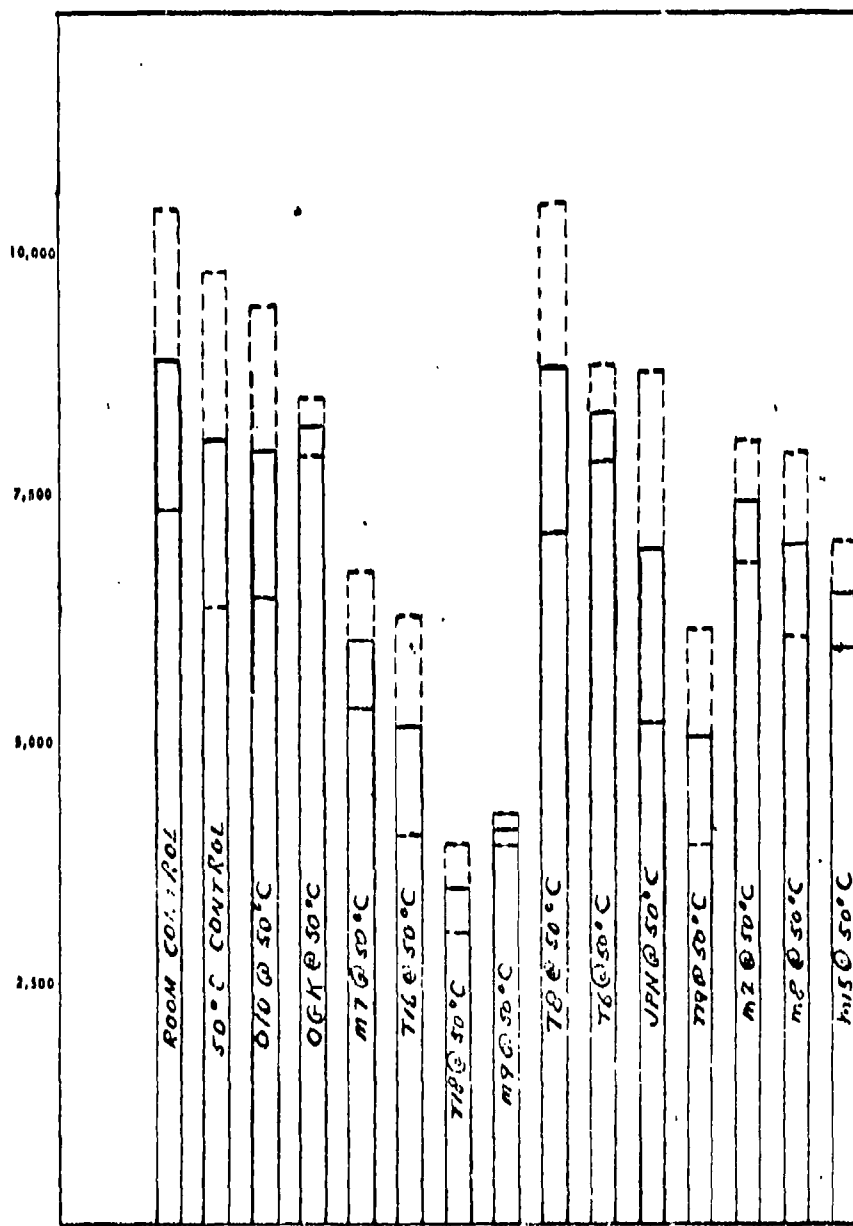


Fig 19 Maximum Tensile Strength of Nylon 6505 (Zytel 63) after 12 Months Storage with Various Propellants

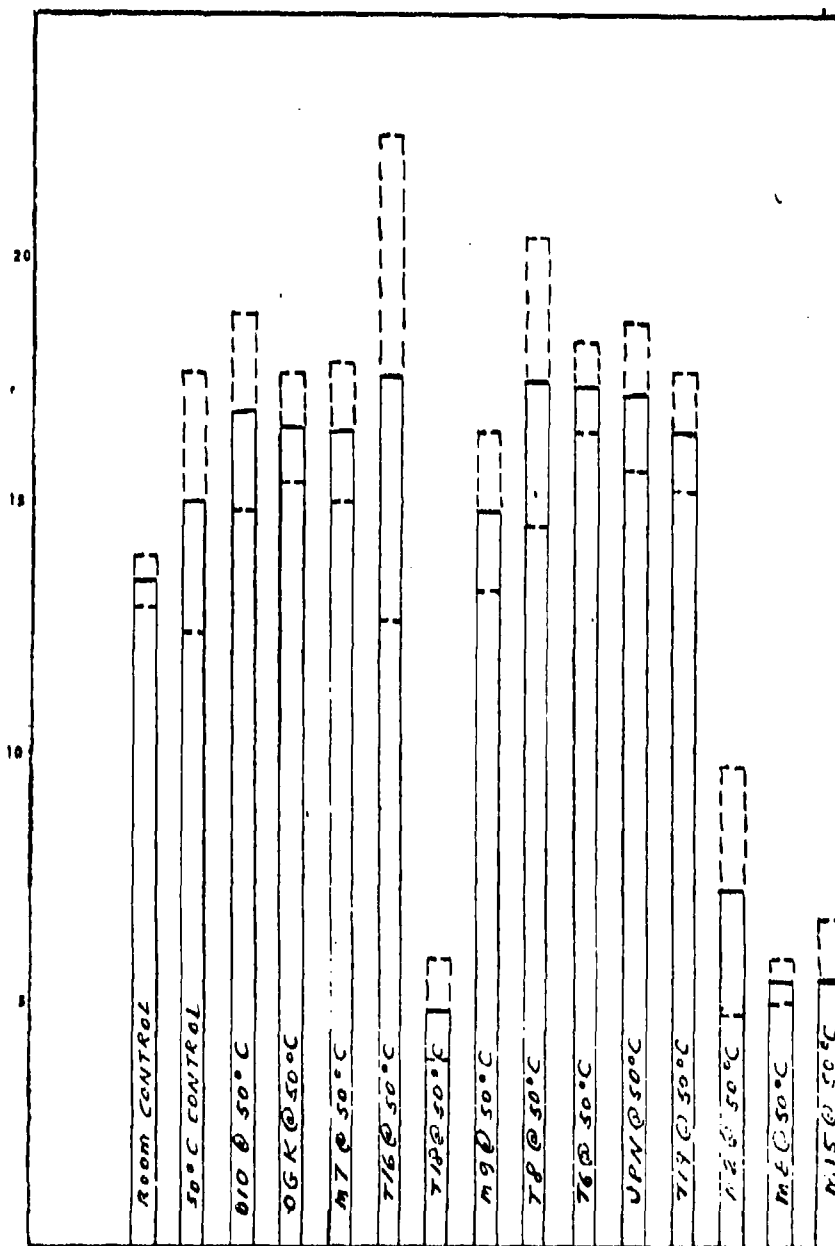


Fig 20 Percent Elongation at Yield of Nylon 6503 (Zytel 63) after 12 Months Storage with Various Propellants

Section 7

PHENOLICS

The chemistry of phenol-formaldehydes and related polymers is complex. These polymers are the basis for many important plastics, adhesives, and coating materials. It is outside the intent of this report to discuss these materials except in terms of properties which are related to compatibility.

On the basis of available data, the following conclusions were reached:

1. Properly cured unmodified phenolic molding materials do not adversely affect the reactivity of explosives and propellants.
2. Phenolic molding materials are substantially unaffected by explosives and propellants.
3. Rubber-modified phenolics in general produce greater reactivity than unmodified phenolics. It is recommended that rubber-modified phenolics be further investigated before they are used with explosives in Ordnance applications.

TABLE 45

Vacuum Stability Test Results For Phenolics

Material	Explosive	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Armstrong J-1140B	Composition A	100	0.64	0.37	0.57	0.00	None	52-M2-110
	Composition B	100	0.64	0.36	1.27	0.27	Negligible	52-M2-110
	Composition C-3	100	0.64	1.25	3.04	1.15	Very slight	52-M2-110
	Composition C-4	100	0.64	0.29	1.13	0.20	Negligible	52-M2-110
	Pentolite 50/50	100	0.64	2.11	2.21	0.00	None	52-M2-110
	PETN	100	1.00	0.46	0.82	0.00	None	52-M2-110
	RDX	100	0.64	0.30	0.63	0.00	None	52-M2-110
	Tetrytol 75/25	100	0.64	4.30	7.37	2.43	Slight	52-M2-110
	TNT	100	0.64	0.21	0.50	0.00	None	52-M2-110
Bakelite BM-250	NRL prop.	90	0.16	0.36	0.28	0.00	None	56-111-1559
Bakelite BM-261	Igniter Charge K-29 RDX	100	0.51	0.11	0.09	0.00	None	56-M2-11
		100	0.51	0.17	1.03	0.35	Negligible	56-M2-11
Bakelite BM-6102	Composition B M-2	100	0.33	0.32	1.14	0.49	Negligible	53-M2-21
		90	0.15	2.35	5.33	2.83	Slight	52-M2-44
Bakelite BM-6260	Black powder Photo flashlight powder Potassium Chlorate Primer Mix	100	0.14	0.54	0.41	0.00	None	53-M2-64
		100	0.14	2.19	3.97	1.64	Very slight	53-M2-64
		100	0.16	0.83	0.96	0.00	None	52-M2-144
Bakelite BM-13089	Composition B TNT	100	0.14	0.21	0.30	0.00	None	52-M2-48
		100	0.14	0.08	0.26	0.04	Negligible	52-M2-48
Bakelite BV-1600	Composition C-4	100	0.35	0.08	0.22	0.00	None	51-8-26

TABLE 45 (Cont)

Material	Explosive	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picotinny Report No.
Bakelite XV-1657	Composition C-4	100	0.53	0.08	0.44	0.00	None	51-8-26
Bakelite VF-612	Composition C-4	100	0.43	0.08	0.38	0.00	None	51-8-26
Corfoam No. 114	HBX-6	100	0.40	0.76	2.37	1.21	Very slight	56-M2-63
	M-10	90	0.29	1.46	3.44	1.69	Very slight	55-M2-51
	T-18	90	0.24	3.56	2.83	0.00	Very slight	55-M2-51
Durez No. 1905	M-16	90	0.05	5.12	5.53	0.36	Negligible	57-TM2-6
	T-16	90	0.04	2.80	4.52	1.68	Very slight	55-M2-6
	T-19	90	0.05	2.86	2.89	0.00	None	57-TM2-6
Durez No. 11864	Composition A-3	120	0.27	0.46	2.27	1.54	Very slight	54-M2-23
Durez No. 12941	M-2	90	0.31	2.48	4.41	1.62	Very slight	52-M2-64
Durez No. 13348	M-2	90	0.17	2.35	11 ⁺	8.48 ⁺	Excessive	52-M2-44
Durez No. 14558	M-2	90	0.20	2.35	11 ⁺	8.45 ⁺	Excessive	52-M2-44
Durez No. 16221	Mox 2-5	100	0.14	0.30	0.22	0.00	None	56-M2-69-
Durez BP-39	PEIN	100	0.18	0.32	0.59	0.09	Negligible	53-M2-84
	RDX	103	0.18	0.34	1.58	1.06	Very slight	53-M2-84
	Tetryl	100	0.18	0.46	0.48	0.00	None	53-M2-84
Entup No. 2507-F4	M-2	90	0.23	2.35	5.15	2.57	Slight	52-M2-44
	M-2	90	0.25	2.35	5.52	2.92	Slight	52-M2-44
	M-2	90	0.24	2.35	5.18	2.59	Slight	52-M2-44
	M-2	90	0.33	2.35	7.11	4.43	Moderate	52-M2-44

TABLE 45 (Cont)

Material	Explosive	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
G.E. No. 12437	Composition B	100	0.36	0.32	2.10	1.42	Very slight	53-M2-21
	M-2	90	0.27	2.71	9.61	6.63	Excessive	52-M2-44
	Pentolite 50/50	100	0.23	1.82	1.84	0.00	None	53-M2-17
G.E. No. 12494	Composition B	100	0.23	0.18	3.05	2.64	Slight	55-H1-396
G.E. No. 12840	Composition B	100	0.16	0.29	0.38	0.00	None	52-M2-48
	Pentolite 50/50	100	0.23	1.82	1.69	0.00	None	53-M2-17
	TNT	100	0.16	0.07	0.20	0.00	None	52-M2-48
G.E. No. 12899	M-2	90	0.11	0.42	6.25	5.72	Excessive	52-M2-177
Melnac 1502	TNT	100	0.28	0.12	1.71	1.31	Very slight	132861
Micarta	Composition C-4	100	0.39	0.27	0.16	0.00	None	56-M2-47
Micro-Balloons	HBX-6	100	0.65	0.66	1.84	0.53	Negligible	56-M2-61
Palmer Resin No. 752	PETN	100	0.39	0.49	0.37	0.00	None	55-M2-32
Pentacoline G 1215A	JPN	90	1.02	2.51	2.84	0.00	None	53-M2-4
	MRP	90	1.02	1.99	2.27	0.00	None	53-M2-4
	T-2	90	1.02	6.37	5.48	0.00	None	53-M2-4
	T-8	90	1.02	2.13	2.40	0.00	None	53-M2-4
Phenol-formaldehyde No. 2611	JPN	90	0.24	2.36	2.17	0.00	None	53-M2-4
	MRP	90	0.24	1.71	1.59	0.00	None	53-M2-4
	T-2	90	0.24	7.22	5.68	0.00	None	53-M2-4
	T-8	90	0.24	2.04	1.80	0.00	None	53-M2-4

TABLE 45 (Cont)

Material	Explosive	Test Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Phenol-formaldehyde foam	Composition B	100	1.33	0.25	2.43	0.85	Negligible	52-M2-127
Phenol-formaldehyde Varnish	Black powder	100	0.69	0.37	0.97	0.00	None	51-8-20
	Composition C-4	100	0.43	0.08	0.38	0.00	None	51-8-26
	Lead Azide	100	2.25	1.95	3.55	0.00	None	51-8-3
	PETN	100	0.68	0.80	0.68	0.00	None	52-M2-151
Phenolic Resin No. 9594	Composition C-4					0.00		
Resinox No. 5797	Photoflash powder	100	0.42	0.99	1.70	0.29	Negligible	52-M2-115
Synvar No. 85071 86512	M-2	90	0.26	2.35	11 ⁺	8.39 ⁺	Excessive	52-M2-44
	M-2	90	0.23	2.35	7.71	5.13	Excessive	52-M2-44
Synvarite	T-28	90	0.23	4.71	5.48	0.54	Negligible	57-TM2-29
Taylor Grade XX	Composition Smoke No. 259	100	0.30	0.32	0.34	0.00	None	54-M2-64
Laminare	Potassium Chlorate Primer	100	0.14	0.83	0.62	0.00	None	52-M2-144
Weld Beston Phenolic Acrylonitrile	Composition A-3	100	0.26	0.39	0.44	0.00	None	53-M2-69
	Composition C-3	100	0.26	1.02	2.53	1.25	Very slight	53-M2-69
	Tetryl	100	0.26	0.47	1.05	0.32	Negligible	53-M2-69
Dielectro Tubing	Tetryl	100	0.14	0.43	0.30	0.00	None	55-M2-46
	Tetryl 75/25	100	0.14	3.96	3.08	0.00	None	55-M2-46
	TNT	100	0.14	0.08	0.27	0.05	Negligible	55-M2-46

TABLE 45 (Cont)

Material	Explosive	Test Temperature, °C	Polymer Control		Explosive Control		Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Amberlite PR No. 115 Resorcinol formaldehyde	HBX-6	100	0.83		0.43		1.03	0.00	None	56-M2-42
	RDX	100	0.83		0.29		0.52	0.00	None	56-M2-42
Vibraglass No. 9594	T-19	90	0.15		3.28		5.29	1.86	Very slight	55-M2-4

TABLE 46
Percent Change in Weight of Phenolic After Storage

Polymer	Explosive	Storage, Weeks	Temperature, °C	% Weight Change Control	% Weight Change Contact	Picatinny Report No.
Bakelite BM-6102	M-2	8	50	-1.42	-1.53	52-M2-44
Durez No. 1905	M-16	28	50	-2.05	-1.93	57-TM2-6
	T-19	28	50	-2.05	-1.88	57-TM2-6
Durez No. 13343	M-2	8	50	-1.46	+0.24	52-M2-44
Durez No. 14658	M-2	8	50	-1.39	-0.27	52-M2-44
Empur No. 2507 F4	M-2	8	50	-0.41	+3.02	52-M2-44
2530	M-2	8	50	-0.42	+1.66	52-M2-44
2532 F-2	M-2	8	50	-0.33	+2.49	52-M2-44
2537 F	M-2	8	50	-0.53	+1.25	52-M2-44
Micro-Balloons	HBX-6	24	71	-1.75	-11.7	56-M2-61
Penacolite G-1215A	JPN	26	50	-4.36	-5.00	53-M2-4
	MRP	26	50	-4.36	-4.08	53-M2-4
	T-2	26	50	-4.36	-4.71	53-M2-4
	T-8	26	50	-4.36	-3.97	53-M2-4
Phenol-formaldehyde No. 2611	JPN	26	50	-1.66	-1.13	53-M2-4
	MRP	24	50	-1.66	-1.57	53-M2-4
	T-2	24	50	-1.66	-1.62	53-M2-4
	T-8	24	50	-1.66	-1.51	53-M2-4
Phenol-formaldehyde foam	Comp B	24	77	0.20	0.08	52-M2-127

TABLE 46 (Cont)

Polymer	Explosive	Storage Weeks	Temperature, °C	% Weight Change Control	% Weight Change Contact	Picatinny Report No.
Synvar No. 8565J	M-2	8	50	-0.87	+1.06	52-M2-44
Synvar No. 86512	M-2	8	50	-0.95	-0.27	52-M2-44
Synvarite	T-28	24	76	+0.68	+1.26	52-TM2-29
Dielectro Tubing	Tetryl	24	76	-1.97	-1.99	55-M2-46
	Tetrytol 75/25	24	76	-1.97	-1.25	55-M2-46
	TNT	24	76	-1.97	-1.07	55-M2-46
Vibraglass No. 9594	T-19	23	50	-0.29	+22.9	55-M2-4

TABLE 47
Appearance of Phenolics After Storage

Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	Appearance of Specimens	Picatinny Report No.
Bakelite BV-1600	Composition C-4	6	71	No change	51-8-26
Bakelite XV-1657	Composition C-4	6	71	Slightly softens	51-8-26
Durez No. 1905	M-16 T-19	28 28	50 50	No change No change	57-TM2-6 57-TM2-6
Durez No. 12041	M-2	4	50	No change	52-M2-84
Micro Balloons	HBX-6	24	71	No change	56-M2-61
Penacolite GP15A	JPN MRP T-2 T-8	26 26 26 26	50 50 50 50	No change No change No change No change	53-M2-4 53-M2-4 53-M2-4 53-M2-4
Phenol-formaldehyde No. 2611	JPN MRP T-2 T-8	26 24 24 24	50 50 50 50	No change No change No change No change	53-M2-4 53-M2-4 53-M2-4 53-M2-4
Phenol-formaldehyde Varnish	Black powder	16	76	No change	51-8-20
Synvarite	T-28	24	76	Slightly darkened	57-TM2-29

TABLE 47 (Cont)

Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	Appearance of Specimens	Picatinny Report No.
Dielectro Tubing	Tetryl	24	76	Darkens slightly	55-M2-46
	Tetrytol 75/25	24	76	Darkens slightly	55-M2-46
	TNT	24	76	Darkens slightly	55-M2-46
Vibraglass No. 9594	T-19	12	76	Loses adhesion	55-M2-4

TABLE 48

100°C Heat Test Results for Phenolics

Material and Weight in Grams	Explosive and Weight in Grams	1st 48 Hrs. Grams	%	2nd 48 Hrs. Grams	%	Explosion in 100 Hrs.	Picatinny Report No.
Armstrong J-11403							
	Dynamite						
0.6	0.6	0.0404	3.37	0.0191	1.59	None	52-M2-110
0.6	—	0.0075	1.25	0.0012	0.20	None	52-M2-110
—	0.6	0.0404	6.72	0.0226	3.76	None	52-M2-110
Bakelite BM-261							
	Lead Azide						
0.6	0.6	0.0064	5.33	0.0016	0.13	None	56-M2-11
0.6	—	0.0017	0.28	0.0020	0.33	None	56-M2-11
—	0.6	0.0022	0.37	0.0004	0.05	None	56-M2-11
Bakelite-Pe-HR-73-2-256c							
	Lead Azide						
0.6	0.6	0.0341	2.84	0.0005	0.04	None	52-M2-172
0.6	—	0.0293	4.88	0.0003	0.13	None	52-M2-172
—	0.6	0.0631	0.52	0.0003	0.05	None	52-M2-172
Durez HR-340							
	Lead Azide						
0.6	0.6	0.0172	1.43	0.0005	0.04	None	53-M2-84
0.6	—	0.0068	1.13	0.0000	0.00	None	53-M2-84
—	0.6	0.0050	0.83	0.0007	0.11	None	53-M2-84

TABLE 48 (Cont)

Material and Weight in Grams	Explosive and Weight in Grams	1st 48 Hrs. Grams	%	2nd 48 Hrs. Grams	%	Explosion in 100 Hrs.	Picotinny Report No.
Durite HR-340	Lead Styphnate						
0.6	0.6	0.0259	2.14	0.0055	0.46	None	53-M2-84
0.6	-	0.0068	1.18	0.0000	0.00	None	53-M2-84
-	0.6	0.0134	2.23	0.0085	1.41	None	53-M2-84
	Nol 130 Primer Mix						
0.6	0.6	0.0163	1.35	0.0022	0.18	None	53-M2-84
0.6	-	0.0068	1.13	0.0000	0.00	None	53-M2-84
-	0.6	0.0097	1.62	0.0009	0.15	None	53-M2-84
Durite HR-340	Potassium Dinitrobenzofurazan						
0.6	0.6	0.0075	0.63	0.0000	0.00	None	53-M2-84
0.6	-	0.0068	1.13	0.0000	0.00	None	53-M2-84
-	0.6	0.0013	0.22	0.0000	0.00	None	53-M2-84
Taylor Grade XX	Charge Detonator No. 260						
0.6	0.6	0.0205	1.71	0.0000	0.00	None	54-M2-64
0.6	-	0.0206	3.43	0.0000	0.00	None	54-M2-64
-	0.6	0.0002	0.03	0.0000	0.00	None	54-M2-64

TABLE 43
Physical Property Changes in Belolite BM 261 (Class B asbestos-filled phenol-formaldehyde, black)

Storage Period, Months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Yield Strength, psi	Elongation at Yield, %	Proportional Limit, psi	Modulus of Elasticity, psi	$\sigma : \epsilon$
Original Control	0.0	4860	0.3	4860	0.3	2320	2.08×10^6	92
Room Control	0.0	4920	1.4	4920	1.4	2330	2.01×10^6	245
50°C Control	-0.6	4460	0.3	4460	0.3	2370	2.13×10^6	411
In contact with: OGK at 50°C	-0.6	5000	0.4	5050	0.4	2700	1.84×10^6	145
In contact with OIO at 50°C	-0.5	5400	6.4	5400	7.2	2510	1.93×10^6	105
In contact with M2 at 50°C	-0.6	4920	0.4	4920	0.3	2790	1.93×10^6	67
In contact with M7 at 50°C	-0.6	4640	0.3	4640	0.3	2570	2.03×10^6	142
In contact with V1 at 50°C	-0.4	5000	0.3	5050	0.3	2710	1.94×10^6	87
In contact with M9 at 50°C	-0.6	4460	0.3	4460	0.3	2660	2.61×10^6	156
In contact with M15 at 50°C	-0.6	4640	0.3	4640	0.3	2750	1.93×10^6	62
In contact with T16 at 50°C	-1.2	4460	0.3	4460	0.3	2570	1.55×10^6	102
In contact with T18 at 50°C	-0.6	4460	0.3	4460	0.3	2750	2.06×10^6	153
In contact with T19 at 50°C	-0.6	4460	0.3	4460	0.3	2790	1.95×10^6	148

TABLE 30
Physical Property Changes in Balaflow BR 74 (Class 2 Wood-Bond-Filled phenol-formaldehyde, black)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Tensile Strength, psi	Impact, ft-lb	Proportional Limit, psi	σ/ϵ	Modulus of Elasticity, psi	Work as Yielded, in-lb	σ/ϵ
Original Control:										
Room Control:	-2.84	5490	7.3	0.1	5680	7.3	0.14	1.06×10^5	1.3	0.4
30°C Control:	-3.10	5720	8.35	0.02				1.14×10^5	1.27	0.13
In contact with		5265	8.4	0.05				1.16×10^5	1.31	0.19
OGS at 30°C	-2.86	5110	8.42	0.06				1.13×10^5	1.0	0.29
In contact with		5425	8.5	0.05				1.13×10^5	1.09	0.23
OH at 30°C	-2.62	5110	8.15	0.04				1.18×10^5	1.04	0.3
In contact with		5720	8.35	0.10				1.11×10^5	1.22	0.13
30°C Control:	-2.85	5420	8.35	0.05				1.16×10^5	1.31	0.25
In contact with		5440	8.5	0.05				1.07×10^5	1.07	0.20
30°C Control:	-2.75	5620	8.5	0.06				1.13×10^5	1.31	0.28
In contact with		5720	8.35	0.06				1.11×10^5	1.32	0.2
30°C Control:	-2.94	645	8.49	0.06				1.40×10^5	1.40	0.18
In contact with		5440	8.5	0.05				1.14×10^5	1.17	0.21

TABLE 51

Physical Property Changes in Tensile 1833 (Grade P Isomethylphenylhydrazide, Isomer)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Yield Strength, psi	Change in Yield, %	Proportional Limit, psi	Modulus of Elasticity, psi	Work or Yield, ft-lb	σ/ϵ
Original Control	0.0	11,940	1.3	11,900	1.3	3100	1.72×10^6	9.70	1.7
Base Control	+0.4	11,800	1.5	11,800	1.6	3000	1.16×10^6	44.70	2.0
90°C Control	-0.9	11,800	1.3	11,800	1.3	400	1.14×10^6	62.10	1.2
In Contact with Oils at 50°C	-0.4	12,500	1.5	12,400	1.3	1000	1.29×10^6	36.80	1.26
In Contact with Oils at 75°C	-0.9	12,400	1.4	12,300	1.6	670	1.31×10^6	9.41	1.91
In Contact with Oils at 100°C	-2.1	11,500	1.4	11,500	1.3	800	1.46×10^6	8.41	2.55
In Contact with Water at 50°C	-0.7	12,300	1.6	12,200	1.6	200	1.21×10^6	17.10	1.6
In Contact with Water at 75°C	-1.9	11,200	1.4	11,200	1.3	120	1.41×10^6	9.15	0.97
In Contact with Water at 100°C	-0.7	12,100	1.5	12,000	1.5	600	1.29×10^6	36.80	2.17
In Contact with Toluene at 50°C	-2.2	11,100	1.7	11,100	1.2	100	1.31×10^6	7.31	0.98
In Contact with Toluene at 75°C	-1.1	11,000	1.4	11,000	1.4	0	1.27×10^6	0.32	0.53
In Contact with Toluene at 100°C	-0.7	12,500	1.1	12,500	1.3	600	1.37×10^6	22.50	1.29
In Contact with Toluene at 125°C	-0.7	11,000	1.3	11,000	1.3	400	1.31×10^6	11.00	1.55

TABLE 52

Physical Property Changes in Tyndine LE (Laminated phenol-formaldehyde, brown)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	Elongation at Break, %	Yield Strength, psi	Elongation at Yield, %	Proportional Limit, psi	Modulus of Elasticity, psi	Work or Yield, in lbs.	$\sigma : \epsilon$
Original Control	0.0	10,000	424	8,700	178	8.3	4.76×10^6	75,800	2.0
Room Control	-0.3	10,900	216	10,200	146	8.1	1.26×10^6	11,400	0.4
90°C Control	-1.0	10,000	201	10,600	294	8.2	6.9×10^6	9,700	1.15
In contact with Oil at 90°C	-1.4	10,700	419	10,700	419	8.2	1.81×10^6	8,100	0.91
In contact with Oil at 90°C	-1.5	10,900	275	10,900	275	8.2	1.91×10^6	8,000	1.25
In contact with Water at 90°C	-1.6	10,900	271	10,900	271	8.4	8.9×10^6	10,600	1.10
In contact with Water at 90°C	-1.5	10,400	312	10,400	312	8.3	1.64×10^6	8,400	2.0
In contact with Water at 90°C	-1.4	10,300	178	10,300	178	8.6	1.35×10^6	8,100	0.9
In contact with Water at 90°C	-1.3	10,200	163	10,200	163	8.3	1.31×10^6	12,400	2.9
In contact with Water at 90°C	-1.4	10,300	311	10,300	311	8.1	1.11×10^6	9,600	0.4
In contact with Water at 90°C	-1.4	10,400	305	10,400	305	8.6	1.81×10^6	7,900	0.45
In contact with Water at 90°C	-1.4	9,520	341	9,520	341	8.2	1.85×10^6	7,300	2.1
In contact with Water at 90°C	-1.4	10,200	271	10,200	271	8.4	8.90×10^6	11,200	2.7

TABLE 53
Physical Property Changes in Tensile 2027 (Laminated phenol-formaldehyde)

Storage Period, months	Change of Weight, %	Ultimate Tensile Strength, psi	σ : Break, %	Elongation at Break, %	Yield Strength, psi	σ : Yield	Elongation at Yield, %	Proportional Limit, psi	σ : Electricity, psi	Modulus of Electricity, psi	Work at Yield in lbs	σ : 1.9
Original Control	0.0	12,500	100	1.3	12,100	100	1.3	5000	475	1,210,000	41,300	1.9
Room Control	-0.9	12,000	616	1.4	12,300	618	1.4	6400	212	1,200,000	47,200	
50°C Control	-2.1	12,300	435	1.1	12,200	435	1.1	7010	400	1,120,000	51,800	
In contact with Oil at 50°C	-2.3	12,300	601	1.4	12,300	601	1.4	7300	180	1,140,000	50,000	
In contact with Oil at 50°C	-2.0	14,100	1091	1.4	13,400	1091	1.4	7400	180	1,160,000	41,200	
In contact with Oil at 50°C	-2.6	12,400	761	1.1	12,400	761	1.1	6700	470	1,170,000	47,000	
In contact with Oil at 50°C	-2.4	12,400	600	1.4	12,400	600	1.4	7300	200	1,110,000	46,100	
In contact with Oil at 50°C	-2.7	12,400	600	1.4	12,400	600	1.4	6000	400	1,200,000	52,400	
In contact with Oil at 50°C	-2.2	12,400	420	1.4	12,400	420	1.4	6100	400	1,170,000	47,000	
In contact with Oil at 50°C	-2.0	12,400	540	1.4	12,400	540	1.4	6400	470	1,150,000	46,000	
In contact with Oil at 50°C	-2.1	12,200	1240	1.3	12,200	1240	1.3	6700	470	1,140,000	46,000	
In contact with Oil at 50°C	-2.0	14,100	600	1.4	13,100	600	1.4	7300	400	1,170,000	46,000	
In contact with Oil at 50°C	-2.3	14,200	730	1.4	13,200	730	1.4	6600	200	1,150,000	46,000	

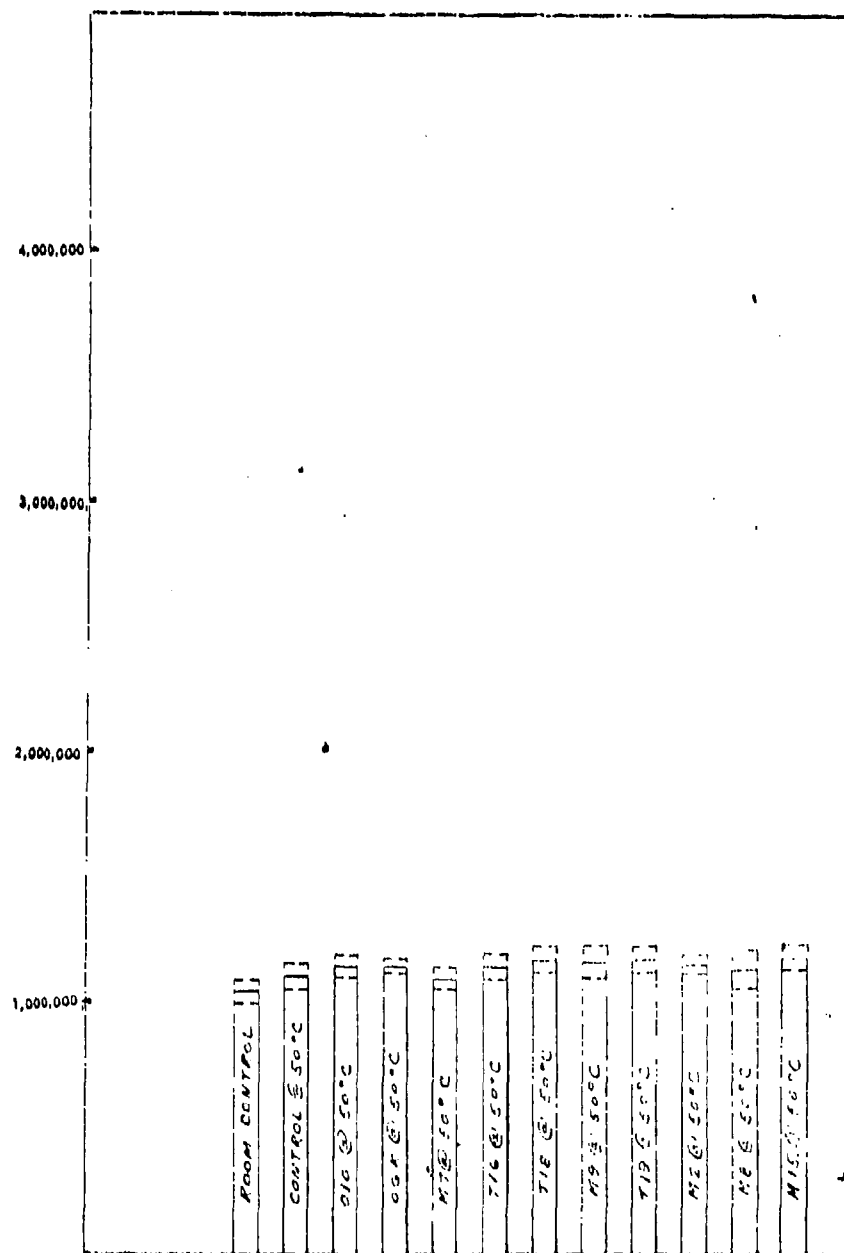


Fig 21 Impact Strength of Texolite 2029 (Grade XXX) After 12 Months With Various Propellants. (Range of standard deviation is indicated by dotted lines.)

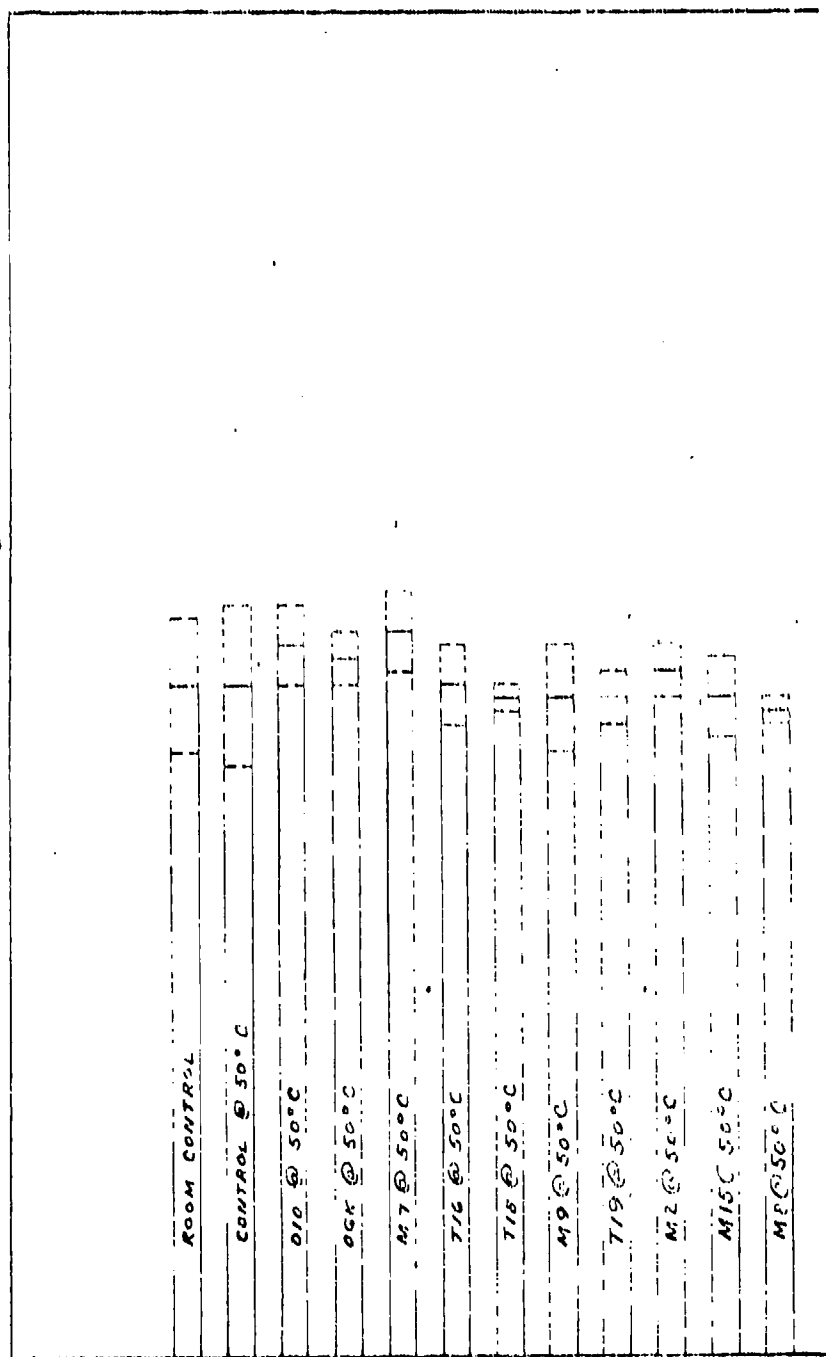


Fig 22 Modulus of Textolite 2029 (Grade NVN) after 12 Months Storage With Various Propellants

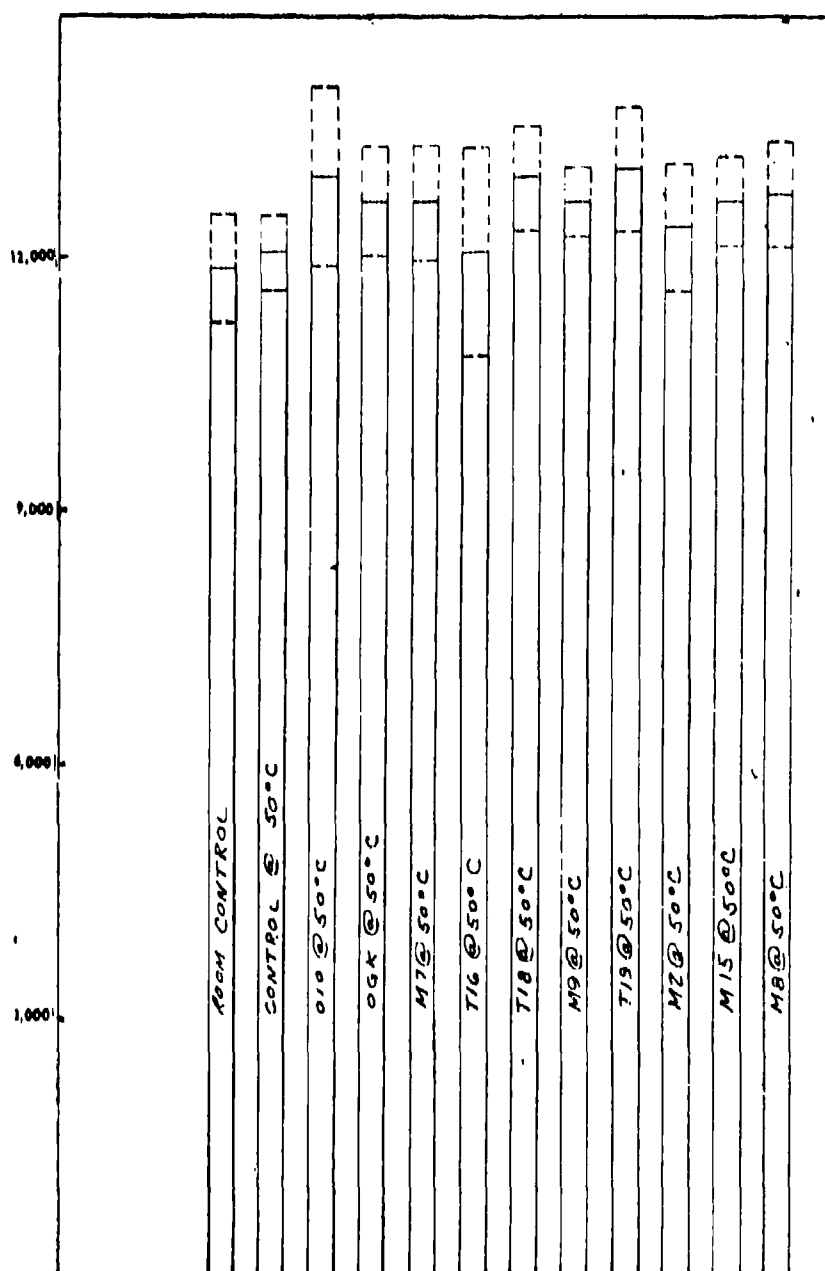


Fig 23 Maximum Tensile Strength of Textolite 2029 (Grade XXX) After 12 Months Storage With Various Propellant

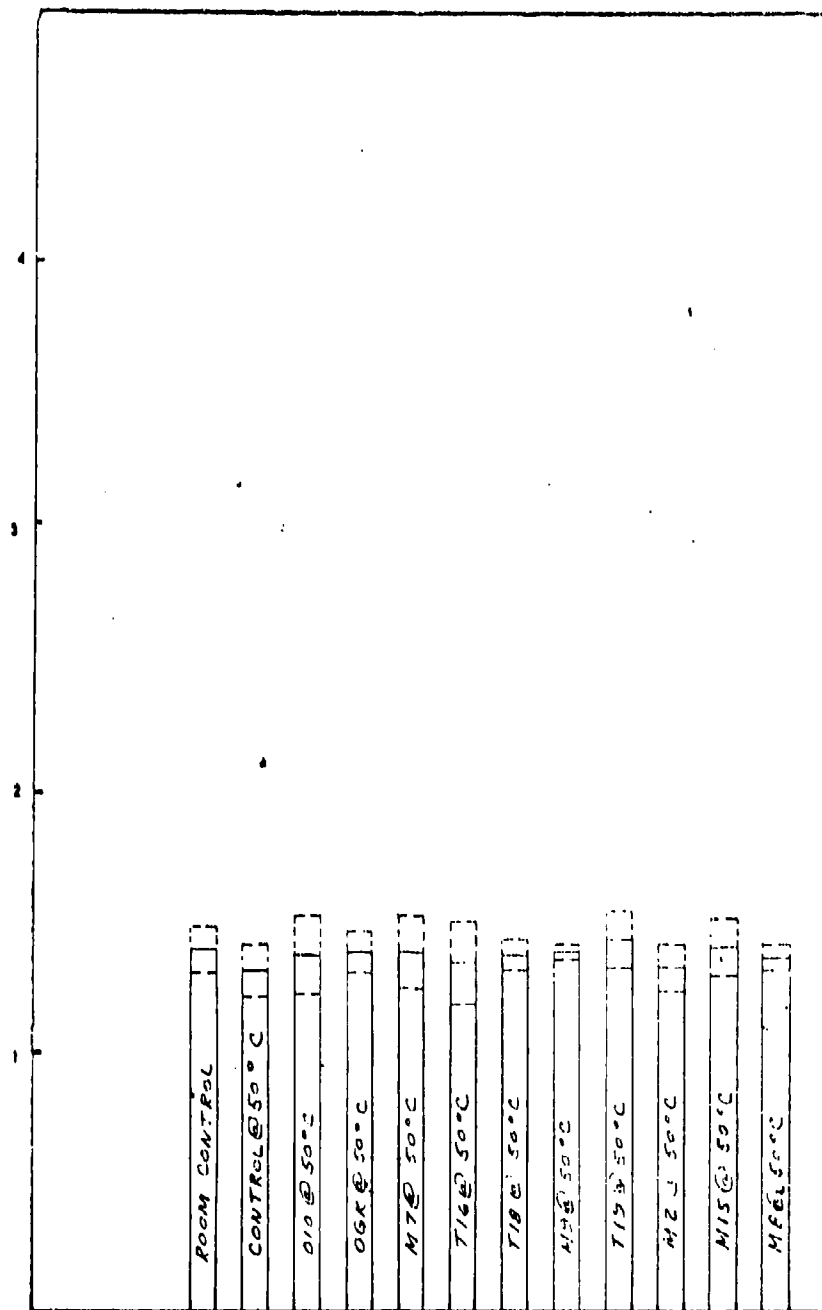


Fig 24 Percent Elongation at Break of Textolite 2029 (Grade XXV) After 12 Months Storage With Various Propellants

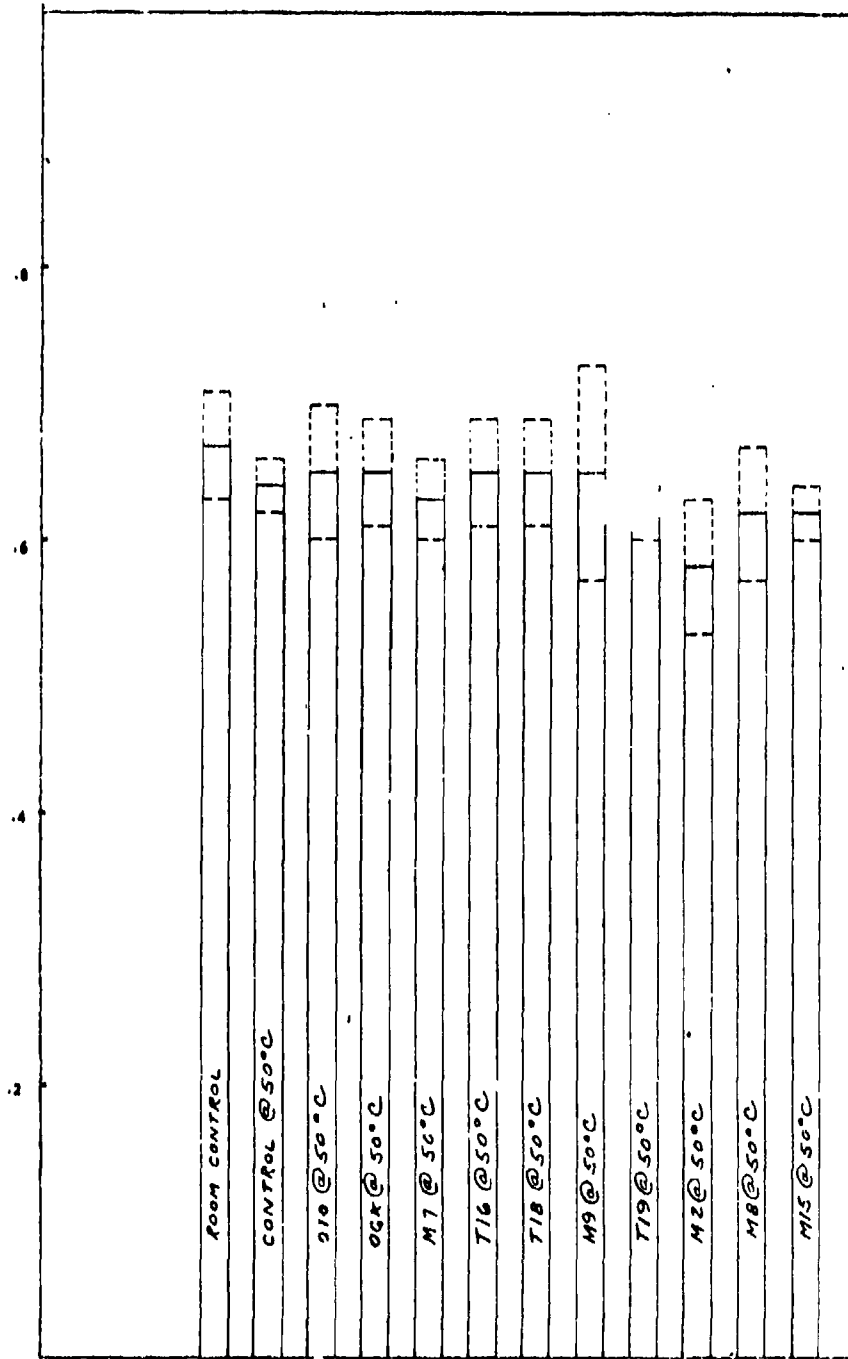


Fig 25 Impact Strength of Textolite 1838 (Grade P) After 12 Months Storage With Various Propellants

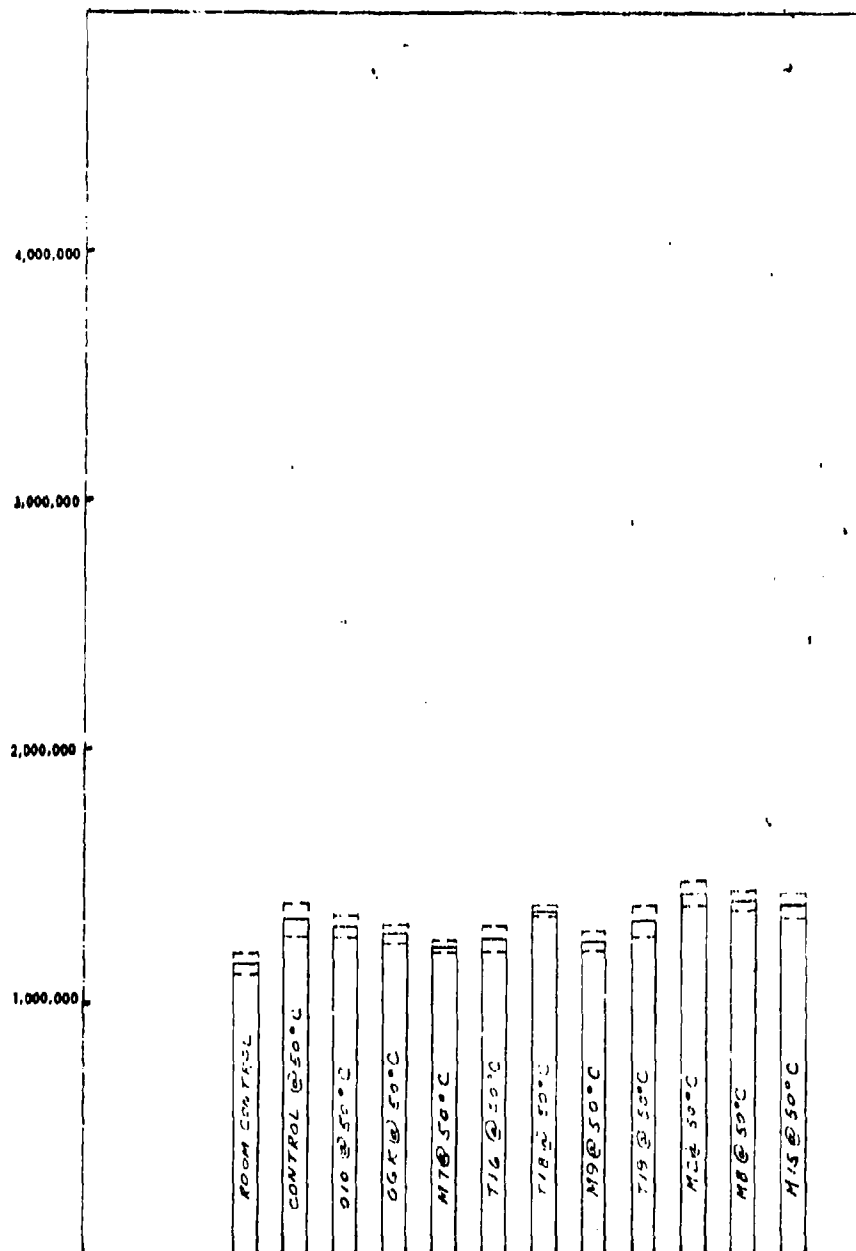


Fig 26 Modulus of Textolite 1838 (Grade P) After 12 Months Storage With Various Propellants

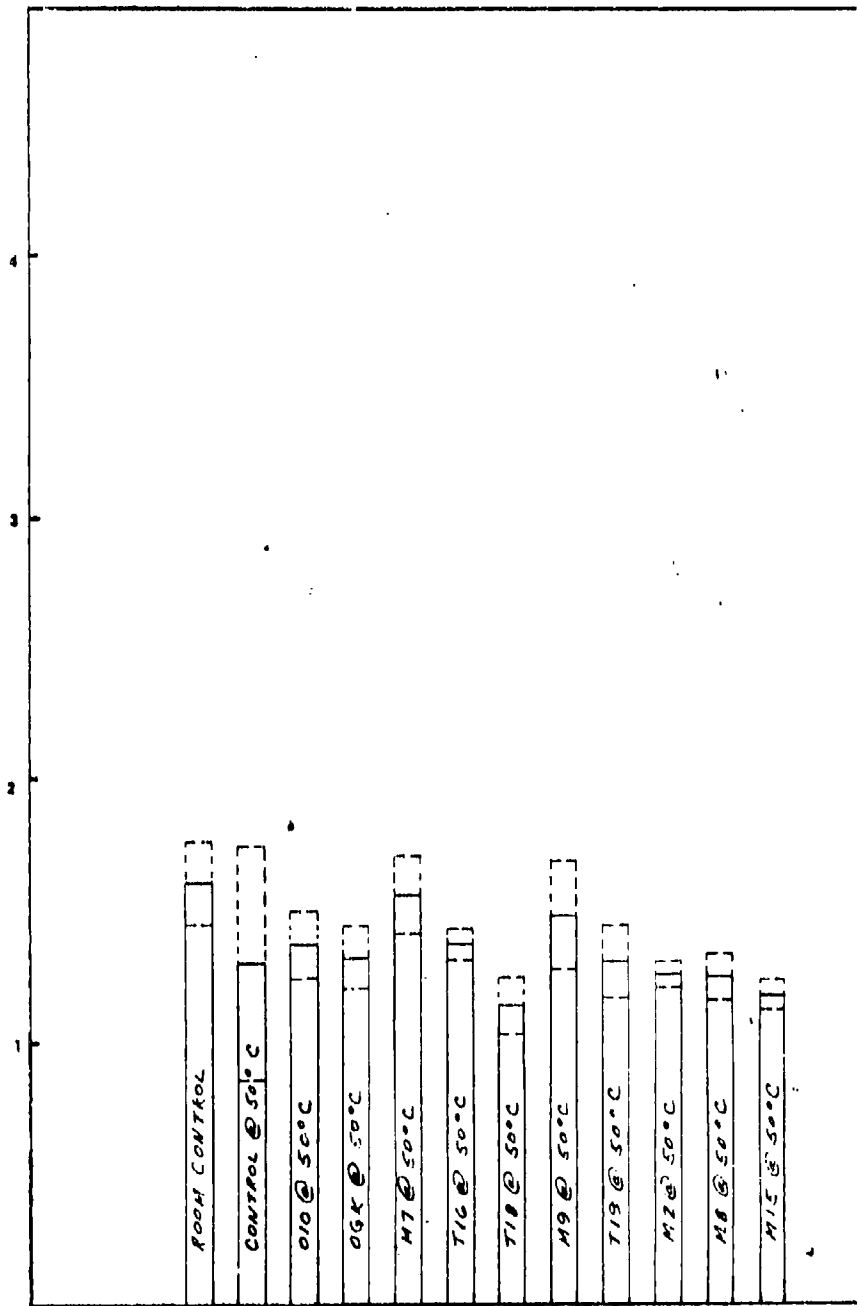


Fig 27 Percent Elongation at Break of Texolite 1838 (Grade P) After 12 Months Storage With Various Propellants

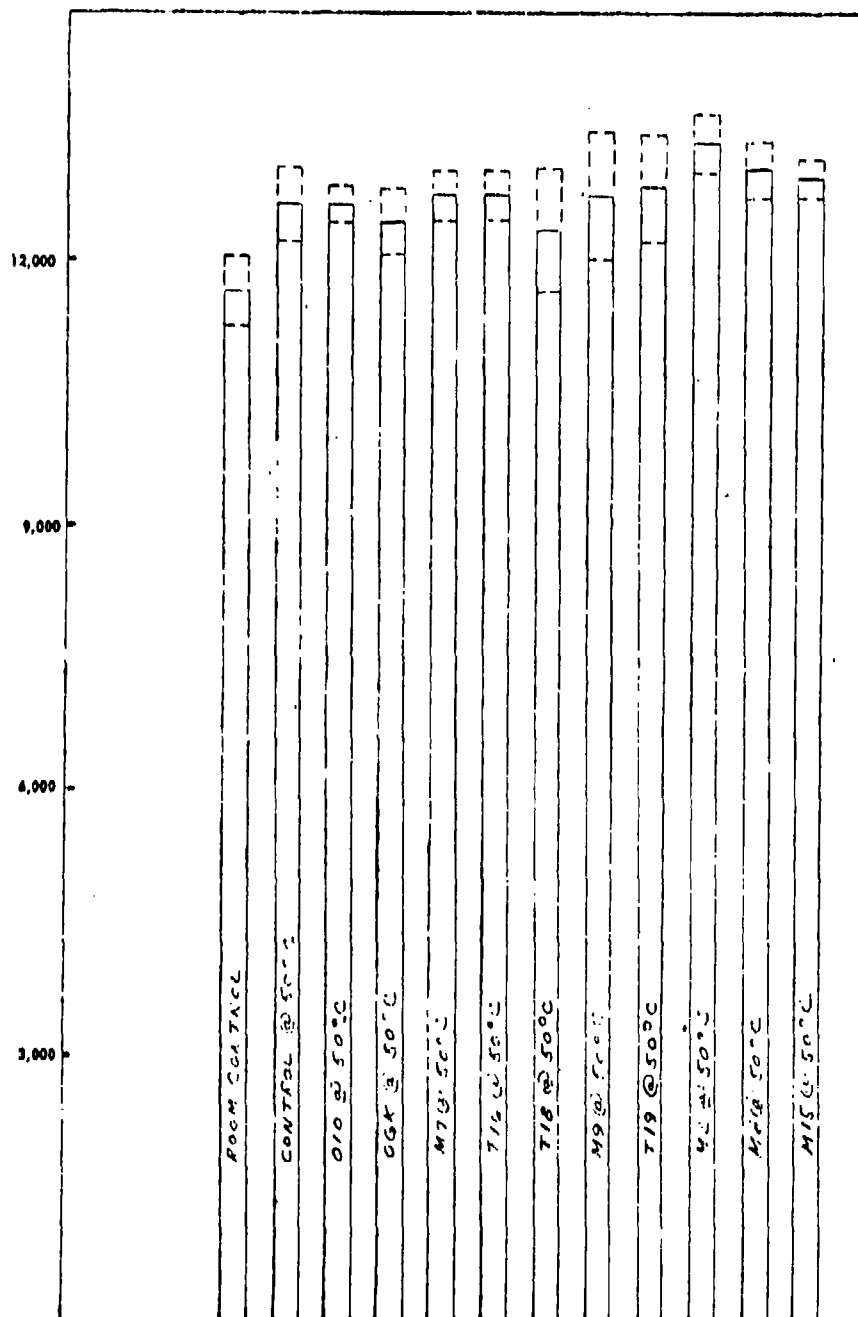


Fig 28 Maximum Tensile Strength of Texrolite 1838 (Grade P) After 12 Months Storage With Various Propellants

Section 8

POLYESTERS AND ALKYDS

In the commercial or plastics field, the term polyester generally refers to an unsaturated polyester base resin dissolved in a polymerizable monomer. For practical purposes, an oil-modified polyester is usually referred to as alkyd or alkyd-coating resin. Polyesters prepared from saturated compounds are called saturated polyesters.

A survey of relevant data discloses the following salient points about polyester compatibility:

1. Polyester plastics do not in general affect seriously the reactivity of a variety of explosives and propellants.
2. Unsaturated rigid polyesters generally gain less than 10% in weight when stored in contact with explosives or propellants containing nitroglycerine or TNT.
3. Unsaturated flexible polyesters gain weight continuously when in direct contact with explosives or propellants containing nitroglycerine or TNT.
4. Unsaturated flexible polyesters are more susceptible than unsaturated rigid polyesters to attack by explosives and propellants containing nitroglycerine or TNT.
5. Saturated polyesters do not significantly affect the reactivity of explosives and propellants.

TABLE 54

Vacuum Stability Test Results for Polyesters

Polymeric Material	Explosive	Test Temperature °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Picatinny Report No.	Remarks
Amberlac 292 with Paraplex G-50	PBX	100	0.55	0.23	0.48	0.00	56-M2-8	None
Amberlac 292	Black powder	100	0.35	0.51	0.64	0.00	56-M2-77	None
	Tetryl	100	0.35	0.45	1.39	0.50	56-M2-77	Negligible
	Composition B	100	0.35	0.17	0.40	0.00	56-M2-77	None
Bakelite-BRS-136-	HBX-6	100	0.12	0.66	1.29	0.51	56-M2-82	Negligible
Bakelite-BRS-147	Composition A-3	100	0.13	0.22	0.25	0.00	56-M2-24	None
	Cyclotol 75/25	100	0.13	0.28	0.32	0.00	56-M2-24	None
	HBX-6	100	0.58	0.66	1.77	0.53	56-M2-73	Negligible
	Composition B	100	2.12	0.28	0.54	0.14	55-H1-2298	Negligible
Glidpol No. 1017 with cobalt naphthenate and Lupersol DDM	Composition B	100	0.22	0.28	0.34	0.00	56-M2-35	None
Gray Glid-Iron No. 6043	Black powder	100	0.38	0.79	0.91	0.00	57-TM2-23	None
	Composition B	100	0.38	0.24	0.37	0.00	57-TM2-23	None
	Tetryl	100	0.38	0.49	0.52	0.00	57-TM2-23	None
	TNT	100	0.38	0.85	0.29	0.00	57-TM2-23	None
	Tritonal 80/20	100	0.38	0.10	0.40	0.00	57-TM2-23	None
Gray Glid-Iron No. 6130	Black Powder	100	0.21	0.79	0.47	0.00	57-TM2-23	None
	Comp B	100	0.21	0.24	0.47	0.02	57-TM2-23	Negligible
	Tetryl	100	0.21	0.49	0.48	0.00	57-TM2-23	None
	TNT	100	0.21	0.85	0.32	0.00	57-TM2-23	Negligible
	Tritonal 80/20	100	0.21	0.10	0.44	0.13	57-TM2-23	None

TABLE 54 (Continued)

Polymeric Material	Explosive	Test Temperature °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Picatinny Report No.	Remarks
H-35	Composition B	100	0.21	0.20	0.27	0.00	55-M2-54	None
	Tetryl	100	0.21	0.42	0.42	0.00	55-M2-54	None
	TNT	100	0.21	0.07	0.13	0.00	55-M2-54	None
H-00	Composition B	100	0.16	0.20	0.30	0.00	55-M2-54	None
	Tetryl	100	0.16	0.42	0.43	0.00	55-M2-54	None
	TNT	100	0.16	0.07	0.10	0.00	55-M2-54	None
Isolite No. 2112 Perstop	Composition B	100	0.46	0.20	0.96	0.30	54-HI-1447	Negligible
	Tetryl	100	0.46	0.22	0.54	0.00	54-HI-1447	None
Laminac No. 4116	Black powder	100	0.39	0.53	0.69	0.00	136517	None
	Composition B	100	0.39	0.31	0.50	0.00	136517	None
	Cyclotol 75/25	100	0.24	0.36	0.37	0.00	53-M2-81	None
	JPN	100	0.42	2.51	2.10	0.00	53-M2-4	None
	MRP	100	0.42	1.99	1.82	0.00	53-M2-4	None
	MOX-2B	100	1.00	0.16	0.42	0.00	55-M2-12	None
	M-1	90	0.22	0.30	0.56	0.04	136517	Negligible
	M-6	90	0.22	1.71	1.73	0.00	136517	None
	M-7	90	0.42	2.16	2.12	0.00	52-M2-92	None
	OIO	90	0.10	0.73	0.57	0.00	53-M2-90	None
	RDX	100	0.25	0.48	0.23	0.00	52-M2-131	None
	T-2	100	0.42	6.37	3.48	0.00	53-M2-4	None
	T-6	90	0.21	4.15	2.73	0.00	54-M2-46	None
	T-8	100	0.42	2.13	0.92	0.00	53-M2-4	None
	TNT	100	0.14	0.06	0.16	0.00	55-M2-31	None
	Tetryl	100	0.43	1.10	0.57	0.00	136521	None

TABLE 54 (Continued)

Polymeric Material	Explosive	Test Temperature °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Picatinny Report No.	Remarks
Laminac No. 4125	JPN	100	0.12	2.51	2.14	0.00	53-M2-4	None
	MRP	100	0.12	1.99	1.88	0.00	53-M2-4	None
	T-2	100	0.12	6.37	4.87	0.00	53-M2-4	None
	T-8	100	0.12	2.13	2.02	0.00	53-M2-4	None
Laminac 4116 with Vinylite MA24-18	Bulseye No. 2	90	0.76	1.94	1.89	0.00	52-HI-2023	None
Laminac No. 4128	Composition B	100	0.08	0.34	0.33	0.00	53-M2-59	None
	Tetryl	100	0.08	0.41	0.33	0.00	53-M2-59	None
Laminac No. 4134	Black powder	100	0.34	0.35	0.82	0.13	53-M2-26	Negligible
	Composition B	100	0.34	0.35	0.49	0.00	53-M2-26	None
	JPN	100	0.14	2.51	2.66	0.01	53-M2-4	Negligible
	M-1	90	0.16	0.29	0.37	0.00	53-M2-26	None
	MRP	100	0.14	1.99	1.82	0.00	53-M2-4	None
	M6	90	0.05	1.71	1.58	0.08	136517	Negligible
	M-7	90	0.19	2.16	2.01	0.00	52-M2-111	None
	RDX	100	0.24	0.48	0.25	0.00	52-M2-131	None
	T-2	100	0.14	6.37	6.32	0.00	53-M2-4	None
	T-8	100	0.14	2.13	2.38	0.11	53-M2-4	None
	Tetryl	100	0.34	0.44	0.86	0.08	53-M2-26	Negligible
	TNT	100	0.14	0.06	0.16	0.00	55-M2-31	None

TABLE 54 (Continued)

Polymeric Material	Explosive	Test Temperature °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Picotinny Report No.	Remarks
Mylar Tape No. 7300	Black powder	100	0.10	0.44	0.55	0.01	56-M2-26	Negligible
	M-10	100	0.10	1.97	1.96	0.00	56-M1-572	None
	M-17	100	0.10	2.51	2.40	0.00	56-M1-572	None
	T-18	90	0.00	3.30	3.23	0.00	54-M2-54	None
	Tetryl	100	0.10	0.26	0.27	0.00	54-M2-54	None
	TNT	100	0.10	0.05	0.15	0.00	56-M2-26	None
Metaseal 19V5	Composition B	100	0.01	0.31	0.33	0.01	53-M2-8	Negligible
	TNT	100	0.01	0.08	0.13	0.04	53-M2-8	Negligible
Mylar	Black powder	100	0.09	0.64	0.67	0.00	56-H1-572	None
	M2	100	0.06	1.27	2.65	1.32	56-H1-572	Negligible
	M-6	100	0.06	6.66	5.68	0.00	56-H1-572	None
Paraplex P-13	JPN	100	0.05	2.51	2.15	0.00	53-M2-4	None
	MRP	100	0.05	1.99	1.79	0.00	53-M2-4	None
	T-2	100	0.05	6.37	5.97	0.00	53-M2-4	None
	T-8	100	0.05	2.13	2.06	0.00	53-M2-4	None
Paraplex P-43	Composition B	100	0.09	0.39	0.33	0.00	52-M2-60	None
	Composition C-3	100	0.09	1.12	1.10	0.00	52-M2-60	None
	JPN	100	0.18	2.51	4.30	1.61	53-H2-4	Very slight
	MRP	100	0.18	1.99	1.91	0.00	53-H2-4	None
	PEIN	100	0.09	0.30	0.21	0.00	52-M2-60	None
	Pentolite 50/50	100	0.09	1.84	1.83	0.00	52-M2-60	None
	RDX	100	0.09	0.42	0.31	0.00	53-M2-60	None
	T-2	100	0.18	6.37	4.98	0.00	53-M2-4	None
	T-8	100	0.18	2.13	2.02	0.00	53-M2-4	None

TABLE 54 (Continued)

Polymeric Material	Explosive	Test Temperature °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Pictorial Report No.	Remarks
Paraplex P-43/ P-13 85/15%	Composition C-2/RDX	100	0.09	0.62	0.28	0.00	53-M2-60	None
	Composition C-3/RDX	100	0.09	1.32	0.31	0.00	53-M2-60	None
	Composition C-4/RDX	100	0.09	0.39	0.54	0.00	53-M2-60	None
	RDX	100	0.09	0.42	1.16	0.00	53-M2-60	None
P-43 and P-13 75/25 %	OIO	90	0.08	0.73	0.55	0.00	53-M2-90	None
	Moz-2B	100	0.22	0.16	0.17	0.00	55-M2-53	None
Plaskon No. 951	RDX	100	0.22	0.34	0.34	0.00	55-M2-53	None
	Composition C-2/RDX	100	0.39	0.56	0.70	0.00	53-M2-57	None
Plaskon Alkyd No. 442	Composition C-3/RDX	100	0.39	1.19	1.24	0.00	53-M2-57	None
	Composition C-4/RDX	100	0.39	0.32	0.16	0.00	53-M2-57	None
	Moz-2B	100	0.17	0.30	0.35	0.00	53-H1-1436	None
	RDX	100	0.39	0.43	0.26	0.00	53-M2-57	None
Bakelite QRS-136	Black powder	100	0.37	0.35	0.99	0.17	53-M2-26	Negligible
	Composition B	100	0.37	0.35	0.68	0.00	53-M2-26	None
	M-1	90	0.28	0.29	0.38	0.00	53-M2-26	None
	M-2	90	0.27	2.73	0.62	0.00	52-M2-153	None
	TNT	100	0.09	0.23	0.29	0.00	54-H1-2099	None
	Tetryl	100	0.37	0.44	1.04	0.23	53-M2-26	Negligible

TABLE 54 (Continued)

Polymeric Material	Explosive	Test Temperature °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Picotimny Report No.	Remarks
Bakelite QRS-147	Composition B	100	0.65	0.27	0.77	0.00	52-M2-100	None
	BaCrO ₄ /KClO ₄ /Zr-Ni	100	0.61	0.06	0.33	0.00	52-M2-166	None
	OGK	90	2.38	1.19	2.65	0.00	53-M2-20	None
	RDX	100	0.88	0.35	0.83	0.00	52-M2-132	None
	Swiss Propellant	90	0.74	0.73	1.87	0.40	52-M2-174	Negligible
	T-6	90	0.35	4.15	3.83	0.00	54-M2-46	None
	T-16	90	2.38	3.21	5.62	0.00	53-M2-20	None
	Tetryl	100	0.88	0.42	1.52	0.22	52-M2-132	Negligible
	TNT	100	0.61	0.07	0.49	0.00	52-M2-166	None
Polyplastex MC	Composition B	100	0.21	0.24	0.41	0.00	53-M2-14	None
	TNT	100	0.21	0.07	0.29	0.01	53-M2-14	Negligible
Selectron No. 5003	JPN	100	0.61	2.51	3.16	0.04	53-M2-4	Negligible
	MRP	100	0.61	1.99	3.51	0.91	53-M2-4	Negligible
	T-2	100	0.61	6.37	5.84	0.00	53-M2-4	None
	T-3	100	0.61	2.13	2.94	0.20	53-M2-4	Negligible
	T-16	90	0.35	3.66	4.57	0.56		
Selectron No. 5003 and accelerator	JPN	100	0.21	2.51	2.98	0.26	53-M2-4	Negligible
	MRP	100	0.21	1.99	3.57	1.37	53-M2-4	Very slight
	T-2	100	0.21	6.37	7.98	0.40	53-M2-4	Negligible
	T-8	100	0.21	2.13	3.27	0.93	53-M2-4	Negligible

TABLE 54 (Continued)

Polymeric Material	Explosive	Test Temperature °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Picatinny Report No.	Remarks
Selectron No. 5081	Composition B	100	0.28	0.25	0.29	0.00	54-M2-24	None
Atlas Glass-filled Polyester	Composition B	100	0.16	0.32	0.35	0.00	53-M2-21	None
	Pentolite 50/50	100	0.14	1.82	1.82	0.00	53-M2-17	None
Dryply No. 81 cured	Composition B	100	0.24	0.34	0.29	0.00	57-TM2-4	None
	HBX-6	100	0.24	0.64	0.51	0.00	57-TM2-4	None
Dryply No. 81 uncured	Composition B	100	0.13	0.34	0.51	0.04	57-TM2-4	Negligible
	HBX-6	100	0.13	0.64	0.87	0.10	57-TM2-4	Negligible
Glaskyd No. 1901	RDX	100	0.25	0.32	0.18	0.00	55-HI-620	None
Laminated Fiberglass	Composition B	100	0.28	0.24	0.27	0.00	56-M2-25	None
	T-131	90	0.28	0.94	0.78	0.00	56-M2-25	None
	Tetryl	100	0.28	0.49	0.29	0.00	54-HI-1734	None
	Tetryol	100	0.28	1.76	3.50	1.46	54-HI-1734	Very slight
	TNT	100	0.28	0.32	0.25	0.00	54-HI-1734	None
	Composition 4187	90	0.28	0.94	0.78	0.00	55-HI-1111	None
MR-25C	JPN	100	0.20	2.51	2.50	0.00	53-M2-4	None
	MRP	100	0.20	1.99	2.29	0.00	53-M2-4	None
	T-2	100	0.20	6.37	5.20	0.00	53-M2-4	None
	T-8	100	0.20	2.13	2.48	0.00	53-M2-4	None

TABLE 54 (Continued)

Polymeric Material	Explosive	Test Temperature °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Picatinny Report No.	Remarks
Polyester, glass mat	Composition B	100	0.13	0.33	0.59	0.13	52-M2-163	Negligible
MX-172	Composition B	100	0.13	0.21	0.26	0.00	56-M2-49	None
	TNT	-100	0.13	0.06	0.13	0.00	56-M2-49	None
Polyester Fiberglass	Composition B	100	0.08	0.34	0.33	0.00	53-H1-498	None
	Tetryl	100	0.08	0.41	0.33	0.00	53-H1-498	None
Cycopol S-1025 with aluminum powder	Fuze powder	100	0.50	0.37	0.54	0.00	53-M2-7	None
	Fuze powder	100	0.89	0.36	0.56	0.00	53-M2-87	None
	RDX	100	0.28	0.39	0.32	0.00	53-M2-89	None
	Tetryl	100	0.30	0.28	1.16	0.58	53-M2-89	Negligible
Stryrenated Alkyd MF-882	Amatol	100	0.58	0.41	6.84	5.85	56-M2-12	Excessive
	M-7	90	0.75	2.13	1.82	0.00	56-M2-12	None
	M-15	90	0.75	1.98	2.76	0.03	56-M2-12	Negligible
	Tetryl	100	0.58	0.45	5.22	4.19	56-M2-12	Moderate
Acrylated Alkyd MF-881	Amatol	100	0.58	0.41	5.24	4.25	56-M2-12	Moderate
	M-7	90	0.71	2.13	1.92	0.00	56-M2-12	None
	M-15	90	0.71	1.98	2.11	0.00	56-M2-12	None
	Tetryl	100	0.58	0.45	0.85	0.00	56-M2-12	None

TABLE 54 (Continued)

Polymeric Material	Explosive	Test Temperature °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Picatinny Report No.	Remarks
Phthalic drying oil Alkyd MF-884	Amatol	100	0.55	0.41	5.33	4.37	56-M2-12	Moderate
	M-7	90	0.70	2.13	1.32	0.00	56-M2-12	None
	M-15	90	0.70	1.98	1.88	0.00	56-M2-12	None
	Tetryl	100	0.55	0.45	1.63	0.63	56-M2-12	Negligible
Vinyl toluene Alkyd MF-883	Amatol	100	0.73	0.41	5.28	4.14	56-M2-12	Moderate
	M-7	90	1.06	2.13	1.94	0.00	56-M2-12	None
	M-15	90	1.06	1.98	2.03	0.00	56-M2-12	None
	Tetryl	100	0.73	0.45	1.37	0.19	56-M2-12	Negligible
Allite	JPN	90	0.39	2.36	2.10	0.00	53-M2-4	None
	MRP	90	0.39	1.71	1.68	0.00	53-M2-4	None
	T-2	90	0.39	7.22	7.69	0.08	53-M2-4	Negligible
	T-8	90	0.39	2.04	2.05	0.00	53-M2-4	None

TABLE 55
Percent Change in Weight of Polyesters after Storage

Polymer	Explosive	Storage, Weeks	Temperature, °C	% Weight of Control	% Weight of Contact	Picatinny Report No.
Bakelite-BRS-147 Rigid	Cyclotol 75-25	28	71	+0.06	+0.16	56-M2-24
	Composition A-3	28	76	+0.06	-0.25	56-M2-24
	HBX-6	28	71	-0.19	+0.69	56-M2-73
Glidpol No. 1017	Composition B	24	71	-0.24	-0.57	56-M2-35
Gray Glid-Iron No. 6043	Black powder	52	76	+0.70	-1.90	57-TM2-23
	Composition B	52	71	+0.70	+8.30	57-TM2-23
	Tetryl	52	76	+0.70	+18.30	57-TM2-23
	TNT	52	71	+0.70	+37.90	57-TM2-23
	Tritonal 80/20	52	76	+0.70	+19.70	57-TM2-23
Gray Glid-Iron No. 6130	Black powder	52	76	+0.20	-1.00	57-TM2-23
	Composition B	52	71	+0.20	+9.90	57-TM2-23
	Tetryl	52	76	+0.20	+0.50	57-TM2-23
	TNT	52	71	+0.20	+10.70	57-TM2-23
	Tritonal 80/20	52	76	+0.20	+7.50	57-TM2-23
H-00	Composition B	24	76	+0.16	+6.04	55-M2-54
	Tetryl	24	76	+0.16	+0.51	55-M2-54
	TNT	24	76	+0.16	+8.59	55-M2-54
H-35	Composition B	24	76	-0.05	+5.13	55-M2-54
	Tetryl	24	76	-0.05	+0.08	55-M2-54
	TNT	24	76	-0.05	+6.52	55-M2-54

TABLE 55 (Continued)

Polymer	Explosive	Storage, Weeks	Temperature, °C	% Weight of Control	% Weight of Contact	Picatinny Report No.
Laminac No. 4116 rigid	JPN	26	50	+0.27	+5.71	53-M2-4
	MRP	26	50	+0.27	+4.01	53-M2-4
	M-7	26	50	+0.35	+3.88	52-M2-92
	OIO	14	50	-0.04	+0.85	53-M2-90
	T2	26	50	+0.27	+4.71	53-M2-4
	T-8	26	50	+0.27	+2.85	53-M2-4
	TNT	12	76	-6.72	+35.8	55-M2-31
Laminac No. 4125 rigid	JPN	26	50	+0.30	+5.92	53-M2-4
	MRP	26	50	+0.30	+3.21	53-M2-4
	T-2	26	50	+0.30	+3.16	53-M2-4
	T-8	26	50	+0.30	+1.91	53-M2-4
	Composition B	14	76	-0.34	+0.50	53-M2-59
Laminac No. 4128 rigid	Tetryl	14	76	-0.34	-0.45	53-M2-59
Laminac No. 4134 flexible	JPN	26	50	+0.43	+25.40	53-M2-4
	MRP	26	50	+0.43	+22.40	53-M2-4
	M-7	26	50	+0.46	+29.30	52-M2-111
	T-2	26	50	+0.43	+27.70	53-M2-4
	T-8	26	50	+0.43	+20.20	53-M2-4
Metaseal 19V5	Composition B	14	76	-0.41	+9.00	53-M2-8
	TNT	14	76	-0.41	+11.50	53-M2-8

TABLE 55 (Continued)

Polymer	Explosive	Storage, Weeks	Temperature, °C	% Weight of Control	% Weight of Contact	Picatinny Report No.
Paraplex P-13 flexible	JPN	26	50	-0.37	+45.20	53-M2-4
	MRP	26	50	-0.37	+28.00	53-M2-4
	T-2	26	50	-0.37	+32.30	53-M2-4
	T-8	26	50	-0.37	+31.40	53-M2-4
Paraplex P-43 rigid	Composition B	8	76	-0.06	+1.35	52-M2-60
	Composition C-3	8	76	-0.06	+8.26	52-M2-60
	JPN	26	50	+0.14	+3.17	53-M2-4
	MRP	26	50	+0.14	+3.97	53-M2-4
	PETN	8	76	-0.06	-0.33	52-M2-60
	Pentolite 50/50	8	76	-0.06	+1.39	52-M2-60
	T-2	26	50	+0.14	+2.53	53-M2-4
	T-8	26	50	+0.14	+2.43	53-M2-4
	Composition C-2/RDX	12	76	-0.07	+14.70	53-M2-60
	Composition C-3/RDX	12	76	-0.07	+14.20	53-M2-60
Paraplex P-43 / P-13 85/15%	Composition C-4/RDX	12	76	-0.07	-0.07	53-M2-60
	RDX	12	76	-0.07	-0.34	53-M2-60
	P-43 and P-13 75/25% O/O	14	50	-0.11	-0.08	53-M2-90
Plaskon Alkyd No. 442	Composition C-2/RDX	10	76	-0.72	+2.57	53-M2-57
	Composition C-3/RDX	10	76	-0.72	+2.60	53-M2-57
	Composition C-4/RDX	10	76	-0.72	-0.59	53-M2-57
	RDX	10	76	-0.72	-0.64	53-M2-57

TABLE 55 (Continued)

Polymer	Explosive	Storage, Weeks	Temperature, °C	% Weight of Control	% Weight of Contact	Picatinny Report No.
Bakelite QRS-147	Swiss Propellant	4	50	-0.49	-1.02	52-42-174
Polyplastex MC	Composition B	12	76	-0.29	+0.86	53-M2-14
	TNT	12	76	-0.29	+0.95	53-M2-14
Selectron No. 5003 rigid	JPN	26	50	+0.13	+7.00	53-M2-4
	MRP	26	50	+0.13	+9.19	53-M2-4
	T-2	26	50	+0.13	+5.55	53-M2-4
	T-8	26	50	+0.13	+6.03	53-M2-4
Selectron No. 5003 with accelerator	JPN	26	50	+0.14	+0.59	53-M2-4
	MRP	26	50	+0.14	+0.25	53-M2-4
	T-2	26	50	+0.14	+0.84	53-M2-4
	T-8	26	50	+0.14	+0.41	53-M2-4
Dryply No. 81 cured	Composition B	40	71	-0.16	+1.90	57-TM2-4
	HBX-6	40	71	-0.16	+1.10	
Laminated Fiberglass with Epon 828 +	T-131	28	50	-1.37	-2.69	56-M2-25
	T-131	24	50	-0.09	-0.08	56-M2-23
"MR" 25C	JPN	26	50	-0.02	+4.24	53-M2-4
	MRP	26	50	-0.02	+2.59	53-M2-4
	T-2	26	50	-0.02	+4.07	53-M2-4
	T-8	26	50	-0.02	+1.99	53-M2-4

TABLE 55 (Continued)

Polymer	Explosive	Storage, Weeks	Temperature, °C	% Weight of Control	% Weight of Contact	Picatinny Report No.
MX-172	Composition B	24	71	-0.63	+2.38	56-M2-49
	TNT	24	71	-0.63	+2.65	56-M2-49
Allite	JPN	26	50	-0.66	+1.12	53-M2-4
	MRP	24	50	-0.66	+0.16	53-M2-4
	T-2	24	50	-0.66	+0.25	53-M2-4
	T-8	24	50	-0.66	-0.03	53-M2-4

TABLE 56
Effects of Storage on Physical Properties of Polyesters

Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	Effects on the Polymer	Picatinny Report No.
Amberlac No. 292 with Paraplex G-50	PBX	24	76	No effect	56-M2-8
Bakelite-BRS-147	Cycloal 75/25	28	76	Slight adhesion with surface roughening	56-M2-24
	Composition A-3	28	76	Slight darkening	56-M2-24
Glidpol No. 1017 Cobalt naphthenate and Lupersol DDM	Composition B	24	71	Darkened slightly	56-M2-35
H-00 unfilled	Composition B Tetryl	24	76	Turned brown and brittle	55-M2-54
	TNT	24	76	Turned amber and brittle	55-M2-54
	TNT	24	76	Turned brown and brittle	55-M2-54
H-35 filled	Composition B Tetryl	24	76	Turned brittle and darkened	55-M2-54
	TNT	24	76	Turned brittle and darkened	55-M2-54
	TNT	24	76	Softens with loss of adhesion	55-M2-54
Laminac No. 4116	JPN	26	50	Yellowed, more impact resistance	53-M2-4
	MRP	26	50	Yellowed, more impact resistance, tacky	53-M2-4
	T-2	26	50	Yellowed, more impact resistance	53-M2-4
	TNT	12	76	Blackened, deteriorated	55-M2-31

TABLE 56 (Continued)

Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	Effects on the Polymer	Pictinny Report No.
Laminac No. 4125	JPN	26	50	More impact resistance	53-M2-4
	MRP	26	50	More impact resistance	53-M2-4
	T-2	26	50	More impact resistance	53-M2-4
	T-8	26	50	More impact resistance	53-M2-4
Laminac No. 4134	Black powder Composition B	8	76	Turned orange, lost adhesion	56-M2-26
		8	76	Decomposed	56-M2-26
	JPN	26	50	Turned yellow	53-M2-4
	M-1	8	50	Softened, lost adhesion	56-M2-26
	MRP	26	50	Turned amber	53-M2-4
	T-2	26	50	Turned amber	53-M2-4
	T-8	26	50	Turned amber	53-M2-4
	Tetryl	8	76	Turned orange, lost adhesion	53-M2-26
	Black powder Tetryl TNT	24	76	Lost adhesion, deteriorated	56-M2-26
		24	76	Lost adhesion, deteriorated	56-M2-26
		24	71	Lost adhesion, deteriorated	56-M2-26
Paraplex P-13	JPN	26	50	No change	53-M2-4
	MRP	26	50	No change	53-M2-4
	T-2	26	50	No change	53-M2-4
	T-8	26	50	No change	53-M2-4
Paraplex P-43	JPN	26	50	Becomes tacky, more impact resistance	53-M2-4
	MRP	26	50	Becomes tacky, more impact resistance	53-M2-4

TABLE 56 (Continued)

Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	Effects on Polymer	Picatinny Report No.
Paraplex P-43	T-2	26	50	Becomes tacky, more impact resistance	53-M2-4
	T-8	26	50	Becomes tacky, more impact resistance	53-M2-4
Bakelite QRS-136	Black powder	8	76	Turned amber	53-M2-26
	Composition B	8	76	Decomposed	53-M2-26
	M-1	8	50	Lost adhesion	53-M2-26
	M-2	8	50	Turned orange	52-M2-153
	Tetryl	8	76	Turned orange	52-M2-26
Bakelite QRS-147	Composition B	8	76	Softened, turned brown	52-M2-100
	BaCrO ₄ /KClO ₄ /Zr-Ni	8	76	No change	52-M2-166
	Tetryl	8	76	No change	52-M2-132
	T-16	8	50	No change	53-M2-20
	TNT	8	76	Became slightly tacky	52-M2-166
Selectron No. 5003	JPN	26	50	Became tacky, turned yellow	53-M2-4
	MRP	26	50	Became tacky, turned yellow	53-M2-4
	T-2	26	50	Became tacky, turned yellow	53-M2-4
	T-8	26	50	Became tacky, turned yellow	53-M2-4
	T-16	8	50	Softened, became tacky, lost adhesion	52-M2-49

TABLE 56 (Continued)

Material	Explosive or Propellant	Storage, Weeks	Temperature, °C	Effects on Polymer	Picatinny Report No.
Selectron No. 5003 with accelerator	JPN	26	50	More impact resistant	53-M2-4
	MRP	26	50	More impact resistant	53-M2-4
	T-2	26	50	More impact resistant	53-M2-4
	T-8	26	50	More impact resistant	53-M2-4
Dryply No. 81 cured	Composition B	40	71	Turned light brown	57-TM2-4
	HBX-6	40	71	Turned yellow	
Dryply No. 81 uncured	Composition B	40	71	Turned light brown	57-TM2-4
	HBX-6	40	71	Turned light brown	57-TM2-4
Laminated Fiberglass	T-131	28	50	Darkened slightly	56-M2-25
MR-25C	JPN	26	50	No effect	53-M2-4
	MRP	26	50	No effect	53-M2-4
	T-2	26	50	No effect	53-M2-4
	T-8	26	50	No effect	53-M2-4
Cyclopol S-1025	Fuze powder	8	76	No effect	53-M2-7
Allite	JPN	26	50	No effect	53-M2-4
	MRP	24	50	No effect	53-M2-4
	T-2	24	50	No effect	53-M2-4
	T-8	24	50	No effect	53-M2-4

TABLE 57

100°C Heat Test Results for Polyesters

Material and Weight in gms	Explosive and Weight in gms	gms	%	gms	%	Explosion in 100 Hrs	Picatinny Report No.
Amberlac 292							
0.6	Lead Azide	0.0496	3.38	0.0063	0.52	None	56-M2-77
0.6	—	0.0271	4.51	0.0047	0.78	None	56-M2-77
—	0.6	0.0062	1.03	0.0003	0.06	None	56-M2-77
Primer Mix—Class 1							
0.6	0.6	0.0343	2.85	0.0059	0.49	None	56-M2-77
0.6	—	0.0271	4.51	0.0047	0.78	None	56-M2-77
—	0.6	0.0017	0.28	0.0000	0.00	None	56-M2-77
Mylar tape							
0.6	Primer Mix—Nol 130	0.0103	0.85	0.0029	0.24	None	56-HI-572
0.6	—	0.0007	0.11	0.0002	0.03	None	56-HI-572
—	0.6	0.0102	1.70	0.0023	0.38	None	56-HI-572
Glaskyd No. 1901							
0.6	Lead Azide	0.0087	0.72	0.0005	0.04	None	55-HI-620
0.6	—	0.0032	0.53	0.0002	0.03	None	55-HI-620
—	0.6	0.0065	1.08	0.0000	0.00	None	55-HI-620
Cycopol S-1025							
0.6	Lead Azide	0.0105	0.87	0.0023	0.19	None	53-M2-89
0.6	—	0.0018	0.30	0.0005	0.08	None	53-M2-89
—	0.6	0.0052	0.86	0.0000	0.00	None	53-M2-89

TABLE 57 (Continued)

Material and Weight in gms		Explosive and Weight in gms		1st 48 Hrs		2nd 48 Hrs		Explosion in 100 Hrs	Picatinny Report No.
				gms	%	gms	%		
Cyclopol S-1025		Primer Mix F.A.70							
0.6		0.6		0.0077	0.64	0.0014	0.11		53-M2-89
0.6		-		0.0018	0.30	0.0005	0.06	None	53-M2-89
-		0.6		0.0012	0.20	0.0011	0.18	None	53-M2-89
		Primer Mix-100							
0.6		0.6		0.0028	0.23	0.0007	0.06	None	53-M2-89
0.6		-		0.0018	0.30	0.0005	0.06	None	53-M2-89
-		0.6		0.0009	0.15	0.0000	0.00	None	53-M2-89
		Primer Mix-M-20							
0.6		0.6		0.0030	0.05	0.0022	0.18	None	53-M2-89
0.6		-		0.0000	0.00	0.0011	0.18	None	53-M2-89
-		0.6		0.0019	0.31	0.0004	0.06	None	53-M2-89
		Primer Mix-Nol 130							
0.6		0.6		0.0115	0.95	0.0022	0.18	None	53-M2-89
0.6		-		0.0000	0.00	0.0011	0.18	None	53-M2-89
-		0.6		0.0083	1.38	0.0000	0.00	None	53-M2-89
Polyester film tape No. 850		Lead Azide							
0.6		0.6		0.0040		0.0001	0.00	None	56-M2-45
0.6		-		0.0053		0.0000	0.00	None	56-M2-45
-		0.6		0.0091		0.0000	0.00	None	56-M2-45

Section 9

SILICONES

The term silicone is generic for polymers which have a molecular skeleton of silicon-oxygen linkages and several organic groups completing the molecule. Structurally, organopoly-siloxanes may be linear or cross-linked. Depending on the structure, a silicone may be a fluid, an elastomer, or a thermoset resin.

The elastomeric silicones (silicone rubbers) are cross-referenced in the Rubbers and Rubber Derivatives Section of this report.

The data that follows indicates that, in general, the silicone polymers are compatible with explosives and propellants.

TABLE 58
Vacuum Stability Test Results for Silicones

Polymeric Material	Explosive	Test Temperature, °C	Plastic Control		Explosive Control		Plastic and Explosive		Net Increase Due to Polymer	Remarks	Picotinary Report No.
Glass Tubing A-1 (Magneto)	Composition B	100	0.25	0.24	0.24	0.24	0.47	0.00	0.00	None	52-M2-27
	Composition B	100	0.10	0.24	0.24	0.24	0.30	0.00	0.00	None	52-M2-27
	Composition B	100	0.22	0.24	0.24	0.24	0.35	0.00	0.00	None	52-M2-27
	Composition B	100	0.18	0.24	0.24	0.24	0.35	0.00	0.00	None	52-M2-27
Grease Form G	Black powder	100	0.08	0.80	0.80	0.80	0.60	0.60	0.60	None	55-M2-43
	Composition A-3	100	0.08	0.46	0.46	0.46	0.29	0.00	0.00	None	55-M2-43
	Composition B	100	0.08	0.24	0.24	0.24	1.53	1.21	1.21	Very slight	55-M2-43
	Composition C-4	100	0.08	0.23	0.23	0.23	0.35	0.04	0.04	Negligible	55-M2-43
	Pentolite 50/50	100	0.08	1.87	1.87	1.87	6.17	4.22	4.22	Moderate	55-M2-43
	Picratol	100	0.08	0.44	0.44	0.44	1.03	0.51	0.51	Negligible	55-M2-43
	RDX	100	0.08	0.30	0.30	0.30	0.55	0.17	0.17	Negligible	55-M2-43
	Tetryl	100	0.08	0.41	0.41	0.41	1.09	0.60	0.60	Negligible	55-M2-43
	TNT	100	0.08	0.21	0.21	0.21	2.41	2.12	2.12	Slight	55-M2-43
	Trinitol	100	0.08	0.15	0.15	0.15	2.06	1.83	1.83	Very slight	55-M2-43
Grease Form H	Black powder	100	0.13	0.80	0.80	0.80	0.68	0.00	0.00	None	55-M2-43
	Composition A-3	100	0.13	0.46	0.46	0.46	1.36	0.77	0.77	Negligible	55-M2-43
	Composition B	100	0.13	0.24	0.24	0.24	0.11	0.00	0.00	None	55-M2-43
	Composition C-4	100	0.13	0.23	0.23	0.23	0.18	0.00	0.00	None	55-M2-43
	Pentolite 50/50	100	0.13	1.87	1.87	1.87	2.04	0.04	0.04	Negligible	55-M2-43
	Picratol	100	0.13	0.44	0.44	0.44	0.41	0.00	0.00	None	55-M2-43

TABLE 58 (Cont)

Polymeric Material	Explosive	Test Temperature, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Grease Form H	RDX	100	0.13	0.30	0.22	0.00	None	55-M2-43
	Tetryl	100	0.13	0.41	0.33	0.00	None	55-M2-43
	TNT	100	0.13	0.21	0.13	0.00	None	55-M2-43
	Tritonal	100	0.13	0.15	0.10	0.00	None	55-M2-43
Grease No. A-20044	Black powder	100	0.20	0.80	0.80	0.00	None	55-M2-43
	Composition A-3	100	0.20	0.46	0.53	0.00	None	55-M2-43
	Composition B	100	0.20	0.24	0.16	0.00	None	55-M2-43
	Composition C-4	100	0.20	0.23	0.17	0.00	None	55-M2-43
	Pentolite 50/50	100	0.20	1.87	2.15	0.08	Negligible	55-M2-43
	Picratol	100	0.20	0.44	0.36	0.00	None	55-M2-43
	RDX	100	0.20	0.30	0.24	0.00	None	55-M2-43
	Tetryl	100	0.20	0.41	0.38	0.00	None	55-M2-43
	TNT	100	0.20	0.21	0.04	0.00	None	55-M2-43
	Tritonal	100	0.20	0.15	0.07	0.00	None	55-M2-43
	Black powder	100	0.17	0.80	0.83	0.00	None	55-M2-43
	Composition A-3	100	0.17	0.46	0.38	0.00	None	55-M2-43
Grease No. A-20046	Composition B	100	0.17	0.24	0.18	0.00	None	55-M2-43
	Composition C-4	100	0.17	0.23	0.26	0.00	None	55-M2-43
	Pentolite 50/50	100	0.17	1.87	2.00	0.00	None	55-M2-43
	Picratol	100	0.17	0.44	0.36	0.00	None	55-M2-43
	RDX	100	0.17	0.30	0.23	0.00	None	55-M2-43
	Tetryl	100	0.17	0.41	0.49	0.00	None	55-M2-43
	TNT	100	0.17	0.21	0.08	0.00	None	55-M2-43
	Tritonal	100	0.17	0.15	0.06	0.00	None	55-M2-43
	Black powder	100	0.11	0.80	0.71	0.00	None	55-M2-43
	Composition A-3	100	0.11	0.46	0.34	0.00	None	55-M2-43
	Composition B	100	0.11	0.24	0.21	0.00	None	55-M2-43
	Composition C-4	100	0.11	0.23	0.26	0.00	None	55-M2-43

TABLE 58 (Cont)

Polymeric Material	Explosive	Test Temperature, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Grease No. 372-72-539	Composition C-4	100	0.11	0.23	0.38	0.04	Negligible	55-M2-43
	Pentolite 50/50	100	0.11	1.87	2.27	0.29	Negligible	55-M2-43
	Picratol	100	0.11	0.44	0.34	0.00	None	55-M2-43
	RDX	100	0.11	0.30	0.23	0.00	None	55-M2-43
	Tetryl	100	0.11	0.41	0.37	0.00	None	55-M2-43
	TNT	100	0.11	0.21	0.09	0.00	None	55-M2-43
	Tritonal	100	0.11	0.15	0.04	0.00	None	55-M2-43
Grease No. XC-4272	Black powder	100	0.19	0.80	0.64	0.00	None	55-M2-43
	Composition A-3	100	0.19	0.46	0.26	0.00	None	55-M2-43
	Composition B	100	0.19	0.24	0.30	0.00	None	55-M2-43
	Composition C-4	100	0.19	0.23	0.17	0.00	None	55-M2-43
	Pentolite 50/50	100	0.19	1.87	2.13	0.07	Negligible	55-M2-43
	Picratol	100	0.19	0.44	0.51	0.00	None	55-M2-43
	RDX	100	0.19	0.30	0.27	0.00	None	55-M2-43
	Tetryl	100	0.19	0.41	0.25	0.00	None	55-M2-43
	TNT	100	0.19	0.21	0.16	0.00	None	55-M2-43
	Tritonal	100	0.19	0.15	2.25	1.91	Slight	55-M2-43
	Black powder	100	0.02	0.80	0.70	0.00	None	55-M2-43
Grease No. XC-4282	Composition A-3	100	0.02	0.46	0.31	0.00	None	55-M2-43
	Composition B	100	0.02	0.24	0.21	0.00	None	55-M2-43
	Composition C-4	100	0.02	0.23	0.30	0.05	Negligible	55-M2-43
	Pentolite 50/50	100	0.02	1.87	2.49	0.60	Negligible	55-M2-43
	Picratol	100	0.02	0.44	0.35	0.00	None	55-M2-43
	RDX	100	0.02	0.30	0.24	0.00	None	55-M2-43
	Tetryl	100	0.02	0.41	0.33	0.00	None	55-M2-43
	TNT	100	0.02	0.21	0.15	0.00	None	55-M2-43
	Tritonal	100	0.02	0.15	0.21	0.07	Negligible	55-M2-43

TABLE 58 (Cont)

Polymeric Material	Explosive	Test Temperature, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Pictetmy Report No.
Grease No. XCT-4043	Black powder	100	0.05	0.80	0.55	0.00	None	55-M2-43
	Composition A-3	100	0.09	0.46	0.35	0.00	None	55-M2-43
	Composition B	100	0.09	0.24	0.23	0.00	None	55-M2-43
	Composition C-4	100	0.09	0.23	0.22	0.00	None	55-M2-43
	Pentolite 50/50	100	0.09	1.87	2.11	0.05	Negligible	55-M2-43
	Picratol	100	0.09	0.44	0.61	0.08	Negligible	55-M2-43
	RDX	100	0.09	0.30	0.32	0.00	None	55-M2-43
	Tetryl	100	0.09	0.41	0.55	0.05	Negligible	55-M2-43
	TNT	100	0.09	0.21	0.17	0.00	None	55-M2-43
	Tritonal	100	0.09	0.15	0.17	0.00	None	55-M2-43
Grease No. XC-5012	Black powder	100	0.22	0.80	0.92	0.00	None	55-M2-43
	Composition A-3	100	0.22	0.46	0.38	0.00	None	55-M2-43
	Composition B	100	0.22	0.24	0.04	0.00	None	55-M2-43
	Composition C-4	100	0.22	0.23	0.39	0.00	None	55-M2-43
	Pentolite 50/50	100	0.22	1.87	1.84	0.00	None	55-M2-43
	Picratol	100	0.22	0.44	0.39	0.00	None	55-M2-43
	RDX	100	0.22	0.30	0.24	0.00	None	55-M2-43
	Tetryl	100	0.22	0.41	4.87	4.24	Moderate	55-M2-43
	TNT	100	0.22	0.21	3.44	3.01	Moderate	55-M2-43
	Tritonal	100	0.22	0.15	0.23	0.00	None	55-M2-43
Grease-Electro-Lube Pres-o-valve	Black powder	100	0.16	0.80	0.63	0.00	None	55-M2-43
	Composition A-3	100	0.16	0.46	1.09	0.47	Negligible	55-M2-43
	Composition B	100	0.16	0.24	0.92	0.52	Negligible	55-M2-43
	Composition C-4	100	0.16	0.23	0.32	0.00	None	55-M2-43
	Pentolite 50/50	100	0.16	1.87	2.04	0.01	Negligible	55-M2-43
	Picratol	100	0.16	0.44	0.48	0.00	None	55-M2-43
	RDX	100	0.16	0.30	0.35	0.00	None	55-M2-43

TABLE 58 (Cont)

Polymeric Material	Explosive	Test Temperature, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Grease-Electro-Lube Pres-o-valve	Tetryl	100	0.16	0.41	0.53	0.00	None	55-M2-43
	TNT	100	0.16	0.21	0.17	0.00	None	55-M2-43
	Tritonal	100	0.16	0.15	0.02	0.00	None	55-M2-43
Pan Glaze Stopcock grease	Tetryl 65/35	100	0.11	2.05	3.57	1.41	Very slight	53-M2-15
	M-1	90	0.19	0.85	0.51	0.00	None	136 522
	M-6	90	0.19	3.18	1.45	0.00	None	136 522

TABLE 59
Appearance of Silicones After Storage

Polymetric Material	Explosive	Storage, weeks	Temperature, °C	Appearance of Polymer	Picatinny Report No.
Pan glaze	Tetrytol 65/35	12	76	Turns light brown	53-M2-15

Section 10

POLYSTYRENES AND COPOLYMERS

Modified polystyrenes and straight polystyrenes have little or no effect on explosives and propellants.

Straight polystyrenes are unaffected by contact with explosives and propellants.

Modified polystyrenes show much greater susceptibility than straight polystyrenes to attack by explosives and propellants that contain nitro-glycerine or TNT.

Since butadiene/styrene copolymers are elastomeric materials, they are discussed in the section on Rubbers and Synthetic Rubbers.

TABLE 60
Vacuum Stability Test Results for Polystyrenes

Polymeric Material	Explosive	Test Temperature, °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Remarks	Picatinny Report No.
C-11 Copolymer	Composition B	100	0.20	0.31	0.26	0.00	None	52-M2-130
	Tetryl	100	0.20	0.36	0.31	0.00	None	52-M2-130
	OIO	90	0.26	0.81	0.81	0.00	None	52-H1-2365
	T-6	90	0.26	4.90	4.55	0.00	None	52-H1-2365
Dylene No. 100	RDX	120	0.17	0.63	0.71	0.00	None	55-M2-50
Hip-183a	OIO	90	0.17	0.76	0.90	0.00	None	52-M2-138
Kralastic 2183-6 Type J	Tetryl	100	0.05	0.46	0.95	0.44	Negligible	53-M2-56
	T-2	90	0.08	6.13	4.32	0.00	None	52-H1-2066
Kralastic BM-2146	Composition B	100	0.26	0.36	0.27	0.00	None	54-M2-5
	T-2	90	0.11	6.13	4.60	0.00	None	52-H1-2066
Lustrax LT-373	Composition B	100	0.17	0.34	1.07	0.56	Negligible	52-M2-128
	JPN	100	0.21	2.36	3.21	0.64	Negligible	53-M2-4
	M-9	90	0.48	12.12	10.62	0.00	None	52-M2-3
	MRP	90	0.21	1.78	2.39	0.40	Negligible	53-M2-4
	T-2	100	0.21	7.22	10.48	3.05	Moderate	53-M2-4
	T-8	100	0.21	2.28	2.90	0.41	Negligible	53-M2-4
	Tetryl	100	0.17	0.42	0.51	0.00	None	52-M2-128
	RDX	100	0.23	0.63	0.47	0.00	None	52-M2-146
	TNT	100	0.23	0.29	0.45	0.00	None	52-M2-146
	RDX	100	0.11	0.63	0.52	0.00	None	52-M2-146
Lustrax clear	TNT	100	0.11	0.29	0.16	0.00	None	52-M2-146

TABLE 60 (Cont)

Polymeric Material	Explosive	Test Temperature, °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Remarks	Pictorial Report No.
Polystyrene (straight)	M-9	90	0.20	10.44	10.26	0.00	None	52-M2-173
	T-6	90	0.14	5.53	5.72	0.05	Negligible	52-M2-102
	MRP	90	0.12	1.71	1.77	0.00	None	134829
Polystyrene (modified) (GR-S) with GR-S rubber	Composition B	100	0.10	0.28	0.24	0.00	None	53-M2-22
	Composition C-4	100	0.10	0.35	0.29	0.00	None	53-M2-22
	Igniter Mix K-29	100	0.24	0.34	0.34	0.00	None	52-M2-143
	Iron oxide/primer comp	100	0.16	0.20	0.21	0.00	None	56-M2-93
	Lead peroxide	100	0.16	0.20	0.31	0.00	None	56-M2-93
Polystyrene Solution	Tetryl	100	0.10	0.39	0.27	0.00	None	53-M2-22
	M-9	90	0.84	10.44	12.12	0.84	Negligible	52-M2-173
Stryon No. 666 (Black rod)	JPB	100	0.12	2.36	2.35	0.00	None	53-M2-4
	MRP	100	0.12	1.71	1.77	0.00	None	53-M2-4
	Pyrotech. Comp	100	0.48	0.43	0.52	0.00	None	53-M2-95
	T-2	100	0.12	7.22	7.27	0.00	None	53-M2-4
	T-6	90	0.11	3.98	4.45	0.36	Negligible	54-M2-12
	T-8	100	0.12	2.04	1.93	0.00	None	53-M2-4
Polystyrene (black)	T-6	90	0.15	0.78	4.65	6.00	None	52-M2-169
Stryon No. 700	Composition B	100	0.15	0.26	0.25	0.00	None	54-M2-28
	Tetryl	100	0.15	0.21	0.15	0.00	None	54-M2-28
RD-51-24-Bakelite	Black powder	100	0.25	1.02	0.89	0.00	None	52-H1-2066
	T-2	90	0.12	6.13	4.70	0.00	None	52-H1-2066
Ceter-yellow	RDX	100	0.16	0.63	0.55	0.00	None	52-M2-146
	TNT	100	0.16	0.29	0.26	0.00	None	52-M2-146

TABLE 60 (Cont)

Polymeric Material	Explosive	Test Temperature, °C	Polymer Control	Explosive Control	Polymer/Explosive Mixture	Net Increase Due to Polymer	Remarks	Picatinny Report No.
S-50 Polymer Styrene/Isobutylene	Black powder	100	0.29	0.43	0.58	0.00	None	53-M2-5
	JPN	100	0.32	2.36	2.36	0.00	None	53-M2-4
	M-7	90	0.20	1.90	1.81	0.00	None	53-M2-5
	MRP	100	0.32	1.71	2.10	0.07	Negligible	53-M2-4
	Pyrotech. Comp	100	0.37	0.39	0.51	0.00	None	52-M2-155
with aluminum	FF101L							
	RDX	100	0.37	0.39	0.55	0.00	None	53-M2-89
	SF-11457-25	100	0.26	0.13	0.23	0.00	None	52-M2-155
	T-2	90	0.32	7.22	6.53	0.00	None	53-M2-4
	T-6	90	0.59	2.50	2.66	0.00	None	52-M2-4
S-60 Polymer	T-8	90	0.32	2.04	1.96	0.00	None	53-M2-4
	Tetryl	100	0.37	0.28	0.54	0.00	None	53-M2-89
	T-2	90	0.20	6.47	5.86	0.00	None	51-B-6
	Type O-Propellant	90	0.20	2.04	1.91	0.00	None	51-B-6
	Composition B	100	1.08	0.28	0.92	0.00	None	56-HI-1635
Plastic Cement VPX-27	Tetryl	100	1.08	0.29	1.22	0.00	None	56-HI-1635
Plexene M	JPN	90	0.33	2.36	2.51	0.00	None	53-M2-4
	MRP	90	0.33	1.71	1.88	0.00	None	53-M2-4
	T-2	90	0.33	7.22	6.94	0.00	None	53-M2-4
	T-8	90	0.33	2.04	2.12	0.00	None	53-M2-4

TABLE 61
Percent Change in Weight of Polystyrene After Storage

Polymeric Material	Explosive	Storage, weeks,	Temperature, °C	Change in Weight of Control, %	Change in Weight of Control, %	Picatinny Report No.
C-11 Copolymer	Composition B	3	76	+0.56	+82.2	52-M2-130
	Tetryl	8	76	+0.56	+ 0.52	52-M2-130
Hip 185a	OKO	8	50	+0.12	+ 0.95	52-M2-138
Kralastic 7183-6	Tetryl	10	76	+0.31	+ 1.57	52-M2-56
Kralastic 2146-1	Composition B	18	76	-0.26	+27.3	54-M2-5
Luster-LT-373	Composition B	8	76	+0.37	+ 4.82	52-M2-128
	JPN	25	50	+0.19	+ 0.49	53-M2-4
	M-9	8	50	-0.11	- 0.07	52-M2-3
	MRP	25	50	+0.19	+ 0.45	53-M2-4
	T-2	25	50	+0.19	+ 1.10	53-M2-4
	T-8	25	50	+0.19	+ 0.68	53-M2-4
	Tetryl	8	76	+0.37	+ 0.07	52-M2-128
	M-9	8	50	-0.01	- 0.27	52-M2-175
Polystyrene Modified GR-S	Composition B	8	76	-0.05	+ 0.51	53-M2-22
	Composition C-4	8	76	-0.05	+45.2	53-M2-22
	Igniter Mix K-29	9	50	-0.02	- 0.05	52-M2-143
	Tetryl	8	76	-0.05	0.00	53-M2-22
	JPN	24	50	0.00	0.00	53-M2-4
Stryon No. 666 (Black red)	MRP	24	50	0.00	0.00	53-M2-4
	Pyrotech. Comp	8	76	+0.03	0.00	53-M2-95
	T-2	24	50	0.00	+ 0.61	53-M2-4
	T-8	24	50	0.00	+ 0.16	53-M2-4

TABLE 61 (Cont)

Polymeric Material	Explosive	Storage, weeks	Temperature, °C	Change in Weight of Control, %	Change in Weight of Contact, %	Picatinny Report No.
S-50 Polymer Styrene/Isobutylene	JPN	21	50	-0.03	+ 0.62	53-M2-4
	MRF	19	50	-0.03	+ 0.66	53-M2-4
	T-2	19	50	-0.03	+ 0.95	53-M2-4
	T-8	19	50	-0.03	+ 1.16	53-M2-4
S-60 Polymer	T-2	15	50	+0.25	+21.90	51-S-6
	Type O- Propellant	15	50	+0.20	+ 9.30	51-S-6

TABLE 62
Effect of Storage on Appearance of Polystyrenes

Polymeric Material	Explosive and Propellant	Storage, weeks	Temperature, °C	Appearance of Polymer	Picatinny Report No.
Lustrex LT-373	JPN	25	50	More resistant to impact	53-M2-4
	MRP	25	50	No effect	53-M2-4
	T-2	25	50	No effect	53-M2-4
	T-8	25	50	More resistant to impact	53-M2-4
Lustrex LT (Red)	RDX	8	76	No effect	52-M2-146
	TNT	8	76	Darkened	52-M2-146
Lustrex - Clear	RDX	8	76	No effect	52-M2-146
	TNT	8	76	No effect	52-M2-146
Polystyrene (straight)	M-9	8	50	No effect	52-M2-173
Stryon No. 666	JPN	26	50	No effect	53-M2-4
	MRP	26	50	No effect	53-M2-4
	T-2	26	50	Severely crazed	53-M2-4
	T-8	26	50	Slight crazing	53-M2-4
Ceres-yellow	RDX	8	76	No effect	52-M2-146
	TNT	8	76	No effect	52-M2-146
S-50 Polymer Styrene, Isobutylene	Black powder	8	76	Explosive adhered	53-M2-5
	JPN	21	50	Surface tacky	53-M2-4
	M-7	8	50	No effect	53-M2-5
	Pyrotech. Comp FF101L	7	71	Increases adhesion	52-M2-155
	SE-11452-25	7	71	No effect	52-M2-155
	T-6	10	50	Moderately softened	52-M2-4
	T-2	15	50	Yellowed, softened, and pitted	51-8-6
S-60 Polymer	Type O-Propellant	15	50	Softened and pitted	51-8-6

TABLE 63
100°C Heat Test Results for Polystyrene

Material and Weight in Grams	Explosive and Weight in Grams	Loss in Weight				Explosion in 160 Hrs.	Picatinny Report No.
		1st 48 Hrs. Gm	%	2nd 48 Hrs. Gm	%		
S-50 Polymer							
Styrene/Isobutylene							
Lead Azide							
0.6	0.6	0.0247	2.06	0.0008	0.07	None	53-M2-89
0.6	—	0.0302	5.03	0.0003	0.05	None	53-M2-89
—	0.6	0.0043	0.72	0.00	0.00	None	53-M2-89
M-20							
0.6	0.6	0.0129	1.07	0.0003	0.03	None	53-M2-89
0.6	—	0.0302	5.03	0.0003	0.05	None	53-M2-89
—	0.6	0.0019	0.32	0.0004	0.06	None	53-M2-89
Primer Mix-NOL-130							
0.6	0.6	0.0268	2.23	0.0022	0.18	None	53-M2-89
0.6	—	0.0302	5.03	0.0002	0.05	None	53-M2-89
—	0.6	0.0083	1.38	0.0015	0.25	None	53-M2-89
Primer Mix 100							
0.6	0.6	0.0172	1.43	0.0002	0.02	None	53-M2-89
0.6	—	0.0302	5.03	0.0003	0.05	None	53-M2-89
—	0.6	0.0006	0.10	0.0003	0.00	None	53-M2-89
Squib Mix-MIA1							
0.6	0.6	0.0108	0.90	0.0000	0.00	None	53-M2-89
0.6	—	0.0101	1.68	0.0000	0.00	None	53-M2-89
—	0.6	0.0017	0.28	0.0000	0.00	None	53-M2-89

SYNTHETIC RUBBERS AND RUBBER DERIVATIVES

Most of these materials, also known as unsaturated elastomers, soften and swell when in contact with nitroglycerine-containing propellants. The softening and swelling are more severe when the propellants contain a high proportion of nitroglycerine or plasticizers. Silicone rubbers appear to be the least affected by such propellants.

When in contact with TNT, most elastomers become brittle and stiff. It appears that there is less tendency to become brittle as the unsaturation decreases.

Butadiene/Acrylonitrile

Copolymers of butadiene/acrylonitrile (Nitrile rubber, GR-A, Buna N) usually contain from 15% to 55% acrylonitrile by weight. They possess high resistance to the swelling action of oils and greases. They have excellent resistance to degradation from heat, aging, and sunlight.

Contact with butadiene/acrylonitrile rubbers imparts slight reactivity to tetryl, Composition B, and RDX. Generally, explosives in contact with this type of polymer do not exhibit excessive reactivity.

Butadiene/acrylonitrile polymers readily absorb nitroglycerine from propellants. The absorption appears to be related to the nitroglycerine content of the propellant.

Butadiene/Styrene

The most common of all the butadiene/styrene (GR-S) copolymers is the 75/25% by weight butadiene/styrene.

Butadiene/styrene polymers have no adverse effect upon the reactivity of explosives or propellants. They soften and swell when in contact with propellants containing nitroglycerine and become brittle in the presence of explosives containing TNT.

Butyl Rubber

Butyl rubbers are copolymers of isobutylene made vulcanizable by the addition of a small amount of a diolefin. Commercial butyl rubbers are usually

copolymers of isobutylene with isoprene. The limited unsaturation of butyl rubber offers fewer sites for crosslinking than are available in natural rubber and in some of the other elastomers. This low unsaturation leads to outstanding chemical inertness and a high degree of impermeability to gases. Explosives and propellants do not significantly affect butyl elastomers, and butyl rubbers are not adversely affected by explosives and propellants.

Neoprene (2-Chloro-1, 3-Butadiene)

Explosives show little or no reactivity when placed in contact with neoprene, but JPN and MRP propellants show some activity in the presence of neoprene.

Polysulfide Rubber

Polysulfide rubbers or compositions containing a high percentage of polysulfide polymers should not be used in contact with PETN, Pentolite, tetryl, or Composition B. The propellants tested showed little or no reactivity in the presence of polysulfides.

Polysulfide rubbers absorb some nitroglycerine from double- and triple-base propellants.

Silicone Rubbers

The outstanding characteristics of silicone rubbers are stability at elevated temperatures; flexibility at low temperatures; and resistance to ozone, water, oil, and chemicals.

The silicone rubbers are unaffected by the presence of explosives and propellants, and propellants and explosives are not activated by them. These results are probably due to their saturated nature.

TABLE 64

Effects of Storage on Appearance of Rubber and Rubber Derivatives

Polymeric Material	Explosive	Storage, weeks	Temperature, °C	Appearance of Polymer	Picatinny Report No.
Armstrong N-111	Black powder	8	76	Turns brown and loses some adhesion	53-M2-26
	Composition B	8	76	Browns, loses flexibility and adhesion	53-M3-26
	M-1	8	50	Slightly browns	53-M1-26
	M-2	8	50	No change	52-M2-84
	Tetryl	8	76	Turns brown	53-M2-26
Armstrong N-171 Buna N base (synthetic rubber)	Black powder	8	76	No change	53-M2-26
	Composition B	8	76	Loses flexibility	53-M2-26
	M-1	8	50	No change	53-M2-26
	Tetryl	8	76	Loses some adhesion	53-M2-26
	T-19	15	50	Softens and loses adhesion	55-M2-4
	SV-11452-25	7	71	Becomes flexible and tough	52-M2-155
Bondmaster V-333	Black powder	24	76	No change	56-M2-80
	M-1	48	76	Complete deterioration	57-TM2-33
	M-9	48	76	Deteriorates	57-TM2-33
Briggs No. 107 Buradiene Acrylonitrile	M-10	48	76	Deteriorates	57-TM2-33
	Buna-N-o-rings				
	Buradiene/ Acrylonitrile				
T-16		28	50	Swells	56-M2-41

TABLE 64 (Continued)

Polymeric Material	Explosive	Storage, weeks	Temperature, °C	Appearance of Polymer	Picatinny Report No.
Dex-o-Tex					
Neoprene Conductive	Lead azide	1	76	No change	56-M2-1
	M-2	1	50	No change	56-M2-1
	M-9	1	50	No change	56-M2-1
	M-15	1	50	Becomes tacky	56-M2-1
Dex-o-Tex	M-17	1	50	Explosive adheres	57-M2-1
	RDX	1	76	No change	57-M2-1
	TNT	1	71	TNT adheres	57-M2-1
Dioxime No. 1	Composition B	9	76	Slight increase-elasticity, warped	52-M2-85
Buryl rubber	Tetryl	9	76	Slight increase in elasticity	52-M2-85
Dioxime No. 2	Composition B	9	76	No change	52-M2-85
	Tetryl	9	76	No change	52-M2-85
E. C. No. 711 (3M)	Composition B	13	76	Darkens, loses some adhesion	55-M2-19
	Tetryl	13	76	Becomes brittle and darkens	55-M2-19
	TNT	13	76	Loses some adhesion	
E. C. No. 770 (3M)	Black powder	32	76	No change	137253
	T2	32	50	Softens, loses adhesion	137253

TABLE 64 (Continued)

Polymeric Material	Explosive	Storage, weeks	Temperature, °C	Appearance of Polymer	Pictorial Report No.
E.C. No. 776 (3M)	PBX	28	76	No change	56-M2-29
	PEIN	28	76	No change	56-M2-29
	Tetryl	28	76	No change	56-M2-29
E.C. No. 826 (3M)	Black powder	24	76	No change	56-M2-80
E.C. No. 833 (3M)	PBX	52	76	Slight loss of adhesion	56-M2-29
	PEIN	52	76	Loses elasticity, surface hardness	56-M2-29
	Tetryl	52	76	Loses elasticity, surface hardens	56-M2-29
E.C. No. 847 (3M)	PBX	52	76	No change	56-M2-29
	PEIN	52	76	Becomes brittle	56-M2-29
	Tetryl	52	76	Becomes brittle	56-M2-29
E.C. No. 1113 Oil resistant elastomer	Composition B	4	76	Softened, loses adhesion	53-M2-96
	—				
Dampcoat Enamel	Amarol 60/40	4	76	Turns brown	51-8-1
	TNT	4	76	Loses some adhesion, browns	
GR-1 (butyl)	JPN	28	50	Deteriorates	53-M2-4
	MRP	28	50	Softens	53-M2-4
	P-2	28	50	Softens	53-M2-4
	T-5	28	50	Softens	53-M2-4

TABLE 64 (Continued)

Polymeric Material	Explosive	Storage, weeks	Temperature, °C	Appearance of Polymer	Pictorial Report No.
GR-M (Neoprene)	JPN	28	50	No report	53-M2-4
	MRP	28	50	Becomes flexible and softens	53-M2-4
	T-2	28	50	Becomes flexible and softens	53-M2-4
	T-8	28	50	Becomes flexible and softens	53-M2-4
GR-S (Butadiene/Styrene)	JPN	28	50	Deteriorates	53-M2-4
	MRP	28	50	Softens a little	53-M2-4
	T-2	28	50	Softens a little	53-M2-4
	T-8	28	50	Slight softening	53-M2-4
Monocork No. 100 Synthetic rubber	JPN	28	50	Softens	53-M2-4
	MRP	28	50	Becomes tacky	53-M2-4
	T-2	28	50	Softens	53-M2-4
	T-8	28	50	Softens and becomes tacky	53-M2-4
Monocork No. 500 Neoprene base	JPN	28	50	Loses some flexibility	53-M2-4
	MRP	28	50	Loses some flexibility	53-M2-4
	T-2	28	50	Loses some flexibility	53-M2-4
	T-8	28	50	Loses some flexibility	53-M2-4
Plastiktrim (Reclaimed rubber)	OGK	10	50	Softens and becomes tacky	52-M2-43
	T-2	10	50	Softens and becomes tacky	52-M2-43
	T-6	10	50	Softens and becomes tacky	52-M2-43
	T-8	10	50	Softens and becomes tacky	52-M2-43
	T-9	10	50	Softens and becomes tacky	52-M2-43
		10	50	Softens	52-M2-43

TABLE 64 (Continued)

Polymeric Material	Explosive	Storage, weeks	Temperature, °C	Appearance of Polymer	Picatinny Report No.
Pliobond No. 30 Butadiene/Acrylonitrile	Incendiary Compd K29	32	76	Blisters a little	56-M2-20
	Incendiary Compd Mix-1M-68	24	76	Turns darker	56-M2-20
	Incendiary Compd Mix-1M-136	32	76	Becomes tough, loses adhesion, dries out	56-M2-20
	Incendiary Compd Mix-1M-142	32	76	Dries out, poor adhesion	56-M2-20
	MOX-24	32	76	Turns black	56-M2-20
	RDX	32	76	Becomes rubbery and tough, no adhesion	56-M2-20
	Tetryl	32	76	Turns black and becomes brittle	56-M2-20
	Tracer Compd R-45	32	76	Dries out, poor adhesion	56-M2-20
	Pyrotech.	7	71	No change	52-M2-155
	SE11452-25				
SFR 172-2	M-1	48	76	No change	57-TM2-33
	M-9	48	76	Swells, becomes tacky and soft	57-TM2-33
	M-17	48	76	Swells, M-17 adheres	57-TM2-33
SFR-172-3	M-1	48	76	Becomes tacky and swells	57-TM2-33
	M-9	48	76	Becomes tacky and swells	57-TM2-33
	M-17	48	76	Deteriorates	57-TM2-33

TABLE 64 (Continued)

Polymeric Material	Explosive	Storage, weeks	Temperature, °C	Appearance of Polymer	Picatinny Report No.
Scotchweld No. 585 uncured	M-1	24	76	Becomes brittle	56-M2-38
Sulfur No. 1 Butyl rubber	Composition B Tetryl	9 9	76 76	No change No change	52-M2-85 52-M2-85
Sulfur No. 2 Butyl rubber	Composition B Tetryl	9 9	76 76	No change No change	52-M2-85 52-M2-85
Presstite No. 106 Polysulfide rubber	M-2 M-7 M-9	8 8 8	50 50 50	No change Fades a little No change	52-M2-84 52-M2-171 52-M2-173
Pro Seal EP-601	Composition B	40	71	Loses elasticity, surface roughens	56-M2-30
Thiokol L-P2	Composition A-3 M-1 M-8 M-9	12 12 12 12	76 76 50 50	No change No change Becomes brittle Becomes brittle	55-M2-57 55-M2-57 55-M2-57 55-M2-57
Thiokol 1605AH	JPN MRP T-2 T-8	26 26 26 26	50 50 50 50	No change No change No change No change	53-M2-4 53-M2-4 53-M2-4 53-M2-4

TABLE 64 (Continued)

Polymeric Material	Explosive	Storage, weeks	Temperature, °C	Appearance of Polymer	Picatinny Report No.
Thiokol 1620AH	JPN	26	50	No change	53-M2-4
	MRP	26	50	No change	53-M2-4
	T-2	26	50	No change	53-M2-4
	T-8	26	50	No change	53-M2-4
Thiokol 3000FA	JPN	26	50	No change	53-M2-4
	MRP	26	50	Becomes more flexible	53-M2-4
	T-2	26	50	Becomes more flexible	53-M2-4
	T-8	26	50	Becomes more flexible	53-M2-4
Thiokol 3000 PR-I	JPN	26	50	Deteriorates	53-M2-4
	MRP	26	50	Softens	53-M2-4
	T-2	26	50	Softens	53-M2-4
	T-8	26	50	Softens	53-M2-4
Thiokol 3000ST	JPN	26	50	Softens	53-M2-4
	MRP	26	50	Softens	53-M2-4
	T-2	26	50	Softens	53-M2-4
	T-8	26	50	Deteriorates	53-M2-4
Thiokol 3600 ST	JPN	26	50	Becomes tacky	53-M2-4
	MRP	26	50	Softens	53-M2-4
	T-2	26	50	Softens	53-M2-4
	T-8	26	50	Softens	53-M2-4

TABLE 64 (Continued)

Polymeric Material	Explosive	Storage, weeks	Temperature, °C	Appearance of Polymer	Picatinny Report No.
Silastic No. 150 Silicone rubber	JPN	26	50	No change	53-M2-4
	MRP	26	50	No change	53-M2-4
	T-2	26	50	Slightly yellows	53-M2-4
	T-8	26	50	No change	53-M2-4
Silastic No. 80-24-480	M-1	48	76	Becomes spotted, M1 adheres	57-TM2-33
Silicone rubber	M-9	48	76	Swells slightly	57-TM2-33
	M-17	48	76	Yellows--some M-17 adheres	57-TM2-33

TABLE 65

100°C Heat Test Results for Rubbers

Material and Weight in gms	Explosive and Weight in gms	Loss in Weight				Explosion in 100 Hrs	Picetiny Report No.
		1st 48 Hours gms	%	2nd 48 Hours gms	%		
Armstrong J-1140D	Dynamite						
	0.6	0.0487	4.05	0.0216	1.80	None	52-M2-110
	0.6	0.0175	2.85	0.0007	0.11		
Dex-o-Tex	Lead Azide						
	0.6	0.0026	0.21	0.0030	0.25	None	57-M2-1
	0.6	0.0007	0.11	0.0008	0.13		
E.C. No. 373	Lead Azide						
	0.6	0.0100	0.83	0.0003	0.03	None	53-H1-1347
	0.6	0.0045	0.75	0.0005	0.08		
E. C. No. 801	Composition A-3						
	0.6	0.0235	1.95	0.0025	0.21	None	53-M2-76
	0.6	0.0243	4.05	0.0019	0.31		
Cyclonol 75/25	0.6	0.0000	0.00	0.0000	0.00		
	0.6	0.0305	2.54	0.0026	0.21	None	53-M2-76
	0.6	0.0243	4.05	0.0019	0.31		
	0.6	0.0007	0.11	0.0000	0.00		

TABLE 65 (Continued)

Material and Weight in gms	Explosive and Weight in gms	Less in Weight				Explosion in 100 Hrs	Picotiny Report No.
		1st 48 Hours gms	%	2nd 48 Hours gms	%		
E.C. No. 801							
	RDX-Hystine						
0.6	0.6	0.0287	2.39	0.0025	0.21	None	53-M2-76
0.6	-	0.0243	4.05	0.0019	0.31		
-	0.6	0.0001	0.02	0.0000	0.00		
E.C. No. 847							
	Composition A-3						
0.6	0.6	0.2189	0.18	0.0000	0.00	None	53-M2-76
0.6	-	0.2076	0.35	0.0000	0.00		
-	0.6	0.0000	0.00	0.0000	0.00		
Cyclotol 75/25							
0.6	0.6	0.2132	0.17	0.0000	0.00	None	53-M2-76
0.6	-	0.2076	0.35	0.0000	0.00		
-	0.6	0.0007	0.11	0.0000	0.00		
RDX-Hystine							
0.6	0.6	0.0317	2.64	0.0034	0.45	None	53-M2-76
0.6	-	0.2076	0.35	0.0000	0.00	None	
-	0.6	0.0001	0.01	0.0000	0.00	None	

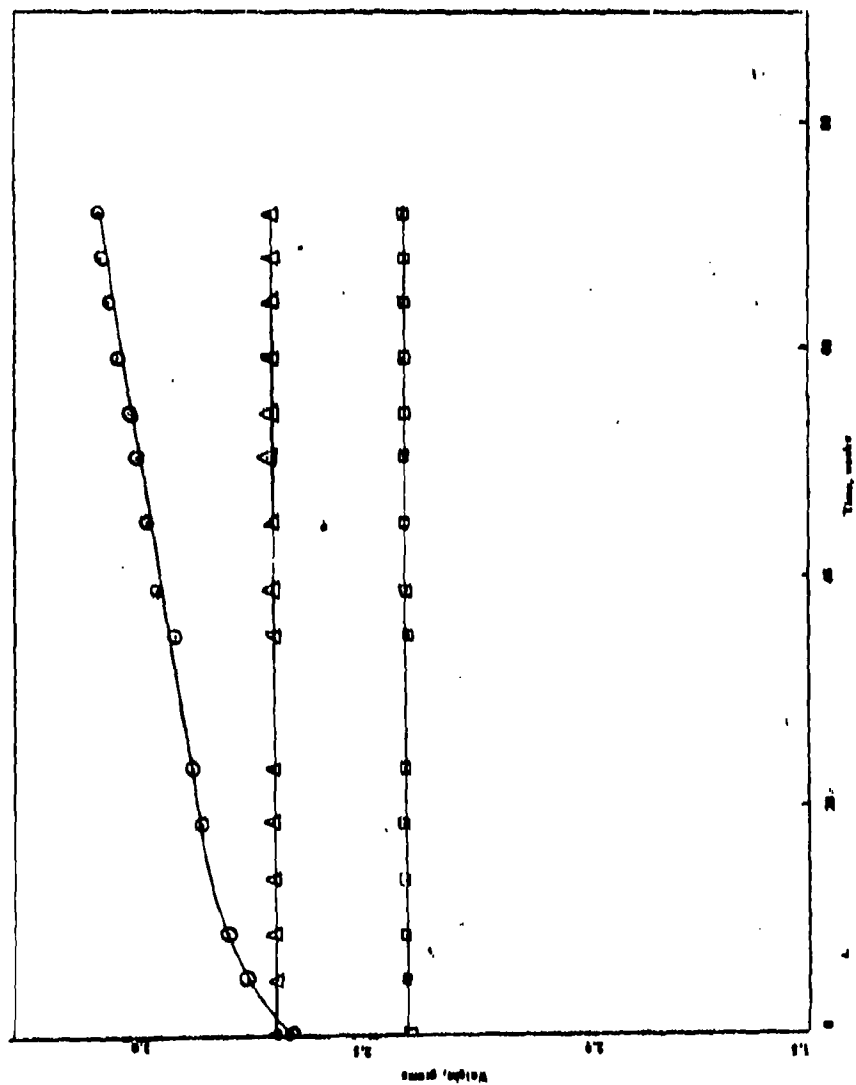


Fig 29 Weight Change of XP-76 in Grams after Storage

□ Room Temperature Control
 ○ In M7 Propellant at 50°C
 ▲ 50°C (122°F) Control

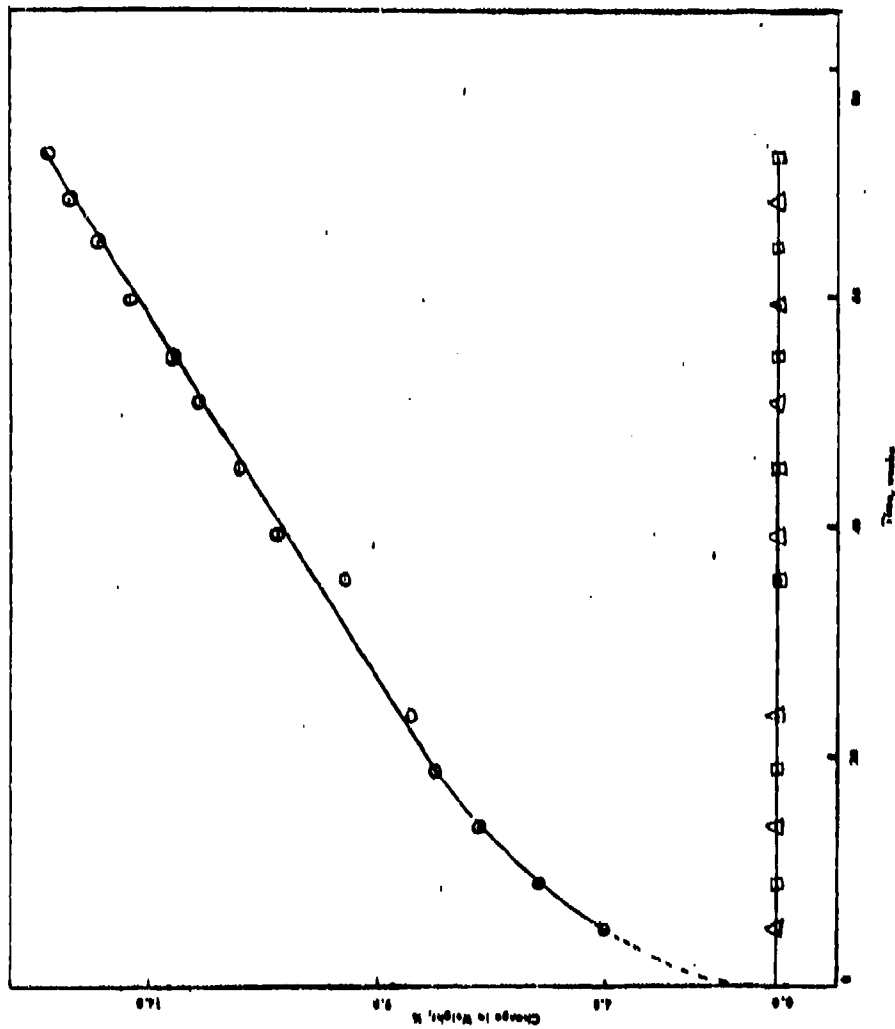


Fig 30 Percent Change in Weight of XP-76 after Storage

□ Room Temperature Control
 ○ 50°C (122°F) Control
 ▲ In M7 Propellant at 50°C

TABLE 66

Vacuum Stability of Explosives Stored Alone
(ml. gas evolved)

	Initial	6 Mo Storage	12 Mo Storage	18 Mo Storage	24 Mo Storage
Amatol 60/40	1.42	0.89	0.46	0.30	-
Black pwd A-5	0.35	0.41	1.09	11 ⁺	11 ⁺
Cyclonite	0.35	0.23	0.18	0.16	0.21
Double base					
propellant	11.68	12.22	10.32	10.18	9.84
Ednatol 55/45	0.84	0.66	0.78	0.72	1.08
Explosive D	0.33	0.14	0.26	0.26	0.26
Haleite	0.65	0.30	0.50	0.38	0.63
PEP-3	0.23	-	0.48	0.69	1.21
PETN	0.52	0.42	0.38	0.32	0.40
Pentolite 50/50	1.84	2.65	2.48	2.05	1.92
Picratol 52/48	0.46	0.26	0.27	0.17	0.18
RDX-Comp. A-3	0.60	0.11	0.23	0.15	0.19
RDX-Comp B	0.53	0.12	0.09	0.10	0.11
RDX-Comp. C-3	0.99	1.62	1.45	1.46	1.34
Single base					
propellant	0.17	0.13	0.17	0.14	0.30
T-9 (CP-492)	0.19	2.19	2.59	1.60	3.09
TNT	0.18	0.04	0.03	0.08	0.04
Tetryl	0.35	0.11	0.15	0.37	0.23
Tetrytol 75/25	4.77	3.29	3.60	3.28	3.63
Torpax	0.22	0.04	0.08	0.13	0.13
Tritonal 75/25	0.12	0.09	0.11	0.09	0.10

TABLE 67

Stability of Rubbers Stored Alone

Material	Room Temperature		90°C		76°C	
	Shore Hardness	Condition	Shore Hardness	Condition	Shore Hardness	Condition
VS2-111-1 Hycar OR-25	28D	Flexible	33D	Flexible	40D	Flexible
VS2-111-2 GR-M-10	28D	Flexible	33D	Flexible	35D	Flexible
VS2-116-1 GR-S	25D	Flexible	33D	Flexible	40D	Flexible
VS2-116-2 Natural	40D	Flexible	65D	Extremely Brittle	85D	Rigid
VS2-117-1 Natural	52D		58D	Extremely Brittle	80D	Rigid
VS2-117-2 Hycar OR-15	42D	Flexible	52D	Flexible	70D	Semi Stiff
VS2-118-1 Neoprene (FR)	28D	Flexible	32D	Flexible	70D	Rigid
VS2-118-2 Thiokol (ST)	50A ₁	Flexible	75A ₁	Slightly Stiff	21A ₁	Gummy Deteriorated
VS2-119-1 Butyl (GR-I)	65D	Flexible	65D	Flexible	65A ₁	Flexible

TABLE 63

Effect of Rubber Composition XP-54 (VS2-116-1) on Stability

Explosive or Propellant	Rubber Control	Expt or Prop		Mixture	Gas Evolved Before Storage	Increase			
		Control				6 mo	12 mo	18 mo	24 mo
Amarol 60/40	0.19	1.42		2.85	1.24	0.50	0.48	0.45	—
Black powder A-5	0.19	0.35		0.44	0.00	0.45	0.78	1.64	2.22
Cyclonite	0.19	0.35		0.50	0.00	0.17	0.21	0.13	0.26
Double base propellant	0.40	11.68		9.88	0.00	10.92	11.20	9.96	9.58
Ednatol 55/45	0.19	0.84		2.67	1.64	0.88	0.96	0.67	0.95
Explosive D	0.19	0.33		0.22	0.00	0.15	0.27	0.30	0.24
Haleite	0.19	0.65		0.89	0.05	0.28	0.42	0.30	0.49
PEP-3	0.19	0.23		0.53	0.11	—	1.57	1.36	2.52
PETN	0.54	0.52		0.88	0.00	0.28	0.28	0.30	0.50
Pentolite 50/50	0.19	1.84		1.82	0.00	8.37	3.37	4.36	2.95
Picratol 52-48	0.19	0.46		0.31	0.00	0.28	0.15	0.23	0.26
RDX-Comp. A-3	0.19	0.60		0.40	0.00	0.09	0.16	0.13	0.18
RDX-Comp B	0.19	0.53		0.43	0.00	0.15	0.12	—	0.16
RDX-Comp C-3	0.19	0.99		1.71	0.53	0.47	0.54	0.59	0.55
Single base propellant	0.16	0.17		0.24	0.00	0.12	0.13	0.26	0.23
T-9 (CP-492)	0.19	0.19		0.21	0.00	1.86	1.88	1.46	2.20
TNT	0.19	0.18		0.37	0.00	0.03	0.02	0.05	0.03
Tetryl	0.19	0.35		1.04	0.50	0.17	0.16	0.33	0.16
Tetrytol 75/25	0.19	4.77		5.61	0.65	5.53	5.65	7.52	9.77
Torpex	0.19	0.22		0.34	0.00	0.09	0.09	0.15	0.18
Tritonal 75/25	0.19	0.12		0.19	0.00	0.11	0.03	0.00	0.12

Composition of XP-54

GR-S	100.0	Capraz	0.75
Steari	1.0	Dibutyl P	12.0
ZnO	5.0	Thermax	30.0
Sulfur	2.0	Micronex W-6	30.0
Altax	0.75		

Cured at 162°C for 15 min.

TABLE 69
Effect of Rubber Composition XP-55 (VS2-116-2) on Stability

Explosive or Propellant	Rubber Control	Expl or Prop Control	Mixture	Gas Evolved Before Storage	Increase 6 mo	Increase 12 mo	Increase 18 mo	Increase 24 mo
Anatol 60/40	0.30	1.42	3.12	1.40	0.75	0.93	0.83	0.99
Black powder A-5	0.30	0.35	0.60	0.00	0.46	1.04	5.62	8.93
Cyclonite	0.30	0.35	0.70	0.05	0.17	0.26	0.21	0.21
Double base propellant	0.42	11.68	14.04	1.94	14.74	14.84	15.84	16.00
Ednaol' 55/45	0.30	0.84	2.34	1.20	1.09	1.12	0.84	1.13
Explosive D	0.30	0.33	0.37	0.00	0.17	0.31	0.32	0.26
Haleite	0.30	0.65	1.28	0.33	0.29	0.45	0.35	0.52
PEP-3	0.30	0.23	0.96	0.43	—	0.43	0.37	0.62
PEIN	0.68	0.52	0.94	0.00	3.28	0.36	0.44	0.44
Pentolite 50/50	0.30	1.84	2.19	0.05	3.05	3.38	2.77	2.88
Picratol 52-48	0.30	0.46	0.56	0.00	0.27	0.20	0.18	0.37
RDX-Comp. A-3	0.30	0.60	0.58	0.00	0.11	0.15	0.16	0.25
RDX-Comp. B	0.30	0.53	0.63	0.00	0.15	0.16	0.09	0.22
RDX-Comp. C-3	0.30	0.99	2.03	0.74	0.66	0.50	0.56	0.50
Single base propellant	0.20	0.17	0.30	0.00	0.08	0.20	0.26	0.27
T-9 (CP-492)	0.30	0.19	0.26	0.00	2.20	2.52	1.80	2.35
TNT	0.30	0.18	0.51	0.03	0.04	0.02	0.08	0.02
Tetryl	0.30	0.35	1.29	0.64	0.13	0.19	0.26	0.27
Tetryol 75/25	0.30	4.77	5.32	0.25	6.21	5.88	8.00	9.58
Torpex	0.30	0.22	0.59	0.07	0.08	0.08	0.17	0.19
Tritonal 75/25	0.30	0.12	0.41	0.00	0.09	0.15	0.05	0.15

Composition XP-55

Smoked sheet natural	100.0
Sebacic acid	1.0
Neozone A	1.5
Sulfur	3.0
Thionex	-0.3
Thiuram M	0.7
ZnO	5.0
Micronex W-6	60.0

Cured at 162°C for 10 minutes

TABLE 70

Effect of Rubber Composition XP-56 (VS2-117-1) on Stability

Explosive or Propellant	Rubber Control	Expl or Prop Control	Mixture	Gas Evolved Before Storage	Increase 5 mo	Increase 12 mo	Increase 18 mo	Increase 24 mo
Anacol 60/40	0.27	1.42	3.41	1.72	0.84	0.76	0.65	0.68
Black powder A-5	0.27	0.35	0.36	0.00	0.49	1.00	4.72	6.00
Cyclonite	0.27	0.35	0.57	0.00	0.15	0.21	0.18	0.28
Double base propellant	0.28	11.68	11.94	0.00	15.06	16.48	16.04	17.12
Ednacol 55/45	0.27	0.84	1.33	0.22	1.92	1.90	1.70	2.30
Explosive D	0.27	0.33	0.07	0.00	0.12	0.30	0.28	0.24
Haleite	0.27	0.63	0.62	0.00	0.28	0.50	0.33	0.54
PEP-3	0.27	0.23	0.63	0.13	—	0.85	1.22	1.39
PETN	0.70	0.52	0.90	0.00	0.60	0.46	0.34	0.32
Pentolite 50/50	0.27	1.84	1.57	0.00	3.83	3.15	2.87	2.47
Picratol 52/48	0.27	0.46	0.63	0.00	0.30	0.30	0.23	0.29
RDX-Comp A-3	0.27	0.60	0.40	0.00	0.14	0.27	0.14	0.14
RDX-Comp B	0.27	0.53	0.59	0.00	0.19	0.15	—	0.26
RDX-Comp C-3	0.27	0.99	1.91	0.65	1.04	0.83	0.71	0.60
Single base propellant	0.16	0.17	0.20	0.00	0.09	0.16	0.26	0.27
T-9 (CP-492)	0.27	0.19	0.20	0.00	1.75	1.98	1.69	2.25
TNT	0.27	0.18	0.33	0.00	0.06	0.04	0.04	0.06
Tetryl	0.27	0.35	0.70	0.08	0.19	0.19	0.24	0.23
Tetrytol 75/25	0.27	4.77	6.03	0.99	8.62	8.06	8.37	9.50
Torpex	0.27	0.22	0.54	0.05	0.11	0.14	0.21	0.15
Trional 75/25	0.27	0.12	0.29	0.00	0.65	0.07	0.06	0.13

Composition of XP-56

Smoked sheet (natural)	100.0	ZnO	5.0
Stearic acid	1.0	Whiting	60.0
Neozone A	1.5	Buna clay	25.0
Sulfur	2.5	Silene EF	60.0
Alex	0.75	Pine tar	5.0
Caprax	0.75	Dispersing oil	5.0

Cured at 170°C for 10 minutes

TABLE 71

Effect of Rubber Composition XP-62 (VS2-111-1) on Stability

Explosive or Propellant	Rubber Control	Expl or Prop Control	Mixture	Gas Evolved Before Storage	Increase 6 mo	Increase 12 mo	Increase 18 mo	Increase 24 mo
Amarol 60/40	0.17	1.42	3.24	1.65	0.46	0.48	0.35	0.83
Black powder A-5	0.17	0.35	0.35	0.00	0.42	0.67	1.09	1.85
Cyclonite	0.17	0.35	0.33	0.00	0.17	0.19	0.21	0.24
Double base propellant	0.32	11.68	10.04	0.00	13.48	11.38	12.12	12.96
Ednarol 55/45	0.17	0.84	4.37	3.33	1.20	0.85	0.79	1.35
Explosive D	0.17	0.33	0.26	0.00	0.14	0.26	0.21	0.22
Hallette	0.17	0.65	0.97	0.15	0.31	0.46	0.31	0.46
PEP-3	0.17	0.23	0.45	0.05	—	0.52	0.76	1.09
PETN	0.34	0.52	0.92	0.06	0.32	0.52	0.40	0.40
Penosolite 50/50	0.17	1.84	1.81	0.00	3.30	2.69	2.66	2.23
Picrarol 52/48	0.17	0.46	0.40	0.00	0.30	0.26	0.15	0.20
RDX-Comp A-3	0.17	0.60	0.48	0.00	0.12	0.16	0.14	0.20
RDX-Comp B	0.17	0.53	0.52	0.00	0.14	0.14	0.12	0.12
RDX-Comp C-3	0.17	0.99	1.68	0.52	0.62	0.69	0.50	0.58
Single base propellant	0.13	0.17	0.22	0.00	0.10	0.11	0.12	0.28
T-9 (CP-492)	0.17	0.19	0.17	0.00	1.64	1.76	1.36	1.77
TNT	0.17	0.18	0.44	0.09	0.08	0.03	0.63	0.14
Tetryl	0.17	0.35	1.65	1.13	0.14	0.13	0.24	0.25
Tetrytol 75/25	0.17	4.77	9.56	4.62	7.86	8.56	8.05	9.23
Torpex	0.17	0.22	0.51	0.12	0.11	0.13	0.12	0.21
Tritonal 75/25	0.17	0.12	0.39	0.10	0.09	0.08	0.07	0.18

Composition of XP-62

Hycar OR-25	100.0
ZnO	5.0
Sebacic acid	1.0
Sulfur	1.5
Altar	1.25
Dibutyl Phthalate	2.5
SRF black (Fumex beads)	70.0
Cured at 170°C for 15 minutes	
Durometer A-56	

TABLE 72
Effect of Rubber Composition XP-63 (VS2-117-2) on Stability

Explosive or Propellant	Rubber Control	Expl or Prop Control	Mixture	Gas Evolved Before Storage	Increase 6 mo	Increase 12 mo	Increase 18 mo	Increase 24 mo
Amatol 60/40	0.31	1.42	4.67	2.94	0.67	0.50	0.44	0.78
Black powder A-5	0.31	0.35	0.48	0.00	0.43	1.04	2.66	3.41
Cyclonite	0.31	0.35	0.51	0.00	0.19	0.20	0.17	0.23
Double base propellant	0.40	11.68	10.30	0.00	13.14	12.40	11.90	11.66
Ednatol 55/45	0.31	0.84	3.22	2.07	1.06	0.80	0.78	1.20
Explosive D	0.31	0.33	0.33	0.00	0.16	0.33	0.38	0.24
Halatte	0.31	0.65	1.37	0.41	0.27	0.46	0.41	0.51
PEP-3	0.31	0.23	0.88	0.34	—	0.86	0.90	1.27
PETN	0.52	0.52	1.20	0.08	0.34	0.54	0.40	0.58
Pentolite 50/50	0.31	1.84	1.94	0.00	3.52	3.19	3.74	2.88
Picratol 52/48	0.31	0.46	0.42	0.00	0.28	0.27	0.12	0.18
RDX-Comp A-3	0.31	0.60	0.47	0.00	0.11	0.16	0.17	0.14
RDX-Comp B	0.31	0.53	0.60	0.00	0.13	0.10	0.12	0.16
RDX-Comp C-3	0.31	0.99	1.69	0.39	0.97	0.62	0.61	0.61
Single base propellant	0.17	0.17	0.24	0.00	0.10	0.15	0.24	—
T-9 (CP-492)	0.31	0.19	0.24	0.00	0.91	2.28	2.38	2.86
TNT	0.31	0.18	0.52	0.03	0.07	0.01	0.04	0.06
Tetryl	0.31	0.35	1.37	0.71	0.17	0.17	0.23	0.20
Tetryl 75/25	0.31	4.77	7.48	2.40	7.88	7.19	7.41	8.27
Topex	0.31	0.22	0.68	0.15	0.28	0.12	0.17	0.31
Tritonal 75/25	0.31	0.12	0.36	0.00	0.11	0.10	0.07	0.14

Composition of XP-63

Hycar OR-15	100.0
ZnO	5.0
Sebacic acid	1.0
Sulfur	1.5
Altax	1.5
Cumar-Indene resin (soft)	10.0
Dibutyl phthalate	15.0
SRF (black)	60.0
MPC (black Apheron 6)	40.0
Cured at 162°C for 20 minutes	

TABLE 73

Effect of Rubber Composition XP-64 (VS2-111-2) on Stability

Explosive or Propellant	Rubber Control	Expl or Prop Control	Mixture	Gas Evolved Before Storage	Increase 6 mo	Increase 12 mo	Increase 18 mo	Increase 24 mo
Amatol 60/40	0.27	1.42	6.27	4.58	0.77	0.80	0.77	1.03
Black powder A-5	0.27	0.35	0.51	0.00	0.52	1.29	3.81	4.84
Cyclonite	0.27	0.35	0.27	0.00	0.19	0.22	0.19	0.24
Double base propellant	0.30	11.68	10.72	0.00	16.10	14.42	14.44	15.18
Ednatol 55/45	0.27	0.84	2.21	1.07	0.98	0.75	0.86	0.97
Explosive D	0.27	0.33	0.16	0.00	0.15	0.28	0.23	0.24
Haleite	0.27	0.65	0.66	0.00	0.33	0.41	0.33	0.45
PEP-3	0.27	0.23	0.78	0.38	—	0.69	0.85	1.14
PEIN	0.70	0.52	1.00	0.00	0.28	0.44	0.38	0.46
Picratolite 50/50	0.27	1.84	1.79	0.00	11	11	11	11
Picratol 52/48	0.27	0.46	0.40	0.00	0.31	0.29	0.23	0.23
RDX-Comp A-3	0.27	0.60	0.31	0.00	0.09	0.19	0.20	0.23
RDX-Comp B	0.27	0.53	0.56	0.00	0.15	0.18	0.13	0.23
RDX-Comp C-3	0.27	0.99	2.26	1.00	1.11	1.36	0.98	0.72
Single base propellant	0.14	0.17	0.19	0.00	0.16	0.14	0.09	0.24
T-9 (CP-492)	0.27	0.19	0.25	0.00	1.83	1.96	1.72	2.26
TNT	0.27	0.18	0.36	0.00	0.08	0.03	0.05	0.03
Tetryl	0.27	0.35	0.73	0.11	0.19	0.16	0.35	0.20
Tetrytol 75/25	0.27	4.77	6.03	0.99	9.17	7.26	8.28	9.54
Torpex	0.27	0.22	0.55	0.06	0.15	0.12	0.18	0.2
Tritonal 75/25	0.27	0.12	0.34	0.00	0.16	0.09	0.10	0.13

Composition of XP-64

GRM-10	100.0
Neozone A	2.0
Extra light calcined MgO	4.0
ZnO	5.0
Stearic acid	1.0
Curco light process oil	10.0
Petrolatum	1.0
Furner beads (SRF black)	50.0

Cured at 157-160°C for 10 minutes

TABLE 74
Effect of Rubber Composition XP-65 (VS2-118-1) on Stability

Explosive or Propellant	Rubber Control	Expl or Prop Control	Mixture	Gas Evolved Before Storage	Increase 6 mo	Increase 12 mo	Increase 18 mo	Increase 24 mo
Amatol 60/40	0.32	1.42	5.79	4.05	1.60	1.19	0.77	0.54
Black powder A-5	0.32	0.35	0.47	0.00	0.52	1.29	1.87	3.09
Cyclonite	0.32	0.35	0.57	0.00	0.18	0.25	0.23	0.28
Double base propellant	0.64	11.68	12.18	0.00	11.78	8.34	6.06	4.42
Ednatol 55/45	0.32	0.84	3.23	2.07	0.74	0.88	0.70	1.04
Explosive D	0.32	0.33	0.42	0.00	0.15	0.26	0.21	0.26
Halette	0.32	0.65	1.48	0.51	0.28	0.51	0.35	0.63
PEP-3	0.32	0.23	1.54	0.99	—	0.84	1.14	1.25
PETN	0.68	0.52	2.08	0.88	0.60	0.70	0.54	0.82
Pentolite 50/50	0.32	1.84	2.20	0.04	11 +	3.35	3.38	2.75
Picratol 52/48	0.32	0.46	0.54	0.00	0.26	0.24	0.12	0.21
RDX-Comp A-3	0.32	0.60	0.52	0.00	0.10	0.17	0.30	0.23
RDX-Comp B	0.32	0.53	0.49	0.00	0.10	0.11	0.11	0.18
RDX-Comp C-3	0.32	0.99	2.30	0.99	1.19	0.97	0.88	0.62
Single base propellant								
T-9 (CP-492)	0.31	0.17	0.22	0.00	0.15	0.19	0.26	0.27
TNT	0.32	0.19	0.24	0.00	1.04	4.31	11+	11+
Tetryl	0.32	0.18	0.63	0.13	0.05	0.02	0.03	0.07
Tetrytol 75/25	0.32	0.35	1.36	0.69	1.36	0.16	0.25	0.19
Torpex	0.32	4.77	5.71	0.62	8.66	8.10	11+	10.57
Tritonal 75/25	0.32	0.22	0.64	0.10	0.36	0.28	0.31	0.23
	0.32	0.12	0.55	0.11	0.14	0.10	0.14	0.15

Composition of XP-65

Neoprene FR	100.0
Neozone A	2.0
Phylblack Q	35.0
P-33	35.0
Dibutyl phthalate	10.0
Sebacic Acid	1.5
Sulfur	1.0
Lead oxide (PbO)	10.0

Cured at 162°C for 10 minutes

TABLE 75
Effect of Rubber Composition XP-66 (VS2-119-1) on Stability

Explosive or Propellant	Rubber Control	Expl or Prop Control	Mixture	Gas Evolved Before Storage	Increase Δ mo	Increase 12 mo	Increase 18 mo	Increase 24 mo
Anisol 60/40	0.44	1.42	3.18	1.32	0.56	0.59	0.69	0.78
Black powder A-5	0.44	0.35	0.45	0.00	0.64	2.66	11+	11+
Cyclonite	0.44	0.35	0.37	0.00	0.18	0.17	0.21	0.23
Double base propellant	0.86	11.68	11.92	0.00	12.44	11.58	11.42	12.34
Edastol 55/45	0.44	0.84	1.14	0.80	0.60	0.69	0.65	0.79
Explosive D	0.44	2.33	0.42	0.00	0.16	0.25	0.29	0.27
Haleite	0.44	0.65	0.62	0.00	0.27	0.46	0.29	0.52
PEP-3	0.44	0.23	0.74	0.07	-	-	-	-
PETN	0.98	0.52	0.98	0.00	0.46	0.86	0.98	1.02
Pentolene 50/50	0.44	1.84	11+	>8.72	11+	11+	11+	11+
Picraol 52/48	0.44	0.46	0.44	0.00	0.34	0.23	0.21	0.39
RDX-Comp A-4	0.44	0.60	0.57	0.00	0.25	0.17	0.19	0.21
RDX-Comp B	0.44	0.53	0.60	0.30	0.14	0.14	0.11	0.21
RDX-Comp C-3	0.44	0.99	1.77	2.34	1.39	1.31	1.22	1.11
Single base propellant	0.55	0.17	0.26	0.00	0.14	0.13	0.34	0.38
T-9 (CP-492)	0.44	0.19	1.33	0.70	1.80	1.92	1.71	2.38
TNT	0.44	0.18	0.48	0.00	0.09	0.00	0.05	0.12
Tetryl	0.44	2.35	0.60	0.00	0.12	0.13	0.19	0.27
Tetrytol 75/25	0.44	4.77	4.64	0.00	5.23	3.74	5.21	8.00
Torpex	0.44	0.22	0.45	0.00	0.10	0.09	0.21	0.15
Tritonal 75/25	0.44	0.12	0.45	0.00	0.08	0.06	0.20	0.10

Composition of XP-66

GR-I Buryl	100.0
MPC black	50.0
ZnO	5.0
Sebacic acid	3.0
Sulfur	2.0
Capraz	0.5
Thiram M	1.0
Vistar No. 1	6.0

Cured at 167°C for 15 minutes

TABLE 76
Effect of Rubber Composition XP-67 (VS2-118-2) on Stability

Explosive or Propellant	Rubber Control	Expl or Prop Control	Mixture	Gas Evolved Before Storage	Increase 6 mo	Increase 12 mo	Increase 18 mo	Increase 24 mo
Anatrol 60/40	0.12	1.42	11+	>9.46	1.92	3.33	3.73	2.81
Black powder A-5	0.12	0.35	0.31	0.00	0.50	0.89	2.30	2.82
Cyclonite	0.12	0.35	0.33	0.00	0.18	0.19	0.19	0.21
Double base propellant	0.34	11.68	11.12	0.00	12.12	-	-	-
Ednatol 55/45	0.12	0.84	3.24	2.28	11+	7.21	1.19	-
Explosive D	0.12	0.33	5.19	0.00	0.13	0.27	0.21	0.28
Halite	0.12	0.65	1.05	0.28	0.28	11+	-	-
PEP-3	0.12	0.23	0.75	0.40	-	-	-	-
PETN	0.38	0.52	0.98	0.08	Decomposed	-	-	-
Pentolite 50/50	0.12	1.84	11+	>9.0+	-	-	-	-
Picratol 52-48	0.12	0.46	0.47	0.00	0.68	0.84	0.51	-
RDX-Comp A-3	0.12	0.60	0.40	0.00	0.14	0.16	0.15	0.15
RDX-Comp B	0.12	0.53	0.56	0.00	0.17	0.28	0.27	0.26
RDX-Comp C-3	0.12	0.99	2.10	0.99	1.50	1.06	0.85	1.84
Single base propellant	0.24	0.17	0.25	0.00	0.09	0.17	0.26	0.24
T-9 (CP-492)	0.12	0.19	0.18	0.00	2.29	5.01	5.95	11+
TNT	0.12	0.18	0.46	0.16	0.51	0.13	0.23	0.31
Tetryl	0.12	0.35	0.57	0.10	0.19	0.18	0.27	0.38
Tetrytol 75/25	0.12	4.77	8.86	3.97	9.72	9.03	11+	11.64
Toxex	0.12	0.22	0.51	0.17	0.32	0.25	0.22	0.34
Tritonal 75/25	0.12	0.12	0.31	0.07	0.16	0.13	0.08	0.45

Composition of XP-67

Thiokol ST	100.0
Sebacic acid	1.0
GMF (p quinone dioxime)	1.5
ZnO	0.5
SRF (black)	60

Cured at 162°C for 10 minutes

TABLE 77
Effect of Rubber Silastic No. 180 (VS2-120-1) on Stability

Explosive or Propellant	Rubber Control	Expl or Prop Control	Mixture	Gas Evolved Before Storage	Increase 6 mo	Increase 12 mo	Increase 18 mo	Increase 24 mo
Amarol 60/40	0.33	1.42	1.08	0.00	0.52	0.39	0.42	0.45
Black powder A-5	0.33	0.35	0.35	0.00	0.55	0.94	11+	11+
Cyclonite	0.33	0.35	0.28	0.00	0.16	0.25	0.20	0.20
Double base propellant	0.50	11.68	10.66	0.00	11.94	9.62	8.18	9.38
Edsitol 55/45	0.33	0.84	0.91	0.00	0.62	0.69	0.73	0.86
Explosive D	0.33	0.33	0.39	0.00	0.16	0.28	0.26	0.25
Haleite	0.33	0.65	0.74	0.00	0.31	0.46	0.33	0.59
PEP-3	0.33	0.23	0.17	0.00	-	0.27	0.03	0.52
PEIN	0.56	0.52	0.60	0.00	0.56	0.58	0.44	0.48
Pentolite 50/50	0.33	1.84	1.69	0.00	2.78	2.77	2.23	2.23
Picraol 52/48	0.33	0.46	0.45	0.00	0.35	0.33	0.25	0.29
RDX-Comp A-3	0.33	0.60	0.46	0.00	0.16	1.00	0.14	0.22
RDX-Comp B	0.33	0.53	0.51	0.00	0.12	0.13	0.17	0.14
RDX-Comp C-3	0.33	0.99	1.02	0.00	1.03	1.17	1.40	0.41
Single base propellant	0.20	0.17	0.16	0.00	0.14	0.16	0.23	0.24
T-9 (CP-492)	0.33	0.19	0.35	0.00	1.71	1.50	0.97	1.35
TNT	0.33	0.18	0.32	0.00	0.05	0.04	0.07	0.04
Tetryl	0.33	0.35	0.25	0.00	0.08	0.14	0.17	0.27
Tetrytol 75/25	0.33	4.77	3.04	0.00	2.44	1.82	2.02	3.36
Torpex	0.33	0.22	0.18	0.00	0.11	0.08	0.11	0.12
Tritonal 75/25	0.33	0.12	0.18	0.00	-	-	-	-

Composition of Silastic No. 180

Not available. Proprietary with manufacturer, Dow Corning Company.

TABLE 78
Effects of Explosives on Rubbers

Explosive or Propellant	Nylon 66 25 (XP-42)			GR-10 (XP-44)			CR-5 (XP-54)			Neoprene (XP-55)			Neoprene (XP-56)		
	Shore Hardness	Condition	Shore Hardness	Shore Hardness	Condition	Shore Hardness	Shore Hardness	Condition	Shore Hardness	Condition	Shore Hardness	Condition	Shore Hardness	Condition	Shore Hardness
Anmol 60/40	78D	Black, brittle		51D	Black, flexible					Black, brittle			82D	Black, brittle, very hard	
Black powder A-5	88D	Black, brittle			Black, flexible ^a	77D		Black, black	76D	Black, brittle			91D	Black, brittle	
Cyclonite	88A	Black, flexible		88A	Black, flexible			Black, brittle	80D	Black, brittle			77D	Black, brittle	
Double-base propellant	77A ₁	Black, flexible ^a		47A ₁	Black, flexible	47D		90 ^b		Black, brittle			53D	Black, brittle	
Edmund 55/45		Black, brittle		47D	Black, flexible ^a	74D		Black, brittle		Black, brittle			75D	Black, brittle	
Explosive D	91A ₁ (43D)	Black, flexible		89A ₁ (36D)	Black, flexible	74D		Black, flexible	78D	Black, brittle			73D	Black, brittle	
Melane	53D	Black, slightly flexible		84D	Black, flexible	62D		Black, brittle	81D	Black, brittle			79D	Black, brittle	
PEP-3	88D	Black, brittle			Black, brittle			Black, brittle		Black, brittle				Black, brittle	
PETN		Black, brittle		63D	Black, slightly flexible	80D		Black, brittle	77D	Black, brittle			84D	Black, brittle	
Pentolene 50/50		Black, brittle			Black, brittle			Black, brittle		Black, brittle				Black, brittle	
Picramol 52/48	75D	Black, brittle		93A ₁ (43D)	Black, flexible			Black, brittle		Black, brittle			90D	Black, brittle	
RDX-Camp A-3	58D	Black, brittle		49D	Black, flexible, rough			Black, brittle, very hard		Black, brittle, very hard				Black, brittle, very hard	
RDX-Camp B		Black, brittle, very hard		44D	Black, brittle, resistant	72D		Black, brittle		Black, brittle				Black, brittle, very hard	
RDX-Camp C-3		Black, brittle, very hard			Black, brittle			Black, brittle		Black, brittle				Black, brittle	
Single-base propellant	83A ₁	Black, flexible		71A ₁	Black, flexible			Black, flexible		Black, flexible ^a				Black, flexible	
T-9 (CP-992)	94A ₁ (66D)	Black, flexible ^a		24A ₁ (35D)	Black, flexible			Black, brittle		Black, brittle			93A ₁ (60D)	Black, flexible	
TNT	93A ₁	Black, very brittle ^a		94A ₁	Black, flexible	79D		Black, brittle		Black, brittle				Black, brittle	
Tonyl		Black, brittle		92A ₁	Black, flexible	53D		Black, brittle	74D	Black, brittle			78D	Black, brittle	
Tonyl 75/25		Black, brittle			Black, brittle			Black, brittle	78D	Black, brittle			68D	Black, brittle	
Tropan		Black, brittle			Black, brittle, but very stiff			Black, brittle		Black, brittle				Black, brittle	
Trinitol 75/25		Black, brittle		50D	Black, flexible ^a			Black, brittle	87D	Black, brittle				Black, brittle	

^aGrade 180¹ before bombing.

^bGrade 90¹ before bombing.

TABLE 78 (Continued)

Explosive or Propellant	Moqum GR-15 (TP-43) Shore Hardness	Moqum FR (TP-43) Condition	Shore Hardness	Thermal ST (TP-43) Condition	Shore Hardness	Shore GR-1 (TP-46) Condition	Shore Hardness	Shore GR-158 Condition
Aminal 66 40	85D	Black, brittle	87D	Dark brown with black spots, brittle	-	Black, flexible	85A ₂	White, brittle
Black powder A-1	77D	Black, brittle	86D	Black, brittle	10A ₂	Black, flexible	86A ₂	White, flexible
Cyclotene	68D	Black, slightly flexible	88D	Black, brittle	Too low to read on A ₂ scale	Black, flexible	87A ₂	White, flexible
Double-base propellant	85A ₂	90° B	79A ₂	Brittle	-	Black, flexible	85A ₂	White, flexible
Edmund 35 43	-	Black, brittle	87D	Black, brittle	-	Black, brittle	85A ₂	Flexible ^a
Explosive D	67D	Flexible ^a	87D	Black, brittle	-	Black, very soft	86D	Flexible ^a
Malrite	77D	Black, brittle	87D	Black, brittle	-	-	86A ₂	White, flexible
PEP-3	-	Black, brittle	63D	Black, brittle	-	-	82A ₂	White, flexible
PETN	86D	Black, brittle	57D	Black, brittle	-	Black, brittle	87A ₂	White, flexible
Powder 90/70	88D	Black, brittle	-	Black, brittle	81D	Black, brittle	78A ₂	White, flexible
Picramid 32 48	-	Black, brittle	87D	Black, brittle	-	Brittle, partly decomposed	84A ₂	White, flexible
RDX-Camp A-3	-	Black, black, hard	86D	Black, brittle	-	Black, very soft, too brittle	80A ₂	White, flexible
RDX-Camp B	-	Black, brittle, hard	87D	Black, brittle	72D	Black, flexible	81A ₂	White, flexible
RDX-Camp C-3	-	Black, brittle	-	Black, brittle	-	Black, flexible, insoluble	78A ₂	White, flexible
Single-base propellant	91A ₂ (20D)	Black, flexible	85 ₂ (20D)	Black, flexible	64A ₂ (15D)	Black, flexible	85A ₂ (21D)	White, flexible
T-9 (CP-492)	64D	Black, brittle	70D	Black, brittle	22A ₂	Black, very poor adhesion	82A ₂	White, flexible
TNT	-	Black, brittle	88D	Black, brittle	-	Black, brittle	79A ₂	White, flexible
Tonyl	73D	Black, brittle	88D	Black, brittle	28A ₂	Black, flexible	83A ₂	White, flexible

^a Bonds 180° before breaking.
^b Bonds 90° before breaking.

TABLE 79

Percent Change in Weight of Rubbers after Storage

Polymeric Material	Explosive	Storage, weeks	Temperature °C	Change of Wt. of Control, %	Change of Wt. of Contact, %	Picatinny Report No.
Briggs No. 107 (Butadiene/ Acrylonitrile)	M-F	48	76	+6.536	+10.638	57-TM2-33
	M-9	48	76	+6.536	+35.445	57-TM2-33
	M-17	48	76	+6.536	+32.629	57-TM2-33
Buna-N-o-rings Butadiene/ Acrylonitrile	T-16	28	50	+0.24	+55.80	56-M2-41
	Comp B	38	76	+1.563	+11.66	55-M2-20
Butyl rubber-5N259	Tetryl	38	76	+1.563	+5.30	55-M2-20
	TNT	38	76	+1.563	+10.29	55-M2-20
	Comp B	9	76	-0.69	+10.2	52-M2-85
Dioxime No. 1 (Butyl rubber)	Tetryl	9	76	-0.69	+1.96	52-M2-85
	Comp B	9	76	-0.64	+5.81	52-M2-85
Dioxime No. 2	Tetryl	9	76	-0.64	+0.66	52-M2-85
	PBX	52	76	-6.91	-3.06	56-M2-29
	PEIN	52	76	-6.91	-1.33	56-M2-29
E. C. No. 776 (3M)	Tetryl	52	76	-6.91	-2.17	56-M2-29
	PBX	52	76	+1.64	+6.79	56-M2-29
	PEIN	52	76	+1.64	+5.27	56-M2-29
E. C. No. 833 (3M)	Tetryl	52	76	+1.64	+3.29	56-M2-29
	PBX	52	76	-0.57	+4.92	56-M2-29
	PEIN	52	76	-0.57	+7.37	56-M2-29
E. C. No. 847 (3M)	Tetryl	52	76	-0.57	+3.30	56-M2-29
	PBX	52	76	-0.57	+3.30	56-M2-29

TABLE 79 (Continued)

Polymeric Material	Explosive	Storage, weeks	Temperature °C	Change of Wt. of Control, %	Change of Wt. of Contact, %	Picatinny Report No.
GR-I Iso butylene- isoprene	JPN	24	50	-0.48	+64.2	53-M2-4
	MRP	24	50	-0.48	+55.0	53-M2-4
	T-2	24	50	-0.48	+53.60	53-M2-4
	T-8	24	50	-0.48	+40.60	53-M2-4
GR-M Neoprene	JPN	24	50	+3.32	+21.80	53-M2-4
	MRP	24	50	+3.32	+34.00	53-M2-4
	T-2	24	50	+3.32	+20.80	53-M2-4
	T-8	24	50	+3.32	+11.0	53-M2-4
GR-S Butadiene/Styrene	JPN	26	50	+0.20	+8.42	53-M2-4
	MRP	24	50	+0.20	+12.11	53-M2-4
	T-2	24	50	+0.20	+9.91	53-M2-4
	T-8	24	50	+0.20	+3.25	53-M2-4
Monocork No. 100	JPN	26	50	-0.71	+2.15	53-M2-4
	MRP	26	50	-0.71	+3.16	53-M2-4
	T-2	26	50	-0.71	+2.94	53-M2-4
	T-8	26	50	-0.71	+12.50	53-M2-4
Monocork No. 500	JPN	26	50	+0.04	+12.10	53-M2-4
	MRP	26	50	+0.04	+11.00	53-M2-4
	T-2	26	50	+0.04	+11.70	53-M2-4
	T-8	26	50	+0.04	+35.6	56-M2-68
Rubber Composition 325-453 GRS	Comp B	20	76	+1.61	+1.58	56-M2-68
	RDX	20	76	+1.61	+8.75	56-M2-68
	Tetryl	20	75	+1.61	+33.8	56-M2-68
	TNT	20	76	+1.61		

TABLE 79 (Continued)

Polymeric Material	Explosive	Storage, weeks	Temperature °C	Change of Wt. of Control, %	Change of Wt of Contact, %	Picatimny Report No.
Rubber Compositions						
SX-1883	M-6	8	50	-0.10	+0.03	52-M2-45
SX-1884	M-6	8	50	-0.06	+0.12	52-M2-45
5420-15	M-6	8	50	-0.84	-0.69	52-M2-45
5420-45	M-6	8	50	-0.48	-0.64	52-M2-45
5420-60	M-6	8	50	-0.52	-0.74	52-M2-45
PS-10-13N	M-6	8	50	-0.16	+0.45	52-M2-45
RF-60	M-6	8	50	+0.02	+0.14	52-M2-45
Rubber Stoppers No. 7						
T-16		8	50	-0.68	+2.13	52-M2-23
Rubber Composition						
XP-203-Neoprene	OIO	9	50	-0.02	+2.97	56-M2-59
XP-206-GRS	T-6	24	50	-0.12	+6.64	56-M2-59
XP-202-Neoprene	T-6	24	50	+0.69	+6.06	56-M2-59
XP-218-Paracil B	OGK	12	50	-0.36	+10.5	56-M2-59
SFR-172-3						
M-1		48	76	-1.44	+5.29	57-TM2-33
M-9		48	76	-1.44	+71.8	57-TM2-33
M-17		48	76	-1.44	+74.9	57-TM2-33
SFR-172-2						
M-1		48	76	-1.16	-1.50	57-TM2-33
M-9		48	76	-1.16	+65.80	57-TM2-33
M-17		48	76	-1.16	+77.02	57-TM2-33
Scotchweld No. 585 (cured)						
M-1		24	76	+5.04	+15.9	56-M2-38
(uncured)		24	76	+1.52	-0.31	56-M2-38
Sulfur No. 1						
Comp B		9	76	-0.24	+10.62	52-M2-85
Butyl rubber	Tetryl	9	76	-0.24	+1.92	52-M2-85
Sulfur No. 2						
Comp B		9	76	-0.45	+8.70	52-M2-85
Tetryl		9	76	-0.45	+1.21	52-M2-85

TABLE 79(Continued)

Polymeric Material	Explosive	Storage, weeks	Temperature °C	Change of Wt of Control, %	Change of Wt of Contact, %	Picatinny Report No.
Presstite No. 106	M-9	8	50	-0.01	+0.27	52-M2-173
Thiokol LP-2	Comp A-3	12	76	-0.421	-1.76	55-M2-57
	M-1	12	76	-0.421	-0.928	55-M2-57
	M-8	12	50	-0.025	+24.61	55-M2-57
	M-9	12	50	-0.025	+19.02	55-M2-57
Thiokol 1695AH	JPN	26	50	+0.17	+2.24	53-M2-4
	MRP	24	50	+0.17	+1.71	53-M2-4
	T-2	24	50	+0.17	+1.63	53-M2-4
	T-8	24	50	+0.17	+1.31	53-M2-4
Thiokol 1620 AH	JPN	26	50	-0.35	+23.58	53-M2-4
	MRP	24	50	-0.35	+15.80	53-M2-4
	T-2	24	50	-0.35	+15.61	53-M2-4
	T-8	24	50	-0.35	+12.23	53-M2-4
Thiokol 3000FA	JPN	26	50	-0.24	+9.31	53-M2-4
	MRP	24	50	-0.24	+9.98	53-M2-4
	T-2	24	50	-0.24	+9.54	53-M2-4
	T-8	24	50	-0.24	+8.01	53-M2-4
Thiokol 3000 PR-I	JPN	21	50	-0.12	+7.41	53-M2-4
	MRP	24	50	-0.12	+8.36	53-M2-4
	T-2	24	50	-0.12	+7.68	53-M2-4
	T-8	24	50	-0.12	+6.60	53-M2-4
Thiokol 3000 ST	JPN	21	50	-0.28	+17.11	53-M2-4
	MRP	24	50	-0.28	+17.81	53-M2-4
	T-2	24	50	-0.28	+16.31	53-M2-4
	T-8	24	50	-0.28	+12.22	53-M2-4

TABLE 79 (Continued)

Polymeric Material	Explosive	Storage, weeks	Temperature °C	Change of Wt of Control, %	Change of Wt of Contact, %	Picatinny Report No.
Thiokol 3600ST Polysulfide rubber	JPN	21	50	-0.37	+17.24	53-M2-4
	MRP	24	50	-0.37	+15.36	53-M2-4
	T-2	24	50	-0.37	+15.74	53-M2-4
	T-8	24	50	-0.37	+12.68	53-M2-4
Silastic No. 150 Silicone rubber	JPN	26	50	+0.18	+0.67	53-M2-4
	MRP	26	50	+0.18	+0.71	53-M2-4
	T-2	26	50	+0.18	+1.43	53-M2-4
	T-8	26	50	+0.18	+1.42	53-M2-4
Silastic No. 180 Silicone rubber	JPN	26	50	-0.04	+0.30	53-M2-4
	MRP	26	50	-0.04	+0.36	53-M2-4
	T-2	26	50	-0.04	+0.82	53-M2-4
	T-8	26	50	-0.04	+0.65	53-M2-4

TABLE 80

Vacuum Stability Test Results for Rubber and Rubber Derivatives

Polymeric Material	Explosive	Test Temp, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase		Remarks	Picotiny Report No.
						Due to Polymer			
Armstrong N-111 (G. R. A-Phenolic rubber)	Black powder	100	0.58	0.35	0.99	0.06		Negligible	53-M2-26
	Comp B	100	0.58	0.35	3.35	2.42		Slight	53-M2-26
	Fuze powder	100	0.45	0.35	0.40	0.00		None	54-M2-14
	M-1	90	0.27	0.29	0.38	0.00		None	53-M2-26
	M-2	90	0.57	2.52	3.98	0.89		Negligible	52-M2-84
	Nitrated yarn	100	0.45	1.29	1.34	0.00		None	54-M2-14
Armstrong N-171 (synthetic rubber) Buna N-base	Tetryl	100	0.58	0.44	2.18	1.16		Very slight	53-M2-26
	Black powder	100	0.38	0.35	0.68	0.00		None	53-M2-26
	Comp B	100	0.38	0.35	1.50	0.77		Negligible	53-M2-26
	M-1	90	0.19	0.29	0.31	0.00		None	53-M2-26
	Tetryl	100	0.38	0.44	2.14	1.33		Very slight	53-M2-26
	SW-11452-25	100	0.26	0.13	0.26	0.00		None	52-M2-155
Armstrong J-1140D (chlorinated rubber)	Comp A	100	0.44	0.37	0.41	0.00		None	52-M2-110
	Comp B	100	0.44	0.36	0.52	0.00		None	52-M2-110
	Comp C-3	100	0.44	1.25	2.79	1.10		Very slight	52-M2-110
	Comp C-4	100	0.44	0.29	0.43	0.00		None	52-M2-110
	Pentolite 50/50	100	0.44	2.11	1.62	0.00		None	52-M2-110
	PEIN	100	1.30	0.46	1.30	0.00		None	52-M2-110
	RDX	100	0.44	0.30	2.47	0.00		None	52-M2-110
	Tetryl 75/25	100	0.44	4.30	8.40	3.66		Moderate	52-M2-110
	TNT	100	0.44	0.21	0.31	0.00		None	52-M2-110
	Composition B	100	0.06	0.82	0.63	0.00		None	55-H1-395
	Tetryl	100	0.06	0.36	0.25	0.00		None	55-H1-395
Adhesive A-4000	Black powder							None	53-H 1-1790
Adhesive XC-269	Black powder							None	55-H1-2083
Adhesive XC-271	Tetryl							None	55-H1-2083

TABLE 80 (Continued)

Polymeric Material	Explosive	Test Temp, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Pictorial Report No.
Bondmaster M-373 (synthetic rubber)	Black powder	100	0.36	0.45	0.87	0.04	Negligible	56-M2-80
Brigg's 107 Butadiene/Acrylonitrile	M-1	100	0.20	0.38	0.46	0.00	None	57-TM2-33
	M-9	100	0.33	5.86	6.15	0.00	None	57-TM2-33
	M-17	100	0.20	2.28	3.33	0.85	Negligible	57-TM2-33
Buna-N-rings (Butadiene/ Acrylonitrile)	OGK T-16	90 90	0.49 0.01	0.81 2.66	2.40 4.28	1.10 1.61	Very slight Very slight	56-M2-66 56-M2-41
Buryl rubber 5N-259	Comp B Tetryl TNT	100 100 100	0.50 0.50 0.50	0.25 0.23 0.14	0.60 0.45 0.58	0.00 0.00 0.00	None None None	55-M2-20 55-M2-20 55-M2-20
Der-o-Tex Neoprene Conductive	M-2 M-9 M-17 RDX TNT M-15	90 90 90 100 100 90	0.19 0.19 0.19 0.19 0.19 0.19	2.81 6.81 3.09 0.30 0.15 1.76	3.54 6.16 3.13 0.30 0.59 2.17	0.55 0.09 0.00 0.00 0.25 0.22	Negligible None None None Negligible Negligible	57-M2-1 57-M2-1 57-M2-1 57-M2-1 57-M2-1 57-M2-1
Dioxime No. 1 Buryl rubber	Comp B Lead Azide M-18 Primer mix Tetryl	100 100 100 100	0.48 0.41 0.41 0.48	0.28 0.51 0.37 0.61	0.85 0.38 0.41 0.75	0.00 0.00 0.00 0.00	None None None None	52-M2-85 52-M2-85 52-M2-85 52-M2-85
Dioxime No. 2 Buryl rubber	Comp B Lead azide M-18 Primer mix Tetryl	100 100 100 100	0.56 0.77 0.77 0.56	0.28 0.51 0.37 0.61	0.44 0.57 0.43 0.71	0.00 0.00 0.00 0.00	None None None None	52-M2-85 52-M2-85 52-M2-85 52-M2-85
Dispersite 1789 (Reclaim rubber)	Comp C-3 Comp C-4	100 100	0.16 0.16	1.05 0.22	3.04 0.30	1.83 0.00	Very slight None	133744 133744
Dispersite 1822A Buryl rubber	Comp C-3 Comp C-4	100 100	0.69 0.69	1.05 0.22	3.54 0.67	1.80 0.00	Very slight None	133744 133744

TABLE 80 (Continued)

Polymeric Material	Explosive	Test Temp, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
E. C. No. 250 (3M) (synthetic rubber)	Comp C-3	100	0.23	1.47	2.70	1.00	Negligible	55-M2-21
E. C. No. 373 (3M) (reclaim rubber)	RDX	100	0.55	0.47	0.68	0.00	None	53-HL-1347
E. C. No. 741 (3M) (Oil resistant elastomer)	Comp B	100	0.51	0.25	0.76	0.00	None	55-M2-19
	Comp C-3	100	0.14	1.47	1.66	0.05	Negligible	55-M2-21
	Tetryl	100	0.51	0.23	1.20	0.46	Negligible	55-M2-19
	TNT	100	0.51	0.14	0.49	0.00	None	55-M2-19
E. C. No. 770 (3M) Reclaim rubber	Black powder I-2	100	0.36	0.68	0.89	0.00	None	137253
		90	0.36	6.17	6.07	0.00	None	137253
E. C. No. 776 (3M)	PBX	100	0.31	0.18	1.36	0.87	Negligible	56-M2-29
	PETN	100	0.58	0.62	0.80	0.00	None	56-M2-29
	Tetryl	100	0.31	0.50	2.47	1.66	Very slight	56-M2-29
E. C. No. 801 (3M) (Oil resistant Elastomer)	Comp A-3	100	0.25	0.41	1.07	0.41	Negligible	53-M2-76
	Cyclotol 75/25	100	0.25	0.31	1.32	0.76	Negligible	53-M2-76
	RDX	100	0.40	0.35	1.82	1.07	Very slight	53-M2-44
	PDX/Hysine	100	0.25	0.35	1.07	0.47	Negligible	53-M2-76
	Tetryl	100	0.40	0.26	2.42	1.96	Very slight	53-M2-44
E. C. No. 826 (3M) Buna-N-Synthetic rubber	Black powder	100	0.73	0.39	1.21	0.09	Negligible	54-M2-56
	Comp B	100	0.73	0.20	4.87	3.94	Moderate	54-M2-56
	M-7	90	0.78	2.38	4.89	1.73	Very slight	54-M2-56
	T-16	90	0.78	3.45	6.04	2.71	Slight	54-M2-56
	Tetryl	100	0.73	0.22	3.33	2.38	Slight	54-M2-56
E. C. No. 833 (3M) Oil Soluble Elastomer	PBX	100	0.21	0.18	0.80	0.41	Negligible	56-M2-29
	PETN	100	0.32	0.62	0.60	0.00	None	56-M2-29
	Tetryl	100	0.21	0.50	1.11	0.40	Negligible	56-M2-29

TABLE 80 (Continued)

Polymeric Material	Explosive	Test Temp, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
E. C. No. 847 (3M) Oil Resistant Elastomer	Black powder	100	1.20	0.39	1.08	0.00	None	54-42-56
	Comp A-3	100	1.92	0.41	1.39	0.00	None	53-M2-76
	Comp B	100	1.20	0.20	0.81	0.00	None	54-M2-56
	Cyclotol 75/25	100	1.92	0.31	0.86	0.00	None	53-M2-76
	M-7	90	1.46	2.38	2.57	0.00	None	54-M2-56
	PBX	100	0.27	0.18	0.20	0.00	None	56-M2-29
	PEIN	100	0.56	0.62	0.96	0.00	None	56-M2-29
	RDX/Hystine	100	1.92	0.35	1.54	0.00	None	53-M2-76
	T-16	90	1.46	3.45	4.83	0.00	None	54-M2-56
	Tetryl	100	1.20	0.22	2.28	1.86	Very slight	54-M2-56
E. C. No. 870 Neoprene-Oil Resistant Elastomer	HBX-1	100	0.43	0.47	0.98	0.03	Negligible	55-M2-15
E. C. No. 981 Oil Soluble Elastomer	Comp B	100	0.17	0.28	0.42	0.00	None	54-H1-2106
	Picratol	100	0.17	0.26	0.39	0.00	None	54-H1-2106
	Tetryl	100	0.17	0.17	0.38	0.04	Negligible	54-H1-2106
	TNT	100	0.17	0.14	0.42	0.11	Negligible	54-H1-2106
	Tritonal	100	0.17	0.05	0.39	0.17	Negligible	54-H1-2106
E. C. No. 1022 Oil Resistant Elastomer	RDX	100	0.47	0.36	0.38	0.00	None	53-M2-44
	Tetryl	100	0.47	0.09	1.47	0.91	Negligible	53-M2-44
E. C. No. 1055 Oil Soluble Elastomer	Comp B	100	0.17	0.28	0.54	0.09	Negligible	54-H1-2106
	Picratol	100	0.17	0.26	0.42	0.00	None	54-H1-2106
	Tetryl	100	0.17	0.17	1.49	1.15	Very slight	54-M1-2106
	TNT	100	0.17	0.14	0.44	0.13	Negligible	54-H1-2106
	Tritonal	100	0.17	0.05	0.42	0.20	Negligible	54-H1-2106
E. C. No. 1113 Oil Resistant Elastomer	Comp B	100	0.09	0.21	0.35	0.05	Negligible	53-M2-96
	M-10	100	0.26	6.59	6.28	0.00	None	54-H1-256

TABLE 80 (Continued)

Polymeric Material	Explosive	Test Temp, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
E. C. No. 1126 Oil Resistant Elastomer	Comp B	100	0.23	0.28	0.51	0.00	None	54-H1-2106
	Picratol	100	0.23	0.26	0.25	0.00	None	54-H1-2106
	Tetryl	100	0.23	0.17	0.49	0.09	Negligible	54-H1-2106
	TNT	100	0.23	0.14	0.34	0.00	None	54-H1-2106
E. C. No. 1202 Oil Soluble Elastomer	Tritonal	100	0.23	0.05	0.38	0.10	Negligible	54-H1-2106
	Comp B	100	0.28	0.28	0.45	0.00	None	54-H1-2106
	Picratol	100	0.28	0.26	0.27	0.00	None	54-H1-2106
	Tetryl	100	0.28	0.17	0.36	0.00	None	54-H1-2106
E. C. No. 1236 (3M) Oil Resistant Elastomer	TNT	100	0.28	0.14	0.28	0.00	None	54-H1-2106
	Tritonal	100	0.28	0.05	0.31	0.00	None	54-H1-2106
	Black powder	100	1.67	0.39	1.20	0.00	None	54-M2-56
	Comp B	100	1.67	0.20	0.78	0.00	None	54-M2-56
E. C. No. 1365 Butyl rubber base	M-7	90	1.83	2.38	2.12	0.00	None	54-M2-56
	T-16	90	1.83	3.45	4.37	0.00	None	54-M2-56
	Tetryl	100	1.67	0.22	2.14	0.25	Negligible	54-M2-56
	Comp B	100	0.26	0.14	0.46	0.00	None	54-M2-14
Dampcoat Enamel	Picratol	100	0.26	0.31	0.47	0.00	None	54-M2-14
	TNT	100	0.26	0.05	0.33	0.02	Negligible	54-M2-14
	Tetryl	100	0.26	0.20	0.42	0.00	None	54-M2-14
	Tritonal	100	0.26	0.26	0.48	0.00	None	54-M2-14
GR-I Government rubber-- Isobutylene	Amatol 60/40	100	0.52	0.37	11	10.11	Excessive	51-8-1
	TNT	100	0.52	0.36	0.55	0.00	None	51-8-1
GR-I Government rubber-- Isobutylene	JPN	90	0.20	2.36	1.75	0.00	None	53-M2-4
	MRP	90	0.20	1.71	1.86	0.00	None	53-M2-4
	T-2	90	0.20	7.22	5.18	0.00	None	53-M2-4
	T-8	90	0.20	2.04	1.92	0.00	None	53-M2-4

TABLE 80 (Continued)

Polymeric Material	Explosive	Test Temp. °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Pictorial Report No.
GR-M (Neoprene)	JPN	90	0.22	2.36	5.43	2.85	Slight	53-M2-4
	MRP	90	0.22	1.71	3.65	1.72	Very slight	53-M2-4
	T-2	90	0.22	7.22	4.93	0.00	None	53-M2-4
	T-8	90	0.22	2.04	1.63	0.00	None	53-M2-4
GR-S Butadiene/Styrene	JPN	90	0.32	2.36	1.56	0.00	None	53-M2-4
	MRP	90	0.32	1.71	2.50	0.47	Negligible	53-M2-4
	T-2	90	0.32	7.22	3.29	0.00	None	53-M2-4
	T-8	90	0.32	2.04	2.33	0.00	None	53-M2-4
GR-M10 (Neoprene)	Black powder	100	0.45	1.25	0.63	0.00	None	52-M2-141
	Tetryl	100	0.47	0.57	2.64	1.60	Very slight	52-M2-141
Hycar-72-248 Butadiene/ Acrylonitrile	M-1	100	0.23	0.89	0.96	0.00	None	57-TM2-33
	M-9	100	0.28	5.90	6.45	0.27	Negligible	57-TM2-33
	M-17	100	0.23	2.30	3.47	0.94	Negligible	57-TM2-33
Monocork No. 100 (Synthetic-base)	JPN	90	0.34	2.51	2.36	0.00	None	53-M2-4
	MRP	90	0.34	1.99	4.33	2.00	Very slight	53-M2-4
	T-2	90	0.34	6.37	7.70	0.99	Negligible	53-M2-4
	T-8	90	0.34	2.13	4.45	0.93	Very slight	53-M2-4
Monocork No. 500 (Neoprene base)	JPN	90	0.17	2.51	5.16	2.48	Slight	53-M2-4
	MRP	90	0.17	1.99	11.00+	8.84+	Excessive	53-M2-4
	T-2	90	0.17	6.57	5.57	0.00	None	53-M2-4
	T-8	90	0.17	2.13	2.90	0.60	Very slight	53-M2-4
Plastiktrim Reclaimed rubber	OGK	90	0.32	0.78	2.22	1.12	Very slight	52-M2-43
	T-2	90	0.32	6.24	6.63	0.07	Negligible	52-M2-43
	T-6	90	0.32	4.91	5.87	0.64	Negligible	52-M2-43
	T-8	90	0.32	1.83	2.83	0.68	Negligible	52-M2-43
	T-9	90	0.32	0.14	0.37	0.00	None	52-M2-43

TABLE 80 (Continued)

Polymeric Material	Explosive	Test Temp, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Pliebond No. 20 (Phenol- formaldehyde synthetic rubber)	Black powder	100	0.34	0.47	0.86	0.05	Negligible	53-H1-877
	Comp B	100	0.34	0.28	3.81	3.19	Moderate	53-M1-877
	M-1	100	0.34	1.78	3.37	1.25	Very slight	53-H1-877
	PETN	100	0.40	0.42	0.87	0.05	Negligible	55-M2-29
	T-2	90	0.54	7.58	10.30	2.18	Slight	52-M2-139
	Tetryl	100	0.34	0.44	3.72	2.94	Slight	53-H1-877
	Comp C-3	100	0.22	1.05	3.96	2.69	Slight	133744
	Comp C-4	100	0.22	0.22	2.34	1.90	Very slight	133744
	Igniter Compd K-29	100	0.08	0.26	0.30	0.00	None	56-M2-20
	Incendiary Mix IM-68	100	0.08	2.11	3.67	1.48	Very slight	56-M2-20
Pliebond No. 30	Incendiary Mix IM-136	100	0.56	0.32	1.17	0.29	Negligible	56-M2-20
	MOX-2B	100	0.56	0.22	1.31	0.53	Negligible	56-M2-20
	RDX	100	0.56	0.31	4.09	3.22	Moderate	56-M2-20
	Tetryl	100	0.56	0.46	3.42	2.40	Slight	56-M2-20
	Tracer Compd R-45	100	0.56	0.47	1.11	0.08	Negligible	56-M2-20
	Tritonal	100	0.24	0.07	1.26	0.95	Negligible	54-M2-15
	T-2	90	0.54	7.58	10.30	2.18	Slight	134165
	SW-11452-25 Pyro tech.	100	0.38	0.13	0.30	0.00	None	52-M2-155
	Incendiary Mix IM-142	100	0.56	0.28	0.78	0.60	None	56-M2-20
Rubber Comp 32S-453 (GR-S)	Comp B	100	0.32	0.34	0.40	0.00	None	56-M2-68
	RDX	100	0.32	0.29	0.30	0.00	None	56-M2-68
	Tetryl	100	0.32	0.29	0.78	0.17	Negligible	56-M2-68
	TNT	100	0.32	0.07	0.31	0.00	None	56-M2-68
Rubber Comp SX-1883 SX-1884 5420-15 5420-45 5420-60 PS-10-13N W-4930 W-4930 W-4610B RF-60	M-6	90	0.25	0.49	0.43	0.00	None	52-M2-45
	M-6	90	0.25	0.49	0.30	0.00	None	52-M2-45
	M-6	90	0.27	0.49	0.28	0.00	None	52-M2-45
	M-6	90	0.29	0.49	0.35	0.00	None	52-M2-45
	M-6	90	0.26	0.49	0.32	0.00	None	52-M2-45
	M-6	90	0.12	1.02	1.08	0.00	None	52-M2-45
	M-1	90	0.30	0.89	1.01	0.00	None	52-M2-112
	M-6	90	0.30	1.67	1.47	0.00	None	52-M2-112
	M-2	90	0.26	3.41	3.63	0.90	None	52-M2-67
	M-6	90	0.20	0.49	0.35	0.00	None	52-M2-45

TABLE 80 (Continued)

Polymeric Material	Explosive	Test Temp °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Rubber stoppers No. 7 Natural rubber	M-16 M-2	90 90	0.19 0.19	3.66 0.66	3.87 0.50	0.02 0.00	Negligible None	52-M2-23 54-H1-1183
Rubber Composition XP-203 Neoprene	OIO	90	0.20	0.97	1.07	0.00	None	56-M2-59
XP76	T-6	90	0.23	4.91	4.39	0.00	None	56-M2-59
XP-206-GRS	M-7	90	0.25	2.08	2.63	0.30	Negligible	135788
XP-218-Paracril BJ	T-6	90	0.31	4.91	5.03	0.00	None	56-M2-59
XP-214-GRS	OGK	90	0.25	0.99	2.18	0.94	Negligible	56-M2-59
XP-217-GRS	Comp B	100	0.18	0.32	0.55	0.05	Negligible	53-M2-21
XP-193-GRS	Comp B	120	0.29	0.78	1.25	0.18	Negligible	53-H1-833
	M2	90	0.24	2.35	2.29	0.00	None	52-M2-44
10-DC-Hycar 7202	Comp B	100	0.41	0.29	0.42	0.00	None	56-M2-58
	Tetryl	100	0.41	0.32	0.36	0.00	None	56-M2-58
	TNT	100	0.41	0.08	0.47	0.00	None	56-M2-58
Z-40 Silicone	Comp B	100	0.09	0.29	0.12	0.00	None	56-M2-58
	Tetryl	100	0.09	0.32	0.18	0.00	None	56-M2-58
	TNT	100	0.09	0.08	0.04	0.00	None	56-M2-58
Z2E-Hypalon	Comp B	100	0.33	0.29	0.20	0.00	None	56-M2-58
	Tetryl	100	0.33	0.32	0.51	0.00	None	56-M2-58
	TNT	100	0.33	0.08	0.43	0.02	Negligible	56-M2-58
Z47 Hycar 4021	Comp B	100	0.29	0.29	1.61	1.03	Very slight	56-M2-58
	Tetryl	100	0.29	0.32	1.07	0.46	Negligible	56-M2-58
	TNT	100	0.29	0.08	1.46	1.09	Very slight	56-M2-58
Z46E Adiprene	Comp B	100	0.23	0.29	0.49	0.00	None	56-M2-58
	Tetryl	100	0.23	0.32	1.09	0.54	Negligible	56-M2-58
	TNT	100	0.23	0.08	0.39	0.08	Negligible	56-M2-58

TABLE 80 (Continued)

Polymeric Material	Explosive	Test Temp, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Rubber Composition I- 18FF	Comp B	100	0.15	0.11	0.40	0.14	Negligible	54-H1-775
	Tetryl	100	0.15	0.21	0.75	0.39	Negligible	54-H1-775
	TNT	100	0.15	0.20	0.28	0.00	None	54-H1-775
SFR-172-2 (Firestone)	M-1	100	0.26	0.87	0.84	0.00	None	57-TM2-33
	M-9	100	0.23	5.90	7.15	1.02	Very slight	57-TM2-33
	M-17	100	0.24	2.43	6.49	3.82	Moderate	57-TM2-33
SFR-172-3 (Firestone)	M-1	100	0.24	0.38	0.46	0.00	None	57-TM2-33
	M-9	100	0.30	5.86	7.26	1.10	Very slight	57-TM2-33
	M-17	100	0.24	2.28	11.80	9.28	Excessive	57-TM2-33
SFR-172-1A Firestone	M-1	90	0.32	3.87	0.92	0.00	None	56-H1-573
	M-9	90	0.36	5.90	6.40	0.14	Negligible	56-H1-573
	M-17	90	0.32	6.19	2.08	3.79	Moderate	56-H1-573
Scotchweld No. 585- cured	M-1	100	0.01	1.53	1.27	0.00	None	56-M2-38
	M-1	100	0.27	1.53	1.39	0.00	None	56-M2-38
Sulfur No. 1 Buryl rubber	Comp B	100	0.44	0.28	0.58	0.00	None	52-M2-85
	Lead azide	100	0.55	0.51	0.89	0.00	None	52-M2-85
	M-18	100	0.55	0.37	0.69	0.00	None	52-M2-85
	Tetryl	100	0.44	0.61	1.08	0.03	Negligible	52-M2-85
Sulfur No. 2 Buryl rubber	Comp B	100	0.61	0.28	0.49	0.00	None	52-M2-85
	Lead azide	100	0.61	0.51	0.75	0.00	None	52-M2-85
	M-18	100	0.63	0.37	0.58	0.00	None	52-M2-85
	Tetryl	100	0.63	0.61	0.65	0.00	None	52-M2-85
Fluofilm Rubber hydrochloride film	M-8	90	0.22	2.88	2.59	0.00	None	53-M2-134

TABLE 80 (Continued)

Polymeric Material	Explosive	Test Temp, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Plionuf-GP-75 Butadiene/Styrene	M-9	90	0.09	4.91	3.38	0.00	None	54-M2-65
Prestite No. 106 Polysulfide rubber	M-2 M-7 M-9	90 90 90	0.11 0.27 0.76	2.71 2.57 9.82	3.63 3.69 10.66	0.81 0.85 0.08	Negligible Negligible Negligible	52-M2-84 52-M2-171 52-M2-173
Pro-Seal EP-601 Polysulfide rubber	Comp B	100	0.34	0.25	3.05	2.46	Slight	56-M2-30
Thiokol-LP-2 Polysulfide rubber	Black powder Comp A-3 M-1 M-8 M-9 Tetryl RDX TNT PETN	100 100 100 90 90 100 100 100 100	0.45 0.13 0.09 0.10 0.07 0.45 0.07 0.36 0.40	1.25 0.44 1.84 3.82 5.12 0.57 0.30 0.32 0.54	0.72 0.50 1.23 3.73 3.79 2.50 0.64 1.03 1.04	0.00 0.00 0.00 0.00 0.00 1.48 0.27 0.35 0.10	None None None None None Very slight Negligible Negligible Negligible	52-M2-149 55-M2-57 55-M2-57 55-M2-57 55-M2-57 52-M2-149 52-M2-29 52-M2-28 135156
Thiokol LP-3	Tetryl	100	0.34	0.23	2.43	1.86	Very slight	54-M2-47
Thiokol 1605AH	JPN MRP T-2 T-8	90 90 90 90	0.34 0.34 0.34 0.34	2.36 1.71 7.22 2.04	2.66 2.29 4.61 1.26	0.00 0.24 0.00 0.00	None Negligible None None	53-M2-4 53-M2-4 53-M2-4 53-M2-4
Thiokol 1620 AH	JPN MRP T-2 T-8	90 90 90 90	0.34 0.34 0.34 0.34	2.36 1.71 7.22 2.04	3.04 2.52 5.14 2.51	0.34 0.47 0.00 0.13	Negligible Negligible None Negligible	53-M2-4 53-M2-4 53-M2-4 53-M2-4
Thiokol 3000 FA	JPN MRP T-2 T-8	90 90 90 90	0.21 0.21 0.21 0.21	2.36 1.71 7.22 2.04	3.07 3.46 6.11 2.43	0.50 1.54 0.00 0.18	Negligible Very slight None Negligible	53-M2-4 53-M2-4 53-M2-4 53-M2-4

TABLE 80 (Continued)

Polymeric Material	Explosive	Test Temp, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Thiokol 3000 PR-1	JPN	90	0.30	2.36	3.06	0.40	Negligible	53-M2-4
	MRP	90	0.30	1.71	1.45	0.00	None	53-M2-4
	T-2	90	0.30	7.22	3.26	0.00	None	53-M2-4
	T-8	90	0.30	2.04	2.72	0.38	Negligible	53-M2-4
Thiokol 3000 ST	JPN	90	0.26	2.36	2.35	0.00	None	53-M2-4
	MRP	90	0.26	1.71	2.64	0.67	Negligible	53-M2-4
	T-2	90	0.26	7.22	6.40	0.00	None	53-M2-4
	T-8	90	0.26	2.04	2.27	0.00	None	53-M2-4
Thiokol 3600 ST	JPN	90	0.24	2.36	2.52	0.00	None	53-M2-4
	MRP	90	0.24	1.71	2.20	0.25	Negligible	53-M2-4
	T-2	90	0.24	7.22	6.12	0.60	None	53-M2-4
	T-8	90	0.24	2.04	2.10	0.00	None	53-M2-4
Tremco Polysulfide Rubber	PBX	100	0.35	0.26	0.75	0.14	Negligible	55-M2-8
	PETN	100	0.32	0.24	0.61	0.05	Negligible	55-M2-8
	Tetryl	100	0.35	0.52	1.93	1.06	Very slight	55-M2-8
	OGK	90	0.17	0.91	0.99	0.00	None	54-H1-433
Silastic No. 150 Silicone Rubber	JPN	90	0.33	2.36	2.55	0.00	None	53-M2-4
	MRP	90	0.33	1.78	2.06	0.00	None	53-M2-4
	T-2	90	0.33	7.22	7.29	0.00	None	53-M2-4
	T-8	90	0.33	2.28	2.06	0.00	None	53-M2-4
Silastic No. 180 Silicone Rubber	JPN	90	0.50	2.36	2.76	0.00	None	53-M2-4
	MRP	90	0.50	1.78	1.82	0.00	None	53-M2-4
	T-2	90	0.50	7.22	6.74	0.00	None	53-M2-4
	T-8	90	0.50	2.28	2.34	0.00	None	53-M2-4
Silastic No. D-250 Silicone Rubber	Comp B	100	0.12	0.30	0.19	0.00	None	56-H1-213
	TNT	100	0.12	0.27	0.25	0.00	None	56-H1-213

TABLE 80 (Continued)

Polymeric Material	Explosive	Test Temp, °C	Plastic Control	Explosive Control	Plastic and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Silastic No. 80-24-480 Silicone Rubber	M-1	100	0.06	0.89	0.49	0.00	None	57-TM2-33
	M-9	90	0.14	5.90	5.71	0.00	None	57-TM2-33
	M-17	90	0.06	2.30	2.16	0.00	None	57-TM2-33
Silastic No. 50-24-480 Silicone Rubber	M-1	90	0.06	0.89	0.49	0.00	None	56-H1-574
	M-9	90	0.14	5.90	5.71	0.00	None	56-H1-574
	M-17	90	0.06	2.30	2.16	0.00	None	56-H1-574
Varglas Silicone Tubing	Comp B Pentolite 50/50	100	0.17	0.16	0.20	0.00	None	57-TM2-19
		100	0.17	2.15	2.02	0.00	None	57-TM2-19
Neoprene	HBX	100	0.14	0.52	2.16	1.50	Very slight	51-8-47

TABLE 81

Compositions of Elastomers, in Parts by Weight

Rubber Composition XP-218 (R ^a)	Paracril BJ	100.00
	Zinc oxide	5.00
	Stearic acid	2.00
	Neozone D	1.50
	SRF	75.00
	Flexol-3GH	7.50
	Plasticizer SC	7.50
	Thionex	0.60
	Sulfur	1.00
	GR-S	100.00
GR-S (XP-142) (R) Picatinny Arsenal	Zinc oxide	5.00
	Captax	1.5
	Thiuram M	0.2
	Sulfur	2.0
	GRS-5-630 (80/20)	100.00
Rock Island Arsenal No. S-42 (R) Rock Island Arsenal	Zinc oxide	5.00
	Stearic acid	3.0
	Rosin D	1.0
	Captax	1.0
	Tetrone A	2.0
	Philblack A (HMF)	60.00
	Thermax	20.00
	Helizone	2.0
	Flexol ToF	5.0
	50 pts pliolite and 50 pts	
Rubber Composition No. 32S-453 (R) Ohio Rubber Company	GR-S 100, blended by	
	Goodyear Rubber Co.	46.24
	GR-S-1505 (Arctic rubber)	23.12
	EPC Carbon black	23.12
	Stearic acid	0.46
	Zinc oxide	2.31
	No. 2246 age resistor	0.46
	Idone No. 638½	2.32
	Santocure accelerator	0.58
	Sulfur	1.39

^aR-rubber; P-plastic; A-adhesive; and S-accelant

TABLE 81 (Continued)

Rubber Composition XP-76	76.5/23.5 Butadiene/	100.00
(R)	styrene copolymer	
Picatinny Arsenal	85/15 Butadiene/	50.00
	styrene	
	Carbon black (High	70.00
	abrasion furnace)	
	Tributoxyethyl phosphate	6.0
	Stearic acid	1.5
	Zinc oxide	6.5
	Benzothiazyl disulfide	1.5
	Tetramethyl thiuram	0.4
	Sulfur	2.5
Rubber Composition XP-101	GR-S	100.00
(R)	Stearic acid	1.0
Picatinny Arsenal	Zinc oxide	5.0
	Benzothiazyl disulfide	1.5
	Sulfur	1.5
	Tributoxyethyl phosphate	6.0
	Refined coal tar distillate-	
	Bardol-B	6.0
	Cumaridene resin	5.0
	Tetramethyl thiuram	
	disulfide	0.3
	HAF carbon black	30.0
Rubber Composition XP-195	GR-S	100.0
(R)	Zinc oxide	5.0
Picatinny Arsenal	Stearic acid	2.0
	Altax	1.5
	Sulfur	2.0
	Pliolite S-6	50.0
	Thiuram M	0.1
	KP-140	10.1
	Philblack "0"	70.0
	Age Rite resin	2.0
Rubber Composition XR-206	GR-S	100.0
(R)	Stearic acid	1.50
Picatinny Arsenal	Altax	1.50
	Zinc oxide	5.0
	Thiuram M	0.30
	Sulfur	1.50

TABLE 81 (Continued)

Rubber Composition XP-214 Picatinny Arsenal	Neozone A	1.00
	Philblack '0'	40.00
	Thermax	30.00
	Flexol ToF	10.00
	GR-S	100.0
	Zinc oxide	5.0
	Stearic acid	1.5
	RC 184 (Durez 13388)	20.0
	EPC	20.0
	HAF	20.0
	Tuads	0.25
	HMF	20.0
	Good Rite Resin .50	20.0
	Flexol ToF	10.0
	Graphite	10.0
Rubber Composition XP-217 Picatinny Arsenal	Altax	1.5
	Sulfur	2.0
	Hulizone	2.0
	GR-S	100.0
	Stearic acid	1.5
	Altax	1.5
	Zinc oxide	5.0
	Thiuram M	0.3
	Sulfur	1.5
	Neozone A	2.0
	Acetylene carbon black	70.0
	Flexol ToF	10.0
	Ceraplite (Plumbago)	10.0
	GR-I 15	100.0
	Zinc oxide	5.0
Butyl Rubber 5N-259 (32B-62) Ohio Rubber Company	Stearic acid	3.0
	Tuads	1.0
	Sulfur	1.5
	MPC	116.0
	Butyl rubber	100.0
	Zinc oxide	5.0
	EPC black	54.0
	Stearic acid	1.0
	Dibenzoyl quinone	
	dioxime	6.0
	Red lead	10.0
Dioxime No. 1 Debell & Richardson		

TABLE 81 (Continued)

Dioxime No. 2	Butyl rubber	100.0
DeBell & Richardson	Zinc oxide	5.0
	EPC black	54.0
	Stearic acid	1.0
	Quinone dioxime	2.0
	Benzothiazyl disulfide	4.0
GRI (XP-143)	GR-I	100.0
(R)	Stearic acid	3.0
Picatinny Arsenal	Zinc oxide	5.0
	Sulfur	2.0
Cure: 166°C for 20 minutes	Captax	0.5
	Thiuram M	1.0
Rock Island Arsenal No. I 18FE1	Butyl GR-I	100.0
(R)	Zinc oxide	5.0
Rock Island Arsenal	Stearic acid	1.0
	Methyl tunds	0.5
	Altax	1.0
	Sulfur	1.5
	SRF, Gastex	70.0
	Trioctyl phosphate	15.0
	Diocetyl sebacate	10.0
Sulfur No. 1	Butyl rubber	100.0
DeBell & Richardson	Zinc oxide	5.0
	EPC black	54.0
	Sulfur	2.0
	Tetramethyl thiuram disulfide	1.0
	Selenium diethyl dithiocarbamate	1.0
	Stearic acid	1.0
Sulfur No. 2	Butyl rubber	100.0
DeBell & Richardson	Zinc oxide	5.0
	EPC black	54.0
	Sulfur	2.0
	Tetramethyl thiuram disulfide	1.0
	Mercapto benzothiazole	1.0

TABLE 81 (Continued)

GR-M-Neoprene (XP-145)	GR-M	100.0
Picatinny Arsenal	Stearic acid	1.0
Cure: 166°C for 15 minutes	Zinc oxide	5.0
GR-M10 (Neoprene)	Magnesium oxide	4.0
E. I. duPont deNemours	Neoprene GR-M10	100.0
	Lead oxide	20.0
	Toluene	280.
	Accelerator 833	0.75
Rubber Composition XP-202	Neoprene WRT	100.0
Picatinny Arsenal	Thermoflex A	2.0
	Stearic acid	0.50
	Magnesium oxide	4.00
	SRF	50.00
	HAF	40.00
	NA-22	0.55
	Zinc oxide	5.00
	Marbon 8000	10.00
	Baker P-6	5.00
Rubber Composition XP-203	Neoprene W	100.0
Picatinny Arsenal	Neozone A	2.0
	Stearic acid	0.50
	Petrolatum	1.00
	Magnesia	4.00
	Mt carbon black	80.00
	Baker P-6	12.00
	Zinc oxide	5.00
	Na-22	0.50

Section 12

VINYL POLYMERS AND COPOLYMERS

Information regarding the following polymers is included in this section: polyvinyl chloride, polyvinyl acetates, polyvinyl alcohol, polyvinyl acetal, polyvinyl butyral, and polyvinyl formal.

Vinyl polymers in general do not adversely affect the reactivity of explosives and propellants. The effect of the explosives and propellants on the vinyl polymers cannot be summarized in a single statement. Vinyl polymers, especially when plasticized, quite often deteriorate when in direct contact with propellants containing a high percentage of nitro-glycerine or other plasticizers. Specific examples are given in the tables which follow.

TABLE 82
Vacuum Stability Test Results for Vinyls

Material	Explosive	Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Alvar Polyvinyl Acetal	Composition C-3	100	0.22	1.20	1.97	0.55	Negligible	53-M2-46
	H-6 Navy Explosive	100	0.22	0.13	0.38	0.03	Negligible	53-M2-46
	MOX	100	0.22	0.18	0.28	0.00	None	53-M2-46
	Tetryl	100	0.22	0.41	0.67	0.04	Negligible	53-M2-46
Ankoseal No. 436 (PVC)	M-7	90	0.09	4.37	2.89	0.00	None	135157
Burvas-B-76 PV Butyral	Cyclotol 75/25	100	0.78	0.31	0.74	0.00	None	55-M2-13
Exon No. 400 XR-61-PVC	Fuze Powder	100	0.58	0.37	0.46	0.00	None	53-M2-7
Exon 402A-PVC	Composition B	100	0.18	0.25	0.25	0.00	None	57-TM2-8
	M-2	90	0.25	0.59	1.93	1.09	Very slight	57-TM2-8
	M-8	90	0.17	4.03	3.63	0.00	None	57-TM2-8
	JPN	90	0.14	2.36	2.30	0.00	None	53-M2-4
Formvar E (Polyvinyl formal)	MRP	90	0.14	1.71	1.77	0.00	None	53-M2-4
	T-2	90	0.14	7.22	6.67	0.00	None	53-M2-4
	T-8	90	0.14	2.04	2.10	0.00	None	53-M2-4
	JPN	90	0.15	2.36	2.17	0.00	None	53-M2-4
Geon No. 404 PVC	MRP	90	0.15	1.78	1.58	0.00	None	53-M2-4
	M-2	90	0.15			0.00	None	52-H1-874
	T-2	90	0.15	7.22	7.06	0.00	None	53-M2-4
	T-8	90	0.15	2.28	2.05	0.00	None	
Geon No. 1911 PVC	Black powder					11.00	Excessive	53-H1-2757
	Halite					1.05	Very slight	53-H1-2757

TABLE 82 (Cont)

Material	Explosive	Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picotinny Report No.
Geon No. 1911 PVC	M-1					0.18	Negligible	53-HI-2757
	M-2					4.78	Moderate	53-HI-2757
	PETN					0.26	Negligible	53-HI-2757
	RDX					0.27	Negligible	53-HI-2757
	T-9					1.68	Very slight	53-HI-2757
Geon No. 2046 PVC	Haleite					0.20	Negligible	53-HI-2757
	M-1					3.81	Moderate	53-HI-2757
	M-2					1.10	Very slight	53-HI-2757
	PETN					0.27	Negligible	53-HI-2757
	RDX					0.23	Negligible	53-HI-2757
	T-9					2.29	Slight	53-HI-2757
Geon No. 8700 PVC	Composition B							
	M-2	100	0.13	0.25	0.49	0.11	Negligible	57-TM2-8
	M-8	90	0.15	0.59	1.13	0.39	Negligible	57-TM2-8
Luting Compd-12128A	T-6	90	0.08	4.03	4.66	0.55	Negligible	57-TM2-8
		90	0.64	6.08	6.71	0.00	None	52-M2-93
Polyvinyl Alcohol A	JPN	90	0.19	2.36	3.75	1.20	Very slight	53-M2-4
	MRP	90	0.19	1.71	2.90	0.00	None	53-M2-4
	T-2	90	0.14	3.54	4.10	0.42	Negligible	53-M2-4
	T-8	90	0.19	2.04	2.95	0.72	Negligible	53-M2-4
Polyvinyl Alcohol B	JPN	90	0.20	2.36	2.45	0.00	None	53-M2-4
	MRP	90	0.20	1.71	2.40	0.49	Negligible	53-M2-4
	T-2	90	0.20	7.22	6.43	0.00	None	53-M2-4
	T-8	90	0.20	2.04	2.25	0.01	Negligible	53-M2-4
Polyvinyl chloride tubes	T-6	90	0.08	3.04	3.66	0.54	Negligible	53-M2-61

TABLE 82 (Cont)

Material	Explosive	Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picotinny Report No.
Marvinal Metal Laminatc	RDX	100	0.10	0.35	0.23	0.00	None	55-HI-1828
	Tetryl	100	0.10	0.29	0.36	0.00	None	55-HI-1828
VA-1310	T-2	90	0.42	6.47	4.92	0.00	None	51-8-6
PVC-Acetate	Type O-Prop	90	0.42	2.04	1.57	0.00	None	51-8-6
Prufcoat	Composition C-4 RDX	100 100	0.19 0.19	0.27 0.48	0.19 0.23	0.00 0.00	None None	56-M2-50 56-M2-50
Temflex No. 105	Smoke Composition	100	0.11	0.32	0.11	0.00	None	54-M2-64
VGNA-Vinylite No. 59679	Black powder	100	0.05	0.47	0.44	0.00	None	54-M2-7
Vinylite Blend 351	PBX	100	0.91	0.18	0.35	0.00	None	56-M2-29
PA 30786 VA	PEIN	100	0.99	0.62	1.66	0.00	None	56-M2-29
	Tetryl	100	0.91	0.50	1.24	0.00	None	56-M2-29
VAGH-Vinyl-Acrylic	T-6	90	0.51	2.80	2.63	0.00	None	52-M2-4
	Tetryl	100	0.49	0.44	0.82	0.00	None	51-8-5
	M-7	90	0.72	2.45	1.98	0.00	None	52-M2-150
Vinyl butyral	Amatol	100	0.28	0.41	2.01	1.32	Very slight	56-M2-12
MF-891	M-7	90	0.69	2.13	1.96	0.00	None	56-M2-12
	M-15	90	0.69	1.98	2.31	0.00	None	56-M2-12
	Tetryl	100	0.28	0.45	0.73	0.00	None	56-M2-12
Vinyl Chloride Acetate	Amatol	100	1.48	0.41	4.55	2.66	Slight	56-M2-12
MF-871	M-7	90	1.29	2.13	1.86	0.00	None	56-M2-12
	M-15	90	1.29	1.98	1.93	0.00	None	56-M2-12
	Tetryl	100	1.48	0.45	1.25	0.00	None	56-M2-12

TABLE 82 (Cont)

Material	Explosive	Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Vinyl Chloride Acetate MF-872	Amatol	100	0.73	0.41	2.29	1.15	Very slight	56-M2-12
	M-7	90	0.72	2.13	2.08	0.00	None	56-M2-12
	M-15	90	0.72	1.98	2.61	0.00	None	56-M2-12
	Tetryl	100	0.73	0.45	0.59	0.00	None	56-M2-12
Vinylite MA-28-4	Black powder							
	Tetryl					0.00	None	51-H1-2424
	TNT					0.00	None	51-H1-2424
VGGB Vinylite 19409	Black powder	100	0.10	0.43	0.59	0.06	None	53-H1-874
	RDX	100	0.19	0.02	0.18	0.00	None	57-TM2-35
Covetac No. SC-232 PVC orange	TNT	100	0.19	0.07	0.28	0.06	Negligible	57-TM2-35
	Tetryl	100	0.19	0.22	0.39	0.00	None	57-TM2-35
PV-845	Composition B	100	0.02	0.28	0.13	0.00	None	57-TM2-9
	RDX	100	0.02	0.32	0.11	0.00	None	57-TM2-9
	Tetryl	100	0.02	0.48	0.61	0.11	Negligible	57-TM2-9
	TNT	100	0.02	0.34	0.19	0.00	None	57-TM2-9
Elvaol 70-05 powdered polyvinyl alcohol	Composition C-3	100	0.08	1.47	3.93	2.38	Slight	55-M2-21
Elvaol 70-05 (filz,	Composition C-3	100	0.22	1.47	6.16	4.47	Moderate	55-M2-21
Flexseal No. 258 polyvinyl butyral	Composition B	100	0.45	0.39	0.70	0.00	None	51-8-16
	TNT	100	0.45	0.32	0.58	0.00	None	51-8-16
Permaceal No. 30 (film)	Amatol	100	0.00	0.29	6.12	5.83	Excessive	56-M2-13
	TNT	100	0.00	0.00	0.14	0.14	Negligible	56-M2-13
	Iritonal	100	0.00	0.17	0.15	0.00	None	56-M2-13

TABLE 82 (Cont)

Material	Explosive	Temperature, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Tub-Kore	Composition B	100	0.35	0.29	0.47	0.00	None	53-M2-86
	Tetryl	100	0.35	0.33	1.09	0.41	Negligible	53-M2-86
	TNT	100	0.35	0.32	0.38	0.00	None	53-M2-86
Wash Primer X2676B Spec 15328	Black powder	100	0.43	0.75	1.33	0.15	Negligible	57-TM2-5
	M-1	100	0.43	2.06	2.16	0.00	None	57-TM2-5
	M-16	90	0.43	5.85	5.61	0.00	None	57-TM2-5
	M-17	90	0.43	2.39	2.78	0.00	None	57-TM2-5

TABLE 83
Appearance of Vinyls After Storage

Material	Explosive	Storage, weeks	Temperature, °C	Appearance of Specimen	Picatinny Report No.
Exon-400 XR-61	Fuze Powder	8	76	No change	53-M2-7
Exon-4002	Composition B M-2 M-8	52	71	Surface becomes slightly coated	57-TM2-8
		52	50	No change	57-TM2-8
		52	50	No change	57-TM2-8
Formvar E	JPN	26	50	No report	53-M2-4
	MRP	24	50	Slightly softens	53-M2-4
	T-2	24	50	Slightly softens	53-M2-4
	T-8	24	50	Slightly softens	53-M2-4
Geon No. 404	JPN	26	50	No change	53-M2-4
	MRP	26	50	No change	53-M2-4
	T-2	26	50	No change	53-M2-4
	T-8	26	50	No change	53-M2-4
Geon No. 8700 PVC/acrylonitrile	Composition B M-2 M-8	52	71	Becomes slightly swollen	57-TM2-8
		52	50	Turns green	57-TM2-8
		52	50	Becomes slightly swollen	57-TM2-8
Polyvinyl Alcohol A	JPN	26	50	No report	53-M2-4
	MRP	24	50	No change	53-M2-4
	T-2	24	50	Slightly hardens	53-M2-4
	T-8	24	50	No change	53-M2-4
Polyvinyl Alcohol B	JPN	26	50	Becomes stiffer	53-M2-4
	MRP	24	50	No change	53-M2-4
	T-2	24	50	Becomes brittle	53-M2-4
	T-8	24	50	Becomes brittle	53-M2-4

TABLE 83 (Cont)

Material	Explosive	Storage, weeks	Temperature, °C	Appearance of Specimen	Picatinny Report No.
VU-1310	T-2	15	50	Yellow, softened, elastomeric	51-8-6
	Type O-Prop	15	50	Yellow, softened, elastomeric	51-8-6
Prufcoat	Composition C-4	24	76	No change	56-M2-50
	RDX	24	76	No change	56-M2-50
Vinylite Blend 351 PA 30786 VA	PBX	52	76	Explosive adheres	56-M2-29
	PETN	52	76	Some adherence	56-M2-29
	Tetryl	52	76	Explosive adheres	56-M2-29
VAGH-Vinyl-Acrylic	T-6	10	50	Softens, loses adhesion	52-M2-4
	Tetryl	6	76	Toughens	51-8-5
	M-7	9	50	Softens, loses adhesion	52-M2-150
Coverlac No. SC-232	RDX	24	76	Some adhesion	57-TM2-35
	Tetryl	24	76	Some adhesion	57-TM2-35
	TNT	24	76	Darkens, some adhesion	57-TM2-35
PV-845	Composition B	24	71	Becomes brittle	57-TM2-9
	RDX	24	76	Becomes a bit brittle	57-TM2-9
	Tetryl	24	76	Loses some flexibility	57-TM2-9
	TNT	24	71	Becomes brown and dry	57-TM2-9
Wash Primer Spec 15328	M-1	32	76	No change	57-TM2-5

TABLE 84
Percent Change in Weight of Vinyl Polymers After Storage

Material	Explosive	Storage, weeks	Temperature, °C	% Change, Control	% Change, Contact	Pictaniy Report No.
Ankoseal No. 436	M-7	52	50	- 0.30	-12.00	135157
Exon-402A	Composition B	52	71	+ 0.30	+11.8	57-TM2-8
	M-2	52	50	+ 0.02	- 0.63	57-TM2-8
	M-8	52	50	+ 0.02	+ 1.90	57-TM2-8
Formvar E	JPN	26	50	- 1.93	+29.70	53-M2-4
	MRP	24	50	- 1.93	+12.50	53-M2-4
	T-2	24	50	- 1.93	+12.10	53-M2-4
	T-8	24	50	- 1.93	+ 7.95	53-M2-4
Geon No. 404	JPN	26	50	- 0.03	+ 0.78	53-M2-4
	MRP	26	50	- 0.03	+ 1.41	53-M2-4
	T-2	26	50	- 0.03	+ 0.75	53-M2-4
	T-8	26	50	- 0.03	+ 0.44	53-M2-4
Geon No. 8700 PVC/Acrylonitrile	Composition B	48	71	+ 0.30	+18.2	57-TM2-8
	M-2	48	50	+ 0.11	+ 0.28	57-TM2-8
	M-8	48	50	+ 0.11	+18.1	57-TM2-8
Luvig Cmpd No. 12128A	T-6	See reproduced report at end of section				53-M2-11
Polyvinyl Alcohol A	JPN	26	50	- 3.68	- 1.83	53-M2-4
	MRP	24	50	- 3.68	- 4.79	53-M2-4
	T-2	24	50	- 3.68	- 3.32	53-M2-4
	T-8	24	50	- 3.68	- 4.53	53-M2-4

TABLE 84 (Cont)

Material	Explosive	Storage, weeks	Temperature, °C	% Change, Control	% Change, Contact	Picatinny Report No.
Polyvinyl Alcohol B	JPN	26	50	-12.30	+12.40	53-M2-4
	MRP	24	50	-12.30	-13.50	53-M2-4
	T-2	24	50	-12.30	-13.60	53-M2-4
	T-8	24	50	-12.30	-12.90	53-M2-4
Polyvinyl chloride tube	T-6	8	50	- 0.08	+10.6	53-M2-61
VU-1310	T-2	15	50	0.00	+45.1	51-8-6
PVC-Acetate	Type O	15	50	0.00	+61.4	51-8-6
Prufcoar	Composition C-4	24	76	- 4.21	- 1.06	56-M2-50
	RDX	24	76	- 4.21	- 5.28	56-M2-50
VGNA-Vinylite No. 59679	Black powder	16	76	+ 0.67	+ 0.62	54-M2-7
Vinylite Blend 351 PA-30786	PBX	52	76	-	-	56-M2-29
	PETN	52	76	-	- 9.82	56-M2-29
	Tetryl	52	76	-	-	56-M2-29

TABLE 85
100°C Heat Test Results for Vinyls

Polymer and Weight in Grams	Explosive and Weight in Grams	Loss of Weight				Explosion at 100 Hours	Picotiny Report No.
		1st 48 Hrs.		2nd 48 Hrs.			
		Gm	%	Gm	%		
Fortran 404							
	Lead Azide						
0.6	0.6	0.0081	0.63	0.0012	0.10	None	54-M2-67
0.6	—	0.0018	0.30	0.0010	0.17	None	54-M2-67
—	0.6	0.0051	0.85	0.0003	0.05	None	54-M2-67
Mercury Fulminate							
0.6	0.6	0.0598	4.98	0.0047	0.39	None	54-M2-67
0.6	—	0.0018	0.30	0.0010	0.17	None	54-M2-67
—	0.6	0.0588	9.80	0.0012	0.20	None	54-M2-67
Marvinal Metal Laminate							
	Lead Azide						
0.6	0.6	0.0071	0.59	0.0012	0.10	None	55-HI-1828
0.6	—	0.0010	0.17	0.0000	0.00	None	55-HI-1828
—	0.6	0.0062	1.03	0.0003	0.05	None	55-HI-1828
Nol 130 Primer Mix							
0.6	0.6	0.0141	1.18	0.0010	0.09	None	55-M2-1828
0.6	—	0.0010	0.17	0.0000	0.00	None	55-M2-1828
—	0.6	0.0119	1.98	0.0010	0.17	None	55-M2-1828
Primer Mix PA-100							
0.6	0.6	0.0013	0.11	0.0006	0.05	None	55-M2-1828
0.6	—	0.0010	0.17	0.0000	0.00	None	55-M2-1828
—	0.6	0.0009	0.15	0.0000	0.00	None	55-M2-1828

TABLE 85 (Cont)

Polymer and Weight in Grams	Explosive and Weight in Grams	Loss in Weight				Explosion - 100 Hours	Picatinny Report No.
		1st 48 Hrs. Gm	%	2nd 48 Hrs. Gm	%		
Marvinal Metal Laminates							
	Standard Primer Mix						
0.6	0.6	0.0023	0.19	0.0009	0.08	None	55-M2-1828
0.6	-	0.0010	0.17	0.0000	0.00		
-	0.6	0.0017	0.28	0.0000	0.00		
Temflex No. 105							
	Charge Det. No. 260						
0.6	0.6	0.0015	0.13	0.0000	0.00	None	54-M2-64
0.6	-	0.0016	0.21	0.0000	0.00	- None	54-M2-64
-	0.6	0.0002	0.03	0.0000	0.00	None	54-M2-64

TABLE 36

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ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED DATE 07-11-2013 BY 60322 UCBAW

TABLE 17
Effect of Explosives on Case 8200

Item, Tonville, psi	Yield Strength, psi		Pump Load, psi		Elong. at Yield, %		Elong. at Break, %		Modulus, psi		Work at Yield, psi		Work to Fracture Failure, psi		Impact Strength, ft-lb		
	σ	ϵ	σ	ϵ	σ	ϵ	σ	ϵ	σ	ϵ	σ	ϵ	σ	ϵ	σ	ϵ	
None Control	6890	171	6890	75	3030	321	3.39	0.19	127	2 spec	9.189	53.1	3.9	597	2 spec	1.10	0.20
20°C Control	7560	218	7560	218	5260	170	3.15	0.21	24.9	8.9	403 × 10 ³	14.1	1.9	124	45	1.12	0.50
with OCE	6580	229	6280	107	3620		3.29	0.29	1.9	13	401 × 10 ³	13.6	2.3	716	71	0.90	0.56
with OEO	6330	306	6820	274	4140		3.27	0.15	138	9	345 × 10 ³	13.4	1.1	706	43	0.65	0.15
with M2	7330	154	7330	184	5410	155	3.18	0.18	99.6	5.7	422 × 10 ³	16.0	3.2	194	28	0.55	0.05
with M7	6390	266	6390	266	4450		3.09	0.20	144	11	403 × 10 ³	13.4	1.6	645	61	0.92	0.40
with M8	5580	132	3060	174	3310	126	3.47	0.23	166	5	322 × 10 ³	11.8	2.0	569	39	0.53	0.14
with M9	5080	283	5100	310	3120		3.15	0.14	154	11	378 × 10 ³	11.7	1.5	625	33	1.08	0.41
with M15	6210	270	5930	363	5120		3.25	0.46	146	11.0	379 × 10 ³	12.4	2.2	636	55	2.52	0.04
with T16	6910	265	6830	265	4480		3.28	0.24	144	53.0	443 × 10 ³	13.8	1.8	682	41	0.70	0.30
with T18	7420	98	7390	130	3970		2.91	0.68	85.1	50.5	443 × 10 ³	14.5	3.4	530	179	3.72	0.11
with T19	6450	171	6270	263	5160		3.20	0.44	159	15.8	492 × 10 ³	13.4	2.1	773	59	0.59	0.05

NOTE: 11 months storage for all specimens in the explosive program unless otherwise specified.

TABLE 83

Effect of Storage in Contact with Propellants and Explosives on Tensile Properties* of Exon 402A and Geon 8700

Storage Temp. °F	In Contact With	Property**	Time of Exposure in Months				
			0	3	6	9	12
Exon 402A							
Room	Air	T E M	9300 3.0 494,000	9,300 3.0 521,000	9,400 3.3 519,000	9,700 3.5 525,000	9,600 3.7 505,000
122	Air	T E M	9,300 3.0 494,000	10,200 3.0 536,000	10,300 3.2 502,000	10,900 3.7 519,000	10,500 3.1 508,000
160	Air	T E M	9,300 3.0 494,000	10,300 3.6 529,000	10,400 3.6 537,000	10,900 4.0 506,000	10,300 4.1 500,000
122	M-2 propellant	T E M	9,300 3.0 494,000	10,200 3.0 519,000	10,300 3.0 475,000	10,700 3.2 515,000	10,200 3.1 - 501,000
122	M-8 propellant	T E M	9,300 3.0 494,000	9,900 3.1 503,000	9,700 3.1 480,000	10,000 3.4 502,000	9,300 3.1 451,000
160	Composition B Explosive	T E M	9,300 3.0 494,000	9,500 3.0 518,000	10,300 3.3 521,000	10,700 3.5 519,000	10,300 3.5 521,000

*Properties determined at 73.5° F, 50% RH, regardless of storage temperature

**T=yield strength, psi, E=elongation at yield, %, M=modulus, psi

TABLE 88 (Cont.)

Storage Temp, °F	In Contact With	Property	Time of Exposure in Months					12
			0	3	6	9		
Gen 8700								
Room	Air	T	7,300	7,000	7,000	7,300	7,000	
		E	4.6	4.1	4.2	3.9	4.6	
		M	415,000	373,000	397,000	372,000	355,000	
122	Air	T	7,300	7,300	7,400	7,800	7,700	
		E	4.6	3.6	3.5	3.7	3.3	
		M	415,000	410,000	395,000	386,000	380,000	
160	Air	T	7,300	7,700	8,000	8,300	8,300	
		E	4.6	3.5	3.5	3.7	3.8	
		M	415,000	395,000	390,000	393,000	394,000	
122	M-2 propellant	T	7,300	7,300	7,400	7,800	7,500	
		E	4.6	3.4	3.5	3.7	3.6	
		M	415,000	398,000	398,000	396,000	353,000	
122	M-8 propellant	T	7,300	5,300	4,700	5,000	4,800	
		E	4.6	4.5	4.5	5.7	6.7	
		M	415,000	316,000	255,000	243,000	219,000	
160	Composition B Explosive	T	7,300	7,200	7,400	7,800	7,500	
		E	4.6	3.5	4.0	3.9	3.7	
		M	415,000	353,000	357,000	390,000	366,000	

Reference: Technical Report 2382
 Properties of Rigid Polyvinyl Chloride
 Henry A. Tisch
 January 1957 - Samuel Feltman Ammunition Laboratories
 Picatinny Arsenal - Dover, N.J.

Section 13

Miscellaneous Resins

The materials covered by this section are classed as miscellaneous because, for one reason or another, they cannot be classified under any more specific headings. In most cases, their specific compositions and structures are unknown.

TABLE 89
Vacuum Stability Test Results for Miscellaneous Resins

Material	Explosive	Temp, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Acid Proof Black Paint Type 1-Spec. Jan-P-450	Comp A-3	100	0.47	0.39	0.55	0.00	None	56-M2-27
	Comp B	100	0.43	0.20	1.82	1.19	Very slight	56-M2-27
	Comp C-4	100	0.32	0.08	1.13	0.73	Negligible	51-8-26
	RDX	100	0.47	0.39	0.76	0.00	None	56-M2-27
	Tetryl	100	0.34	0.28	2.25	1.63	Very slight	53-M2-89
	TNT	100	0.47	0.09	0.58	0.02	Negligible	56-M2-27
Acoustic Cement	Comp A	100	0.70	0.37	0.60	0.00	None	52-M2-110
	Comp B	100	0.70	0.36	0.72	0.00	None	52-M2-110
	Comp C-3	100	0.70	1.25	3.81	1.86	Very slight	52-M2-110
	Comp C-4	100	0.70	0.29	0.69	0.00	None	52-M2-110
	PETN	100	1.12	0.46	1.60	0.02	Negligible	52-M2-110
	Pentolite 50/50	100	0.70	2.11	2.06	0.00	None	52-M2-110
	RDX	100	0.70	0.30	0.47	0.00	None	52-M2-110
	Tetrytol 75-25	100	0.70	4.30	7.22	2.22	Slight	52-M2-110
	TNT	100	0.70	0.21	0.37	0.00	None	52-M2-110
Armstrong J-1140E (Cumtar C-6)	Comp A	100	0.52	0.37	0.44	0.00	None	52-M2-110
	Comp B	100	0.52	0.36	0.65	0.00	None	52-M2-110
	Comp C-3	100	0.52	1.25	1.89	0.12	Negligible	52-M2-110
	Comp C-4	100	0.52	0.29	0.83	0.02	Negligible	52-M2-110
	PETN	100	1.28	0.46	1.30	0.00	None	52-M2-110
	Pentolite 50/50	100	0.52	2.11	1.48	0.00	None	52-M2-110
	RDX	100	0.52	0.30	0.39	0.00	None	52-M2-110
	Tetrytol 75/25	100	0.52	4.30	6.85	2.03	Slight	52-M2-110
	TNT	100	0.52	0.21	0.40	0.00	None	52-M2-110
Armstrong J-1162	Tetryl	100	0.23	0.47	0.87	0.17	Negligible	53-M2-69

TABLE 89 (Continued)

Material	Explosive	Temp, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Asphalt/Asbestos	T-28	90	0.16	5.27	11+	5.57	Excessive	36-HI-1402
Baralon	Black powder	100	0.20	0.44	0.47	0.00	None	56-M2-26
	Tetryl	100	0.20	0.26	1.00	0.54	Negligible	56-M2-26
	TNT	100	0.20	0.05	0.49	0.24	Negligible	56-M2-26
Casco Flexible Cement	Comp A	100	0.30	0.37	0.23	0.00	None	52-M2-110
	Comp B	100	0.30	0.36	0.29	0.00	None	52-M2-110
	Comp C-3	100	0.30	1.25	1.66	0.11	Negligible	52-M2-110
	Comp C-4	100	0.30	0.29	0.16	0.00	None	52-M2-110
	PETN	100	1.14	0.46	1.16	0.00	None	52-M2-110
	Pecolite 50/50	100	0.30	2.11	1.20	0.00	None	52-M2-110
	RDX	100	0.30	0.30	0.25	0.00	None	52-M2-110
	Tetrytol 75/25	100	0.30	4.30	7.79	3.39	Moderate	52-M2-110
	TNT	100	0.30	0.21	0.23	0.00	None	52-M2-110
	HMX	100	1.31	1.03	0.20	0.00	None	57-HI-583
	PBX	100	0.20	0.20	0.27	0.00	None	57-HI-583
Chlorinated Paraffin MF-877	Amatol	100	0.39	0.41	1.06	0.26	Negligible	56-M2-12
	M-7	90	0.64	2.13	2.21	0.00	None	56-M2-12
	M-15	90	0.64	1.98	2.00	0.00	None	56-M2-12
	Tetryl	100	0.39	0.45	0.70	0.00	None	56-M2-12
Clevelon	Black powder	100	0.22	0.44	0.50	0.00	None	56-M2-26
	Tetryl	100	0.22	0.26	0.58	0.10	Negligible	56-M2-26
	TNT	100	0.22	0.05	0.39	0.12	Negligible	56-M2-26
Conduco plast	T-6	90	0.28	2.47	3.41	0.66	Negligible	51-B-36
	T-6	90	0.51	4.79	11+	5.70	Excessive	53-M2-80

TABLE 89 (Continued)

Material	Explosive	Temp, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Coumarone-Indene MF-874	Anatol	100	0.57	0.41	11+	10.02+	Excessive	56-M2-12
	M-7	90	0.37	2.31	2.13	0.00	None	56-M2-12
	M-15	90	0.37	1.98	2.16	0.00	None	56-M2-12
	Tetryl	100	0.57	0.45	0.87	0.00	None	56-M2-12
Ernel Grease No. 900	Comp B	100	0.10	0.43	0.32	0.00	None	56-M2-22
Glidden Cushioning Material	Comp B	100	0.00	0.31	0.32	0.01	Negligible	56-M2-36
	Picratol	100	0.00	0.33	0.22	0.00	None	56-M2-36
	Tetryl	100	0.00	0.38	0.42	0.04	Negligible	56-M2-36
	TNT	100	0.00	0.39	0.00	0.00	None	56-M2-36
	Tritonal	100	0.00	0.37	0.36	0.00	None	56-M2-36
Glidden Inert Sealer No. 587	Comp B	100	0.16	—	—	—	None	56-M2-52
	Picratol	100	0.16	0.30	0.32	0.00	None	56-M2-52
	TNT	100	0.16	0.06	0.19	0.00	None	56-M2-52
	Tritonal	100	0.16	0.06	0.16	0.00	None	56-M2-52
Glidden Inert Sealer No. 589	Comp B	100	0.38	0.35	0.33	0.00	None	56-M2-52
	Picratol	100	0.41	0.06	0.25	0.00	None	56-M2-52
	TNT	100	0.41	0.30	0.35	0.00	None	56-M2-52
	Tritonal	100	0.41	0.06	0.19	0.00	None	56-M2-52
Glidden Inert Sealer No. 590	Comp B	100	0.46	0.35	0.42	0.00	None	56-M2-52
	Picratol	100	0.34	0.30	0.32	0.00	None	56-M2-52
	TNT	100	0.34	0.06	0.28	0.00	None	56-M2-52
	Tritonal	100	0.34	0.06	0.26	0.00	None	56-M2-52
Glidden Inert Sealer No. 591	Comp B	100	0.58	0.35	0.37	0.00	None	56-M2-52
	Picratol	100	0.40	0.30	0.36	0.00	None	56-M2-52
	TNT	100	0.40	0.06	0.22	0.00	None	56-M2-52
	Tritonal	100	0.40	0.06	0.21	0.00	None	56-M2-52

TABLE 89 (Continued)

Material	Explosive	Temp, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picotinny Report No.
Glidden Inert Sealer No. 592	Comp B	100	0.45	0.35	0.33	0.00	None	56-M2-52
	Picratol	100	0.41	0.30	0.34	0.00	None	56-M2-52
	TNT	100	0.41	0.06	0.17	0.00	None	56-M2-52
	Tritonal	100	0.41	0.66	0.23	0.00	None	56-M2-52
Glidden Inert Sealer No. 598	Comp B	100	0.69	0.35	0.60	0.00	None	56-M2-52
	Picratol	100	0.36	0.30	0.38	0.00	None	56-M2-52
	TNT	100	0.36	0.06	0.15	0.00	None	56-M2-52
	Tritonal	100	0.36	0.06	0.33	0.00	None	56-M2-52
Glidden Inert Sealer No. 600	Comp B	100	0.31	0.35	0.37	0.00	None	56-M2-52
	Picratol	100	0.37	0.36	0.36	0.00	None	56-M2-52
	TNT	100	0.37	0.06	0.18	0.00	None	56-M2-52
	Tritonal	100	0.37	0.06	0.13	0.00	None	56-M2-52
Insulating Cmpd 150-DS-88	OIO	90	0.29	0.66	5.61	4.66	Moderate	53-M2-45
Insulating Cmpd Dried at 93°C 2 hrs	OIO	90	0.26	1.04	4.85	3.55	Moderate	53-M2-45
Johnsons Wax No. W-5015	Comp B	100	0.09	0.24	0.50	0.17	Negligible	53-M2-71
Johnsons Wax No. W-5016	Comp B	100	0.00	0.24	0.31	0.07	Negligible	53-M2-71
Johnsons Wax No. W-6118	Comp B	100	0.19	0.24	0.32	0.00	None	53-M2-71
Lining Compound PA-PD-128	Comp B	100	0.29	0.35	1.12	0.48	Negligible	52-M2-17
Masters Metallic Cmpd	RDX	100	0.21	0.43	11+	10.36+	Excessive	52-M2-154
	Tetryl	100	0.21	0.45	11+	10.34+	Excessive	52-M2-154
Metal Sealing Cmpd 1380 red	T-6	90	1.62	2.80	2.97	0.00	None	52-M2-4

TABLE 89 (Continued)

Material	Explosive	Temp °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Norfolk Varnish	Black powder M-7	100	0.86	0.39	1.85	0.60	Negligible	52-M2-16
		90	0.98	2.94	3.52	0.00	None	52-M2-16
Okun's Cold Solder	Black powder	100	0.29	0.57	0.57	0.00	None	55-M2-10
Orox V	M-9	90	0.22	9.74	0.60	0.00	None	52-M2-133
Permatex No. 2 (Gasket Sealant)	Comp B	100	0.18	0.37	11+	10.45+	Excessive	55-M2-18
	OGK	90	0.45	0.78	2.17	0.94	Negligible	52-M2-43
	T-2	90	0.45	6.24	4.83	0.00	None	52-M2-43
	T-6	90	0.45	4.91	5.03	0.00	None	52-M2-43
	T-8	90	0.45	1.83	1.96	0.00	None	52-M2-43
	T-9	100	0.45	0.37	0.19	0.00	None	52-M2-43
	TNT	100	0.18	0.20	11+	10.62+	Excessive	55-M2-18
	Tritonal 80/20	100	0.18	0.12	11+	10.70+	Excessive	55-M2-18
	Comp B	100	0.76	0.35	0.98	0.00	None	52-M2-47
	Tetryl	100	0.76	0.26	0.89	0.00	None	52-M2-47
Royal Cement	T-6 Tetryl	100	0.76	0.26	0.88	0.00	None	52-M2-47
		90	0.49	2.47	3.32	0.36	Negligible	51-8-36
Shellac/Bronze	T-6	100	—	—	—	0.00	None	51-H1-1573
		90	0.72	2.64	11+	7.64+	Excessive	51-8-36
Silica Gel	T-16	90	0.05	0.99	3.80	2.76	Slight	53-H1-1350
Titanox TG	Comp C-3	100	0.17	1.20	1.39	0.02	Negligible	53-M2-46
	Navy Explosive H-6	100	0.17	0.13	0.23	0.00	None	53-M2-46
	MOX 2-B	100	0.17	0.18	0.21	0.00	None	53-M2-46
	Tetryl	100	0.17	0.41	0.43	0.00	None	53-M2-46

TABLE 89 (Continued)

Material	Explosive	Temp °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Turbotherm No. 105	Comp B	100	0.00	0.24	0.26	0.00	None	52-M2-27
Tygo film No. TR-216 Blue	Comp C-4	100	0.17	0.37	0.36	0.00	None	56-M2-48
Valpon No. 182-C7 (Enamel)	Comp C-4	100	0.43	0.37	1.30	0.50	Negligible	56-M2-48
XA-47 Resin	Comp A-3	100	0.00	0.41	0.52	0.11	Negligible	53-M2-76
	Cyclotol 15/25	100	0.00	0.31	3.08	2.77	Slight	53-M2-76
	RDX-Stearic acid	100	0.00	0.35	6.74	6.39	Excessive	53-M2-76
Zamak V (98% zinc)	Tetryl	100	0.11	0.36	0.36	0.00	None	52-M2-130
Zorlock No. 965	Black powder	100	1.39	0.66	0.84	0.00	None	54-M2-55
	Comp B	100	1.39	0.29	0.69	0.00	None	54-M2-55
	M-9	90	1.08	5.19	4.49	0.00	None	54-M2-55
	Tetryl	100	1.39	0.29	1.08	0.00	None	54-M2-55
Zinc Chromate Primer Jan P-735	Comp B	-	-	-	-	-	-	54-M2-27
	M-7	90	0.58	1.89	2.17	0.00	None	54-M2-27
	OGK	90	0.58	1.10	1.81	0.13	Negligible	54-M2-27
	T-6	90	0.58	4.56	5.08	0.00	None	54-M2-27
	T-16	90	0.58	2.90	3.47	0.00	None	54-M2-27
Zinc Chromate Primer Mil-P-6889 with Reducer No. 213	T-19	90	0.58	3.19	4.13	0.36	Negligible	54-M2-27
	M-7	90	0.64	1.89	1.82	0.00	None	54-M2-27
	OGK	90	0.64	1.10	2.09	0.35	Negligible	54-M2-27
	T-6	90	0.64	4.56	5.09	0.00	None	54-M2-27
	T-16	90	0.64	2.90	4.25	0.71	Negligible	54-M2-27
	T-19	90	0.64	3.19	3.44	0.00	None	54-M2-27

TABLE 89 (Continued)

Material	Explosive	Temp, °C	Polymer Control	Explosive Control	Polymer and Explosive	Net Increase Due to Polymer	Remarks	Picatinny Report No.
Zinc Chromate Primer Mil-P-15328 with ST-69 Reducer	M-7	90	0.30	1.89	1.56	0.00	None	54-M2-27
	OGK	90	0.30	1.10	1.34	0.00	None	54-M2-27
	T-6	90	0.30	4.56	5.05	0.19	Negligible	54-M2-27
	T-16	90	0.30	2.90	3.97	0.77	Negligible	54-M2-27
	T-19	90	0.30	3.19	3.19	0.00	None	54-M2-27

TABLE 90

Appearance of Miscellaneous Resins After Storage

Material	Explosive	Storage, wks	Temp, °C	Appearance of Specimen	Picatinny Report No.
Acid Proof Black Paint	Comp A-3	24	76	No change	56-M2-27
	Comp B	24		No change	56-M2-27
	Comp C-4	6	71	Dissolved	51-8-26
	RDX			No change	56-M2-27
Barralon	Tetryl	24	71	No change	56-M2-27
	TNT			No change	56-M2-27
	Black powder	24	76	No change	56-M2-26
	Tetryl	24	76	No change	56-M2-26
Cleveland	TNT	20	71	Complete deterioration	56-M2-26
	Black powder	24	76	No change	56-M2-26
	Tetryl	24	76	No change	56-M2-26
	TNT	20	71	Complete deterioration	56-M2-26
Conducto plast	T-6	20	50	No change	51-8-36
	T-6	20	50	No change	53-M2-80
	Comp B	28	71	Becomes brittle	56-M2-22
	T-131	28	50	Darkens	56-M2-25
Glidden Cushioning Material No. 89	Comp B	24	76	Turns brown	56-M2-36
	Picratol	24	76	Turns yellow	56-M2-36
	Tetryl	24	76	Turns yellow	56-M2-36
	TNT	24	71	Turns brown	56-M2-36
Insulating Compd-150-TS-88	Tritonal	24	71	Turns brown	56-M2-36
	OIO	12	50	Turns orange	53-M2-45
	Comp B	8	76	Softens and loses adhesion	52-M2-17
	T-6	10	50	Softens and becomes rubbery	52-M2-4

TABLE 90 (Continued)

Material	Explosive	Storage, wts	Temp, °C	Appearance of Specimen	Picatunny Report No.
Norfolk Varnish	Black powder M-7	8 8	76 50	No change Softens and loses adhesion	52-M2-16 52-M2-16
Permatex No. 2	OGK	10	50	Softens and loses adhesion	52-M2-43
	T-2	10	50	Softens and loses adh. ion	52-M2-43
	T-6	10	50	Softens and loses adhesion	52-M2-43
	T-8	10	50	Softens and loses adhesion	52-M2-43
	T-9	10	50	No change	52-M2-43
Royal Cement No. 6159	T-6	10	50	Softens	51-8-36
Zamak V	Tetryl	8	76	No change	52-M2-130
Zinc Chromate Primer MIL-P-15328	M-7	10	50	No change	54-M2-27
with ST-69 Reducer	OGK	10	50	No change	54-M2-27
	T-6	10	50	No change	54-M2-27
	T-16	10	50	No change	54-M2-27
	T-19	10	50	No change	54-M2-27
Zinc Chromate Primer Spec. P-6859	M-7	10	50	No change	54-M2-27
	OGK	10	50	Softens and becomes lighter	54-M2-27
	T-6	10	50	Softens	54-M2-27
	T-16	10	50	Softens and loses adhesion	54-M2-27
	T-19	10	50	Softens and loses adhesion	54-M2-27
Zinc Chromate Primer Jan P-735	M-7	10	50	No change	54-M2-27
	OGK	10	50	Softens	54-M2-27
	T-6	10	50	No change	54-M2-27
	T-16	10	50	No change	54-M2-27
	T-19	10	50	No change	54-M2-27

TABLE 91

Percent Change in Weight of Miscellaneous Resins After Storage

Material	Explosive	Storage, wks	Temp, °C	% Change, Control	% Change, Contact	Picatinny Report No.
Barralon	Black powder	24	76	+0.81	+1.87	56-M2-26
	Tetryl	24	76	+0.81	+0.67	56-M2-26
	TNT	4	71	+0.81	Explosive adhered	56-M2-26
Cleveland	Black powder	24	76	+0.80	+0.83	56-M2-26
	Tetryl	24	76	+0.80	+2.24	56-M2-26
	TNT	8	71	+0.80	Explosive adhered	56-M2-26
Eromel Grease No. 900	Comp B	28	71	-4.18	Specimen crumbled	56-M2-22
Glidden Cushioning Material	Comp B	24	71	-1.69	-0.37	56-M2-36
	Picratol	24	71	-1.69	-0.62	56-M2-36
	Tetryl	24	76	-1.69	-1.88	56-M2-36
	TNT	24	71	-1.69	-0.48	56-M2-36
Insulating Compound	Tritonal	24	71	-1.69	-0.76	56-M2-36
	OIO	14	50	-0.08	+1.02	53-M2-45
Pre/Set Plasmox No. 2	Comp B	8	76	-0.37	+11.90	52-M2-47
	Tetryl	8	76	-0.37	+1.87	52-M2-47
	TNT	8	76	-0.37	+14.80	52-M2-47

TABLE 92
100°C Heat Test Results for Miscellaneous Resins

Material	Explosive	Loss in Weight				Explosion in 100 Hours	Picotiny Report No.
		1st 48 Hours		2nd 48 Hours			
		%	Gms	%	Gms		
Acoustic Cement	Dynamite						
	0.6	0.0469	3.90	0.0199	1.65	None	52-M2-110
	0.6	0.0113	1.88	0.0006	0.10	None	52-M2-110
	0.6	0.0404	6.72	0.0226	3.76	None	52-M2-110
Acid Proof Black Paint	Lead Azide						
	0.6	0.0070	0.59	0.0008	0.07	None	53-M2-89
	0.6	0.0024	0.40	0.0009	0.15	None	53-M1-89
	0.6	0.0043	0.72	0.0000	0.00	None	53-M2-89
	M-20 Primer Mix						
	0.6	0.0050	0.41	0.0008	0.06	None	53-M2-89
	0.6	0.0024	0.40	0.0009	0.15	None	53-M2-89
	0.6	0.0019	0.32	0.0004	0.06	None	53-M2-89
Acid Proof Black Paint	Nol 130 Primer Mix						
	0.6	0.0137	1.14	0.0028	0.23	None	53-M2-89
	0.6	0.0024	0.40	0.0009	0.15	None	53-M2-89
	0.6	0.0083	1.38	0.0015	0.25	None	53-M2-89
	Primer Mix 100						
	0.6	0.0045	0.38	0.0006	0.05	None	53-M2-89
	0.6	0.0024	0.40	0.0009	0.15	None	53-M2-89
	0.6	0.0006	0.10	0.0000	0.00	None	53-M2-89
Casco Flexible Cement	Dynamite						
	0.6	0.0434	3.61	0.0166	1.38	None	53-M2-110
	0.6	0.0090	1.50	0.0006	0.10	None	52-M2-110
	0.6	0.0404	6.72	0.0226	3.76	None	52-M2-110

EXPLOSIVE/POLYMER INDEX

Materials in Contact with:

Aluminum Flake

Material	Classification* As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
Presstite No. 155	R	0.09	Polyisobutylene/Asbestos	Presstite Engineering Co.	13
Amesol					
Acrylated Alkyd MF-881	C	4.25	Polyester	Aberdeen Proving Ground	8
Acrylate Mixture MF-875	C	0.03	Acrylic	Aberdeen Proving Ground	1
Chlorinated Paraffin MF-877	C	0.26	Chlorinated hydrocarbon	Aberdeen Proving Ground	13
Coumarone Indene MF-874	P	10.02	Coumarone Indene	Aberdeen Proving Ground	13
Dampcoat Enamel	C	10.11	Rubberized Coating	Wilbur Williams Co.	11
Epoxy MF-876	P	4.40	Epoxy	Aberdeen Proving Ground	3
Formula No. 320	P	2.29	Miscellaneous	Wilbur Williams Co.	13
Formula No. 330	P	7.24	Miscellaneous	Wilbur Williams Co.	13
Permacel No. 30	A	5.83	Vinylite	Industrial Tape Corp.	12
Phthalic Drying Oil	C	4.37	Alkyd	Aberdeen Proving Ground	8
Syrtensated Alkyd MF-882	C	5.85	Alkyd	Aberdeen Proving Ground	8
Vinyl Butyral MF-891	P	1.32	Vinylite	Aberdeen Proving Ground	12
Vinyl Chloride Acetate	P	2.26	Vinylite	Aberdeen Proving Ground	12
Vinyl-Toluene Alkyd	C	4.14	Alkyd	Aberdeen Proving Ground	8
Ammonium Perchlorate					
DYNH	P	0.00	Polyethylene	Bakelite Corp.	4

*C = Coating; A = Adhesive; P = Plastic; S = Sealant; R = Rubber; M = Mold Release Agent.

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Teflon	P	0.01	Polyethylene	E.I. duPont de Nemours & Co., Inc.	4
Ammonal					
QRS-147	P	0.00 s	Polyester	Bakelite Corp.	8
Barotol					
BRR-18794	P	0.00	Epoxy	Bakelite Corp.	3
Cycleweld C-14	A	3.12	Epoxy	Cycleweld Cement Prod.	3
Barium Nitrate					
Cycleweld C-14	A	0.00	Epoxy	Cycleweld Cement Prod.	3
Black Powder					
Acid Causticbond	C	0.60 s	Vinylite	Wilbur and Williams Co.	12
Acrylic MF-875	A	0.00	Acrylate	Aberdeen Proving Ground	1
Acryloid B-72	C	0.38	Acrylate	Robm and Haas	1
Amberlac No. 292	C	0.00	Polyester	Robm and Haas	8
Araldite CN-503	A	0.20	Epoxy	Ciba Company Inc.	3
Armstrong N-111	A	0.06 s	Phenolic Rubber	Armstrong Cork Co.	11
Armstrong N-171	A	0.00	Synthetic Rubber	Armstrong Cork Co.	11
Bakelite BN-6260	P	0.00	Phenolic	Bakelite Corp.	7
Bakelite BRR-18795	A	0.04	Epoxy	Bakelite Corp.	3
Bakalox	A	0.00 s	Asphaltic	Plymouth Industrial Prod.	13

The subscript s indicates that storage reports are available.

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Bisonite M	C	0.00 s	Miscellaneous	-	13
Bondmaster No. 373	A	0.04 s	Synthetic Rubber	Rubber and Asbestos Corp.	11
Cellophane No. 300Pc	P	0.00	Cellulosic	E.I. duPont de Nemours & Co., Inc.	2
Cellulose Acetate	P	0.00	Cellulosic	B.F. Goodrich Chem. Corp.	2
Cellulose Nitrate	P	0.00 s	Cellulosic	Selctronic Corp.	2
Clevelon	C	0.00 s	Asphaltic	Plymouth Industrial Prod.	13
Cycleweld C-14	A	0.00	Epoxy	Cycleweld Cement Prod.	3
Diacetate Cloth	P	0.00	Cellulosic	-	2
Durone	C	0.66	Miscellaneous	R.L. Chemical Co.	13
E.C. No. 770	A	0.00	Reclaimed Rubber	Minnesota Mining & Mfg.	11
E.C. No. 826	A	0.09	Synthetic Rubber	Minnesota Mining & Mfg.	11
E.C. No. 847	A	0.00	Elastomer	Minnesota Mining & Mfg.	11
E.C. No. 1236	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg.	11
Epon No. 828	P	0.00	Epoxy	Shell Chemical Corp.	3
Ethyl Cellulose	P	1.05	Cellulosic	Gering Prod. Inc.	2
Geon No. 1911	P	11.00	Vinylfire	B.F. Goodrich Chem. Co.	12
Gray Glid Irons	P	0.00s	Polyester	Glidden Co.	8
Green Sealing Compd.	S	0.00	Spec. Jan 30-71	E.I. duPont de Nemours & Co., Inc.	13
Hot Dip 215	C	0.00	Cellulosic	Picatinny Arsenal	2
Hot Dip 222	C	0.00	Cellulosic	Picatinny Arsenal	2
Laminac No. 4116	A	0.00	Polyester	American Cyanamid Co.	8
Laminac No. 4134	A	0.13	Polyester	American Cyanamid Co.	8
Metal Sealing Compd.	S	0.00 s	Miscellaneous	E. I. duPont de Nemours & Co., Inc.	13
Mylar	P	0.00	Polyester	E.I. duPont de Nemours & Co., Inc.	8
Mylar Tape No. 7300	P	0.01	Polyester	E. I. duPont de Nemours & Co., Inc.	8
Neoprene Gm-10	R	0.00	Polysulfide Rubber	E. I. duPont de Nemours & Co., Inc.	11
Norfolk Varnish	C	0.60	Miscellaneous	Norfolk, Mass.	13
O'Kuss Cold Solder	S	0.00	Organic Filler	A.L. O'Kun Co.	13
Phenol Formaldehyde Var.	C	0.00s	Spec. AXS-1680	Picatinny Arsenal	7
Plastacde	C	0.00	Cellulosic	E. I. duPont de Nemours & Co., Inc.	2
Pliobond No. 20	A	0.05	Synthetic Rubber	Goodyear Tire & Rubber Co.	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Polyamide Hot Dip No. 220	C	0.00 _s	Polyamide	Picatinny Arsenal	6
Polyethylene Grade P-1000	P	0.00	Polyethylene	E.I. duPont de Nemours & Co., Inc.	4
Pressure No. 218	S	0.00	Aerodynamic Smoothing	Pressite Engineering Co.	13
Purple Lacquer	C	0.11 _s	Jar-L-296	Picatinny Arsenal	2
QRS-136	P	0.17	Polyester	Bakelite Corp.	8
RD-51-24	P	0.00	Polystyrene	Bakelite Corp.	10
S-50 Polymer	P	0.00 _s	Synthesized Isobutylene	Enjay Co., Inc.	10
Scratch Tape No. 650	A	0.00	Cellulosic	Minnesota Mining & Mfg. Co.	2
Silicone Adhesive No. XC-269	A	0.00	Silicone Rubber	Dow Corning Corp.	11
Silicone Adhesive No. XC-271	A	0.00	Silicone Rubber	Dow Corning Corp.	11
Silicone Grease Form-H	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease Form-G	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease A-20044	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease A-20046	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease 372-72-539	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease XC-4272	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease XC-4282	M	0.00	Soft Silicone Film	Dow Corning Corp.	9
Silicone Grease XC-5012	M	0.00	Soft Silicone Film	Dow Corning Corp.	9
Silicone Grease XCT-4045	M	0.00	Soft Silicone Film	Dow Corning Corp.	9
Silicone Electro-lub-pres-o-valve	M	0.00	Polyamide	General Electric Co.	9
Silk Grade E	R	0.00	Polysulfide Rubber	Thokol Corp.	6
Thiokol LP-2	P	0.00	Cellulosic	Thokol Corp.	11
Type 2-Grade 7-AXSI-62	P	0.00	Cellulosic	Joseph Davis Plastic Corp.	2
Triacetate cloth No. 26	P	0.00	Cellulosic	Joseph Davis Plastic Corp.	2
Vedac No. 5250	C	0.09	Miscellaneous	Ferro Enamel Corp.	13
Vinylite MA-28-4	P	0.00 _s	Vinylite	Picatinny Arsenal	12
Vistron R-75-D	P	0.10	Miscellaneous	Picatinny Arsenal	13
VGNA No. 59679	P	0.00	Vinylite	Bakelite Corp.	12
Wash Primer X-2676B	C	0.00	Vinylite	Picatinny Arsenal	12
Zedlock No. 965	P	0.00	Miscellaneous	Pressite Engineering Co.	13
Viscose Rayon Cloth	P	0.00	Cellulosic	Pressite Engineering Co.	2

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Composition A: A-3					
Acoustic Cement	A	0.00	Oleoresinous Base	Armstrong Cork Co.	13
Acid Proof Black Paint	C	0.00 _s	Jas-P-450	Glidden Co.	13
Armstrong J-1140-B	A	0.00	Phenolic	Armstrong Cork Co.	7
Armstrong J-1140-D	R	0.00	Chlorinated Rubber	Armstrong Cork Co.	11
Armstrong J-1140-E	A	0.00	Cumar C-6	Armstrong Cork Co.	13
BKR-18793	P	0.00	Resin accelerator	Bakelite Corp.	3
BRR-18795	P	0.00	Epoxy	Bakelite Corp.	3
BRS-147	P	0.00	Polyester	Bakelite Corp.	8
Casco Flexible Cement	A	0.00 _s	Miscellaneous	The Borden Co.	13
Cycleweid C-14	A	0.48	Epoxy	Cycleweid Cement Prod.	3
Durez No. 11864	P	1.54	Phenolic	Durez Plastics & Chem. Inc.	7
E.C. No. 801	A	0.76	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 847	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
Silicone Grease Form-G	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease Form-H	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease A-20044	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease A-20046	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease 372-72-739	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease XC-4272	M	0.00	Soft Silicone Film	General Electric Co.	9
Silicone Grease XC-4282	M	0.00	Soft Silicone Film	Dow Corning Corp.	9
Silicone Grease XC-5012	M	0.00	Soft Silicone Film	Dow Corning Corp.	9
Silicone Grease XCT-4043	M	0.00	Soft Silicone Film	Dow Corning Corp.	9
Silicone Electro-lub-pres-o-valve	M	0.47	Soft Silicone Film	Dow Corning Corp.	9
Stanley 77X576 (Plastisol)	P	0.22	Vynlite	Stanley Chemical Co.	12
Thiokol LP-2	R	0.00	Polysulfide Rubber	Thiokol Chemical Corp.	11
World Bestos	A	0.00	Phenolic	World Bestos Co.	7
XA-47 Resin	P	No Exp.	Miscellaneous	Minneapolis Honeywell Corp.	13

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Composition B					
Acoustic Cement	A	0.00	Oleoresinous Base	Armstrong Cork Co.	13
Acid Proof Black Paint	C	1.19	Jan-P-450	Glidden Co.	13
Acryloid B-72	C	0.00 s	Acrylate	Robt and Haas Co.	1
Adhesive A-4000	A	0.00	Silicone	Dow Corning Corp.	11
Adhesive 43-D	A	0.00	Spec. PA-PD-155	Dewy & Almy Chem. Co.	13
Amberlac No. 292	C	0.00	Polyester	Robt & Haas Co.	8
Araldite AN-111	P	0.00 s	Epoxy	Ciba Co. Inc.	3
Araldite CN-503	A	11.00	Epoxy	Ciba Co. Inc.	3
Araldite F	P	0.23	Epoxy	Ciba Co. Inc.	3
Araldite 2000-S	P	0.00	Epoxy	Ciba Co. Inc.	3
Araldite 33/900	A	10.43	Epoxy	Ciba Co. Inc.	3
Armstrong A-6	P	4.77	Epoxy	Armstrong Products Co.	3
Armstrong J-1140-B	A	0.27	Phenolic	Armstrong Cork Co.	7
Armstrong J-1140-D	R	0.00	Chlorinated Rubber	Armstrong Cork Co.	11
Armstrong J-1140-E	P	0.00	Comar C-6	Armstrong Cork Co.	13
Armstrong N-111	A	2.42 s	Synthetic Rubber	Armstrong Cork Co.	11
Armstrong N-171	A	0.77	Synthetic Rubber	Armstrong Cork Co.	11
Atlas Glassfilled Polyester	P	0.00	Polyester	Thermalflow Chemical Corp.	8
Barrier Material PA203	C	0.13	Viaylite	Picatinny Arsenal	12
BM-6102	P	0.49	Phenolic	Bakelite Corp.	7
BM-13080	P	0.00	Phenolic	Bakelite Corp.	7
BRR-18795	P	9.81	Epoxy	Bakelite Corp.	3
BRS-147	P	0.14	Polyester	Bakelite Corp.	8
Bondmaster No. 373	A	0.94 s	Synthetic Rubber	Rubber & Asbestos Corp.	11
Bondmaster No. 620	P	0.00 s	Epoxy	Rubber & Asbestos Corp.	3
Bondmaster No. 698	P	0.00	Epoxy-Phenolic	Rubber & Asbestos Corp.	3
Buryl Rubber SN-259	R	0.00	Buryl GR-1	Ohio Rubber Co.	11
Casco Flexible Cement	A	0.00	Miscellaneous	The Borden Co.	13

Material	Classification As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
C-11 Copolymer	P	0.00	Polystyrene	Lionel Co. Inc.	10
Chemotex No. 823	P	2.51	Epoxy	Euectric Welding Alloys Corp.	3
Chemotex No. 825	A	10-21	Epoxy	Euectric Welding Alloys Corp.	3
Cycleweld C-14	A	10-49	Epoxy	Cycleweld Cement Prod.	3
Dioxime No. 1	R	0.00s	Buryl Rubber	DeBell & Richardson Inc.	11
Dioxime No. 2	R	0.00s	Buryl Rubber	DeBell & Richardson Inc.	11
Dryply No. 81	P	0.00	Polyester	Flexfirm Products	8
Duralac R-1900	P	0.00s	Cellulosic	Duralac Chemical Corp.	2
Dynakon		0.00	Miscellaneous	Dynakon Corp.	13
Epon VI	A	3.17	Epoxy	Shell Chemical Corp.	3
Epon No. 828	A	10-64	Epoxy	Shell Chemical Corp.	3
Eronel Grease No. 900	M	0.00	Miscellaneous	Eronel Corp.	13
E.C. No. 711	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Corp.	11
E.C. No. 826	A	3.94	Synthetic Rubber	Minnesota Mining & Mfg. Corp.	11
E.C. No. 847	A	0.00	Elastomer	Minnesota Mining & Mfg. Corp.	11
E.C. No. 981	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Corp.	11
E.C. No. 1055	A	0.09	Synthetic Rubber	Minnesota Mining & Mfg. Corp.	11
E.C. No. 1113	S	0.05s	Synthetic Rubber	Minnesota Mining & Mfg. Corp.	11
E.C. No. 1126	S	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Corp.	11
E.C. No. 1202	S	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Corp.	11
E.C. No. 1236	S	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Corp.	11
E.C. No. 1365	S	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Corp.	11
E.C. No. 1469	S	0.00	Miscellaneous	Minnesota Mining & Mfg. Corp.	13
Eron No. 402 A	P	0.00	Vinylite	Firestone Plastic Co.	12
FM 10001	P	0.00s	Polyamide	E.L. duPont de Nemours & Co., Inc.	6
Fiberglas	P	0.00	Polyester	Glass Fibers Inc.	8
Flexseal No. 258	P	0.00	Vinylite	Vibradamp Corp.	12
G.E. No. 12487	S	0.00	Phenolic/Rubber	General Electric Co.	7
G.E. No. 12490	R	1.42	Phenolic	General Electric Co.	7
G.E. No. 12494	P	0.00	Phenolic	General Electric Co.	7
G.E. No. 12494	R	2.64	Phenolic/Rubber	General Electric Co.	7
G.E. No. 12840	P	0.00	Phenolic	General Electric Co.	7

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Geon No. 8700	A	0.11	Vinylite	B. F. Goodrich Chem. Co.	12
Glidden Cushioning Mat	P	0.01	Miscellaneous	Glidden Co.	13
Glidden Sealer No. 589	S	0.00	Glycerol ester/rosin	Glidden Co.	13
Glidden Sealer No. 590	S	0.00	Coumarone-Indene	Glidden Co.	13
Glidden Sealer No. 591	S	0.00	Glycerol ester	Glidden Co.	13
Glidden Sealer No. 592	S	0.00	Glycerol ester/rosin	Glidden Co.	13
Glidden Sealer No. 598	S	0.00	Glycerol ester/rosin	Glidden Co.	13
Glidden Sealer No. 600	S	0.00	Glycerol ester/rosin	Glidden Co.	13
Glidpol No. 1017	A	0.00 s	Polyester	Glidden Co.	8
Gray Glid Irons	P	0.00 s	Polyester	Glidden Co.	8
H-00	C	0.00 s	Polyester	F. E. Schundler & Co.	8
H-35	C	0.00 s	Polyester	F. E. Schundler & Co.	8
Isolite No. 2112	P	0.30	Polyester	Schenectady Varnish Co.	8
Johnson's Wax W-5015	M	0.17	Miscellaneous	S. C. Johnson & Sons	13
Johnson's Wax W-5016	M	0.07	Miscellaneous	S. C. Johnson & Sons	13
Johnson's Wax W-6118	M	0.00	Miscellaneous	S. C. Johnson & Sons	13
Kralastic BM No. 2146	P	0.00 s	Modified Polystyrene	Naugatuck Chemical Co.	10
Laminac No. 4116	A	0.00	Polyester	American Cyanamid Co.	8
Laminac No. 4128	P	0.00 s	Polyester, Styrene	American Cyanamid Co.	8
Laminac No. 4134	P	0.00	Polyester, Styrene	American Cyanamid Co.	8
Laminated Fiberglass	P	0.00	Polyester	Glen L. Martin Co.	8
Lining Compound	C	0.48 s	Spec. PA-PD-128	Dewey & Almy Chemical Co.	13
Liquid Masking Tape	A	0.07	Miscellaneous	Sears Roebuck Co.	13
Lustrex Lt 373	P	0.56 s	Polystyrene	Monsanto Chemical Co.	10
MX-172	P	0.00	Polyester	Celanese Corp. of America	8
Magneta Grade Tubing	P	0.00 s	Silicone	Firestone Tire & Rubber Co.	9
Metaseal 19V5	A	0.01 s	Polyester	American Metaseal Corp.	8
Natural Knife Caulk.	P	0.00	Miscellaneous	Jaye Manufacturing Corp.	13
Panelyte Pc No. 41263	P	0.00 s	Acrylonitrile	St. Regis Sales Corp.	11
Paraplex P-43	A	0.00	Polyester	Robn & Haas Co.	8

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Permatex No. 2	A	10-45	Gasket Sealant	Permatex Co. Inc.	13
Phenol-form. foam	P	0.85 _s	Phenolic	Picatinny Arsenal	7
Plasmount Pre-Set No. 2	A	0.00 _s	Miscellaneous	Girdor Process Corp.	13
Plastic Cement VPX-27	P	0.00	Polystyrene	Victory Plastics Co.	10
Pliobond No. 20	A	3.19	Synthetic Rubber	Goodyear Tire & Rubber Co.	11
Polyester Glass Mat	P	0.13 _s	Polyester	Baker McMillan Co.	8
Polyplastic MC	P	0.00 _s	Polyester	Polyplastic Limited Inc.	8
Polystyrene (Modified)	P	0.00	Polystyrene	Picatinny Arsenal	10
Presstite No. 155-6	A	0.00	Sealant	Presstite Engineering Co.	13
Presstite No. 218	A	2.31	Sealant	Presstite Engineering Co.	13
Presstite No. 261	A	0.19	Sealant	Presstite Engineering Co.	13
Presstite No. 261-6	A	0.32	Sealant	Presstite Engineering Co.	13
Presstite No. 271	A	0.33	Sealant	Presstite Engineering Co.	13
Presstite Sealing Compd No. 144-41	S	0.43	Asphaltic	Presstite Engineering Co.	13
Pro-Seal EP-601A	R	2.46	Polysulfide	Coast Pro-Seal & Mfg. Co.	11
QRS-136	P	0.00	Polyester	Bakelite Corp.	8
QRS-147	P	0.00 _s	Polyester	Bakelite Corp.	8
RD-49-105	P	0.00	Phenolic Foam	Bakelite Corp.	7
Rock Island I-18FE	R	0.14	Synthetic Rubber	Rock Island Arsenal	11
Rubber Comp. 32Si53	R	0.00	GR-S	Ohio Rubber Co.	11
Rubber Comp. XP-214	R	0.05	Butadiene/Styrene	Ohio Rubber Co.	11
Rubber Comp. XP-217	R	0.18	Elastomer	Ohio Rubber Co.	11
Scotch Tape No. 650	A	1.03	Cellulosic	Minnesota Mining Mfg. Co.	2
Selectron Resin 5081	A	0.00	Polyester	Pittsburgh Plate Glass Co.	8
Silastic B-250	R	0.00	Silicone Rubber	Dow Corning Corp.	11
Silicone Grease No. G	M	1.21	Silicone film	General Electric Co.	9
Silicone Grease No. H	M	0.00	Silicone film	General Electric Co.	9
Silicone Grease A-200-44	M	0.00	Soft film silicone	General Electric Co.	9
Silicone Grease A-200-46	M	0.00	Soft film silicone	General Electric Co.	9
Silicone Grease 372-72-539	M	0.00	Soft film silicone	General Electric Co.	9
Silicone Grease XC-4272	M	0.00	Soft film silicone	Dow Corning Corp.	9

Material	Classification As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
Silicone Grease XC-4282	M	0.00	Soft film silicone	Dow Corning Corp.	9
Silicone Grease XC-5012	M	0.00	Soft film silicone	Dow Corning Corp.	9
Silicone Grease XCI-4043	M	0.00	Soft film silicone	Dow Corning Corp.	9
Silicone Grease Electro-Lub-Pre-o-Valve	M	0.52	Soft film silicone	General Electric Co.	9
Silastic D-250	R	0.00	Silicone Rubber	Dow Corning Chemical Co.	9
Soyron No. 700	P	0.00	Polystyrene	Dow Corning Chemical Co.	10
Sulfur No. 1	R	0.00 _s	Butyl Rubber	DeBell and Richardson Inc.	11
Sulfur No. 2	R	0.00 _s	Butyl Rubber	DeBell and Richardson Inc.	11
Thiokol LP-2	R	1.43	Polysulfide Rubber	Thiokol Chemical Corp.	11
Tub Kove Sealing Strip	S	0.00	Vinylite	Keller Products Inc.	12
Turbotherm No. 105	P	0.00 _s	Miscellaneous	Firestone Tire & Rubber Co.	13
Varglass Silicone Tubing	R	0.00	Silicone	Firestone Tire & Rubber Co.	11
Vinyl No. 6242	P	0.00	Polyvinyl Chloride	DeBell and Richardson Inc.	12
Vistanex B-120 Gel	S	0.00	Miscellaneous	Standard Oil Co.	13
Z2E Hypalon	R	0.00	Hypalon Rubber	Rock Island Arsenal	11
Z40 Silicone	R	0.00	Silicone Rubber	Rock Island Arsenal	11
Z46E Adiprene	R	0.00	Adiprene B Rubber	Rock Island Arsenal	11
Z47 Hycar 4021	R	1.01	Butyl Rubber	Rock Island Arsenal	11
Zodock 965	A	0.00	Miscellaneous	Presstite Engineer Corp.	13
Composition C-2					
Paraplex P-13	P	0.00	Polyester	Rohm & Haas Co.	8
Paraplex P-43	P	0.00	Polyester	Rohm & Haas Co.	8
Plaskon Alkyd-442	P	0.00	Polyester	Libbey Owens Ford Glass Co.	8
Composition C-3					
Acoustic Cement Alvar	A	1.86	Oleoresinous Base	Armstrong Cork Co.	13
	A	0.55	Polyvinyl Acetate	Shawinigan Products Co.	12

Material	Classification As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
Armstrong J-1140B	A	L15	Phenol-formaldehyde	Armstrong Cork Co.	7
Armstrong J-1140D	R	L10	Chlorinated Rubber	Armstrong Cork Co.	11
Armstrong J-1140E	A	0.12	Cumar C-6	Armstrong Cork Co.	13
BRR-18795	P	0.77	Epoxy	Bakelite Corp.	3
Casco Flexible Cement	A	0.11	Miscellaneous	The Borden Co.	13
Cohesive Gauze	S	0.12	Miscellaneous	Industrial Tape Corp.	13
Dispersite 1789	R	L83 s	Reclaim Rubber	U.S. Rubber Co.	11
Dispersite 1822A	R	L80 s	Buryl Rubber	U.S. Rubber Co.	11
E.C. No. 250	A	L00	Synthetic Rubber	Minnesota Mining Mfg. Co.	11
E.C. No. 711	A	0.05	Synthetic Rubber	Minnesota Mining Mfg. Co.	11
Elvanol 70-05 (film)	C	4.47	Polyvinyl Alcohol	E.I. duPont de Nemours & Co., Inc.	12
Paraplex P-13	P	0.00 s	Polyester	Rohm & Haas Co.	8
Paraplex P-43	P	0.00 s	Polyester	Rohm & Haas Co.	8
Plaskon Alkyd-442	P	0.00 s	Polyester	Libbey Owens Ford Glass Co.	8
Pliobond No. 20	A	2.69 s	Synthetic Rubber	Goodyear Tire & Rubber Co.	11
Polyethylene	P	0.20 s	Polymerized ethylene	Visking Corp.	4
Saran (Type M film)	P	0.00	Vinylidene Chloride Resin	The Dow Chemical Co.	12
Titanox-TG	C	0.02	Inorganic Pigment	Titanium Alloys Mfg. Co.	13
World Bestos	A	L25	Phenolic/Acrylonitrile	World Bestos Co.	7
Composition 4187 Cast Propellant					
Laminated fiberglass	P	0.00	Polyester		8
Composition C-4 (Harrisite)					
Acoustic Cement	A	0.00	Oleoresinous Base	Armstrong Cork Co.	13
Acid Proof Black Paint	C	0.73 s	JAN-P-450	Glidden Co.	13
Armstrong J-1140B	A	0.20	Phenol-formaldehyde	Armstrong Cork Co.	7
Armstrong J-1140D	R	0.00	Chlorinated Rubber	Armstrong Cork Co.	11
Armstrong J-1140E	A	0.20	Cumar C-6	Armstrong Cork Co.	13
BV-1600	C	0.00	Phenol-formaldehyde	Bakelite Corp.	7

Material	Classification As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
Casco Flexible Cement	A	0.00	Miscellaneous	The Borden Co.	13
Dispersite 1789	R	0.00 _s	Reclaimed Rubber	U.S. Rubber Co.	11
Dispersite 1822A	R	0.00 _s	Reryl Rubber	U.S. Rubber Co.	11
Micarra	P	0.00	Phenol-formaldehyde	Westinghouse Electrical Corp.	7
Paraplex P-13	A	0.00	Polyester	Robm & Haas Co.	8
Paraplex P-43	A	0.00	Polyester	Robm & Haas Co.	8
Phenol-formaldehyde	P	0.00	Phenolic	Picatinny Arsenal	7
Plaskon No. 951	P	0.00	Polyester	Allied Chemical Corp.	8
Plaskon Alkyd-442	P	0.00	Polyester	Libbey Owens Ford Glass Co.	8
Plexiglas	P	0.00	Polymethylmethacrylate	Robm & Haas Co.	1
Plisbond No. 20	A	1.90 _s	Synthetic Rubber	Goodyear Tire & Rubber Co.	11
Polyethylene	P	0.00 _s	Polymethylated ethylene	Visking Corp.	4
Polystyrene	P	0.00	Polystyrene		10
Profcoat	P	0.00	Polyvinyl chloride	Profcoat Inc.	12
Resinox	P	0.20	Phenol-formaldehyde	Monsanto Chemical Co.	7
Saran (Type M film)	P	0.00 _s	Vinylidene chloride	The Dow Chemical Co.	12
Silicone Grease Form G	M	0.04	Soft silicone film	General Electric Co.	9
Silicone Grease Form H	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease A-25044	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease A-20046	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease 372-2-539	M	0.04	Soft silicone film	General Electric Co.	9
Silicone Grease XC-4272	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease XC-4282	M	0.05	Soft silicone film	Dow Corning Corp.	9
Silicone Grease XC-5012	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease XCT-4043	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease Electro-Lub-Pres-o-valve	M	0.00	Soft silicone film	Dow Corning	9
Tygo film TR-216	C	0.00	Miscellaneous	Liberty Powder Co.	13
Tygo film TR-217	C	0.00	Miscellaneous	Liberty Powder Co.	13
Valpon 182C-7	C	0.50	Miscellaneous	Liberty Powder Co.	13
Varnish-Spec 3-167	C	0.00	Phenol-formaldehyde/ linseed oil	Central Paint & Varnish Works	7

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
VF-612 (Acid Proof Black Paint)	C	0.00 s	Spec. AXS-1680, Phenolic	Bakelite Corp.	7
XV-1657	C	0.00 s	Phenol-formaldehyde	Bakelite Corp.	7
Composition Smoke No. 259					
Taylor Grade XX	P	0.00	Phenol Laminar	Taylor Fibre Co.	7
Tensler No. 105	P	0.00	Polyvinyl chloride	Irvington Varnish & Insulator Co.	12
75/25 Cyclohex					
Armstrong A-6	P	3.67	Epoxy	Armstrong Products Co.	3
Armstrong C-4	P	10.56	Epoxy	Armstrong Products Co.	3
BRR-18795	P	0.71	Epoxy	Bakelite Corp.	3
BRS-147	P	0.00 s	Polyester	Bakelite Corp.	8
Buxar-B76	P	0.00	Polyvinyl butyral	Monsanto Chem. Corp.	12
E.C. No. 801	A	0.76	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 847	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
Furac X-2	P	0.00	Furfural-formaldehyde	Furane Plastics & Chem. Co.	5
Laminac No. 4116	A	0.00	Polyester	American Cyanamid Co.	8
Plastisol	P	0.00	Polyvinyl chloride	Stanley Chemical Co.	12
Hot Dip No. 215	P	0.50 s	Ethyl cellulose	Picatinny Arsenal	2
Polyamide Hot Dip No. 220	P	0.67 s	Polyamide	Picatinny Arsenal	6
Hot Dip No. 222	P	0.00	Cellulose Acetate Butyrate	Picatinny Arsenal	2
Dynamite					
Acoustic Cement	C	No Exp.	Oleoresinous base	Armstrong Cork Co.	13
Armstrong J-1140B	A	No Exp.	Phenol-formaldehyde	Armstrong Cork Co.	7
Armstrong J-1140D	R	No Exp.	Chlorinated Rubber	Armstrong Cork Co.	11
Armstrong J-1140E	A	No Exp.	Gumar C-6	Armstrong Cork Co.	13
Casco Flexible Cement		No Exp.	Miscellaneous	The Borden Co.	13

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
DBX					
Teflon	P	0.04	Polyethylene	E.I. du Pont de Nemours & Co., Inc.	4
Flash Powder Bullseye No. 2					
Acryloid B-72	C	0.00	Acrylate	Roby & Haas Co.	1
Cycleweld C-14	A	8.74	Epoxy	Cycleweld Cement Products	3
Epon 828	A	2.34	Epoxy	Shell Chemical Corp.	3
Laminac No. 4116 with Vinylite	A	0.00	Polyester	American Cyanamid Co.	8
Polyethylene DE3422	P	0.00	Polymerized Ethylene	Bakelite Corp.	4
Fuze Powder					
Armstrong N111	A	0.00	Epoxy	Armstrong Cork Co.	3
Cycopol S-102-5	A	0.00	Polyester alkyl	American Cyanamid	8
Esamel, Olive drab	C	0.00	MIL-E-13687 Miscellaneous		13
Exon, Type 400-XR-61	A	0.00	Polyvinyl chloride	Firestone Plastics Co.	12
Formula No. 38	-	0.00		Esjay Co., Inc.	4
Hypolon S-2	P	0.00	Chlorosulfonated Polyethylene	E.I. du Pont de Nemours & Co., Inc.	4
Vistrapex	R	0.00	Polyisobutylene	Standard Oil Co.	13
Moleite					
Cellulose Acetate/Dibutyl Phthalate	P	1.24	Cellulosic	Chemaco Corp.	2
Ethyl Cellulose E59M2; E-1256	P	0.22	Cellulosic	Tennessee Eastman	2
Geon No. 1911	P	1.05	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12
Geon No. 2046	P	1.10	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12
Lucite	P	1.20	Polymethyl methacrylate	E.I. du Pont de Nemours & Co., Inc.	1

Material	Classification As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
HMX					
Furane X-2/CM	A	4.33 ⁺	Furane	Furane Plastics Inc.	5
Eastman 910	A	0.21	Acrylate	Tennessee Eastman	2
Furane X-2/PC	A	2.95	Furane	Furane Plastics Inc.	5
Duralon 31/PC	A	3.53 ⁺	Furane	General Mills	5
Duralon 31/CM	A	2.00	Furane	General Mills	5
Adiprene L	A	0.00	Urethane	E.I. du Pont de Nemours & Co., Inc.	11
Nyloa 6501	P	0.53	Polyamide	E.I. du Pont de Nemours & Co., Inc.	6
HMX/Exon					
Furane X-2/CM	A	0.77	Furane	Furane Plastics Inc.	5
Furane X-2/PC	A	0.00	Furane	Furane Plastics Inc.	5
HBX					
Amberlite PR-115	A	0.00	Resorcinol-formal.	Robm & Haas Co.,	7
BRS-136	P	0.51	Polyester	Bakelite Corp.	8
BRS-147	P	0.53 ^s	Polyester	Bakelite Corp.	8
Corfoam-114	P	1.21	Phenolic-foam	Rezolin, Los Angeles	7
Cycleweld C-14	A	10.11 4.84	Epoxy	Cycleweld Cement Prod.	3
Dryply No. 81	P	0.00	Polyester	Flerfim Products	8
Epon No. 828	P	9.79	Epoxy	Shell Chemical Corp.	3
E.C. No. 870	R	0.03	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
Hysol No. 6020	A	10.33 ⁺ 2.03	Epoxy	Houghton Laboratories	3
Lockfoam C-408R	P	1.91	Polyurethane	Mopco	13
Micmo-Balloons	P	0.53	Phenol-formaldehyde	Union Carbon & Carbide Co.	7
Neoprene	R	1.50	2-Chloro-Butadiene 1,3	Hughes Aircraft & Co.	11
Panelyte Pc No. 41263	P	0.00 ^s	Acrylonitrile Copolymer	Sr. Regis Sales Corp.	11
Presstite No. 155	S	0.79	Polyisobutylene/asbestos	Presstite Engineering Co.	13
Presstite No. 218	P	4.98	Aerodynamic Smoothing Compd.	Presstite Engineering Co.	13
Teflon	P	0.00	Polyethylene	E.I. du Pont de Nemours & Co., Inc.	4

Material	Classification: As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Igniter Mix-K-29					
Bakelite BX-261	P	0.00	Phenolic	Bakelite Corp.	7
Ethyl Cellulose	P	0.00 _s	Cellulosic	Chemaco Corp.	2
Polyethylene	P	0.00	Polyethylene	Visking Corp.	4
JPN					
Allire	P	0.00 _s	Polyester	Pittsburgh Plate Glass Co.	8
Armstrong A-1	A	7.58 _s	Epoxy	Armstrong Cork Co.	3
Bakelite DE-3422	P	0.20	Polyethylene	Bakelite Corp.	4
CMC	P	0.00	Na Carboxymethyl Cellulose	Chemaco Corp.	2
Ethyl Cellulose No. 346	P	1.67 _s	Cellulosic N-100	Chemaco Corp.	2
FM-3 Nylon	P	1.55 _s	Polyamide	E.I. du Pont de Nemours & Co., Inc.	6
Formvar "E"	P	0.00	Polyvinyl formal	Shawinigan Resins Ltd.	12
Furane X-2	A	7.44 _s	Furfural formaldehyde	Furane Plastics & Chemical Co.	5
GR-1	R	0.00 _s	Polyisobutylene-isoprene	Office of Reserve Rubber	11
GR-M	R	2.85	2-Chloro-1,3-Butadiene polymer	E.I. du Pont de Nemours & Co., Inc.	11
GR-S	R	0.00 _s	Butadiene/styrene	E.I. du Pont de Nemours & Co., Inc.	11
Geon No. 404	P	0.00 _s	Polyvinyl Chloride	B.F. Goodrich Chemical Co.	12
Hysol No. 6000	P	0.00 _s	Epoxy Resin	Houghton Laboratories	3
KEL-F	P	0.00 _s	Polytrifluoromono-chloro- ethylene	M.E. Kellogg & Co.	4
Laminac No. 4116	P	0.00 _s	Polyester	American Cyanamid Co.	8
Laminac No. 4125	P	0.00 _s	Polyester Resin	American Cyanamid Co.	8
Laminac No. 4134	A	0.01 _s	Polyester/Styrene	American Cyanamid Co.	8
Lustrex Lt. 373	P	0.64 _s	Modified Polystyrene	Monsanto Chem. Co.	10

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
MR-25C	P	0.00 s	Polyester Resin	Celanese Corp. of America	8
Monocork No. 100	R	0.00 s	Rubber Base	Armstrong Cork Co.	11
Monocork No. 500	R	2.48 s	Neoprene Base	Armstrong Cork Co.	11
Paraplex P-13	P	0.00 s	Polyester Resin	Robm & Haas Co.	8
Paraplex P-43	P	1.61 s	Polyester Resin	Robm & Haas Co.	8
Pencalite G1215A	P	0.00 s	Phenol-formaldehyde	Koppers Co. Inc.	7
Phenol-formaldehyde No. 2611	P	0.00 s	Cast Resin	Catalin Corp.	7
Plexene M	P	0.00 s	Styrene/acrylonitrile	Robm & Haas Co.	10
Polyvinyl Alcohol A	P	1.20 s	Vinylite	E.L. du Pont de Nemours & Co., Inc.	12
Polyvinyl Alcohol B	P	0.00 s	Vinylite	Resistoflex Corp.	12
S-50 Polymer	P	0.00 s	Styrenated isobutylene	Enjay Co. Inc.	10
Selecton No. 5003	P	0.04 s	Polyester	Pittsburgh Plate Glass Co.	8
Silastic No. 150	P	0.00 s	Silicone Polymer	Dow Corning Corp.	11
Silastic No. 180	P	0.00 s	Silicone Polymer	Dow Corning Corp.	11
Symon No. 666	P	0.00 s	Polystyrene	Dow Chemical Co.	10
Teflon	P	0.00 s	Polytetra fluoroethylene	E.L. du Pont de Nemours & Co., Inc.	4
Thiokol-1605AH	R	0.00 s	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol-1620AH	R	0.34 s	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol-3000FH	R	0.50 s	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol-3000PR-1	R	0.40 s	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol-3000 ST	R	0.00 s	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol-3600 ST	R	0.00 s	Polysulfide Rubber	Thiokol Chemical Corp.	11

Material	Classification As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
Lead Azide					
Acid Proof Black Paint	C	No Exp.	IANP-450	Glidden Co.	13
Amberlac No. 292	C	No Exp.	Polyester	Robt & Haas	8
BM-261	P	No Exp.	Phenolic	Bakelite Corp.	7
Cycopol-S102-5	C	No Exp.	Synthetic Alkyd.	American Cyanamid Co.	8
Dex-o-Tex	R	No Exp.	Neoprene Conductive	Crossfield Products	11
Dioxime No. 1 and 2	R	0.00 _s	Butyl Rubber	DeBell and Richardson Inc.	11
Dwite HR-340	P	No Exp.	Phenolic Resin	Dwite Plastics Inc. (The Borden Co.)	7
E.C. 373	A	No Exp.	Epoxy	Minnesota Mining & Mfg. Co.	3
Epon 828	P	No Exp.	Epoxy	Shell Chemical Corp.	3
Fortran No. 404	P	0.00	Polyvinyl chloride	Thermoplastic Plastics Corp.	12
Glaskyd No. 1901	P	No Exp.	Polyester	Olin Industries	8
Green Enamel	C	No Exp.	Spec. MIL-E-10687	American Cyanamid Co.	2
Green Lacquer	C	No Exp.	Spec. MIL-E-10287	American Cyanamid Co.	2
Hypolon No. S-2	C	No Exp.	Chlorosulfonated polyethylene	E.I. du Pont de Nemours & Co., Inc.	4
Panelyte Pc 41263	P	No Exp.	Acrylonitrile Copolymer	St. Regis Sales Corp.	11
Phenolformaldehyde Varnish	P	0.00	Phenol-formaldehyde	Picatinny Arsenal	7
Phenolic Spacers	P	No Exp.	Pc MK 73-2-250G Varnish	Bakelite Corp.	7
Polyester film tape No. 850	P	No Exp.	Polyester	Minnesota Mining Mfg. Co.	8
Marinobl Metal Laminare	A	No Exp.	Blue Aluminum backed PVC		12
Red Enamel	C	No Exp.	Spec. MIL-E-10687	American Cyanamid Co.	2
Red Lacquer	C	No Exp.	Spec. MIL-L-10287	American Cyanamid Co.	2
S-50 Polymer	P	No Exp.	Synthetic-isobutylene,	Eojay Co. Inc.	10
Sulfur No. 1	R	0.00 _s	Butyl Rubber	DeBell and Richardson Inc.	11
Sulfur No. 2	R	0.00	Butyl Rubber	DeBell and Richardson Inc.	11
Tiaseal Brush-on	S	0.00	Gasket Cement	Radiator Specialty Co.	13
Zapon 3-291-A	C	0.00	Phenol-formaldehyde Aluminum	Atlas Powder Co.	7

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
MI					
Armstrong N-111	A	0.00 s	Synthetic Rubber	Armstrong Cork Co.	11
Armstrong N-171	A	0.00	Synthetic Rubber	Armstrong Cork Co.	11
Briggs Rubber No. 107	R	0.00 s	Butadiene Acrylonitrile	Briggs Rubber Co.	11
Cellulose Acetate/Dibutyl Phthalate	P	0.18	Cellulosic	Chemaco Corp.	2
Cellulose Nitrate film	A	0.00 s	Cellulosic	Selectronic Corp.	2
Diacetate Cloth-Bale 25	-	0.00	Cellulosics		2
Filament Tape No. 880	A	0.00	Glass Fiber/Adhesive Backing	Minnesota Mining Mfg. Co.	13
Filament Tape No. 890	A	0.00	Glass Fiber/Adhesive Backing	Minnesota Mining Mfg. Co.	13
Geon No. 1911	P	0.18	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12
Geon No. 2046	P	0.20	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12
Hycar 72-248	R	0.00 s	Rubber Acrylonitrile	Goodyear Rubber Co.	11
Laminac No. 4116	A	0.13	Polyester/Styrene	American Cyanamid Co.	8
Laminac No. 4134	A	0.00	Polyester/Styrene	American Cyanamid Co.	8
Plastacele	A	0.26	Cellulosic		2
Pliobond No. 20	A	1.25	Synthetic Rubber	Goodyear Tire & Rubber Co.	11
QRS-136	P	0.00	Polyester	Bakelite Corp.	8
Rubber Comp. W-4930	R	0.00	Synthetic Rubber	Raybestos-Manhattan Inc.	11
SRF-172-2	R	0.00	Synthetic Rubber	Firestone Plastics Co.	11
SRF-172-1A	R	0.00	Synthetic Rubber	Firestone Plastics Co.	11
SRF-172-3	R	0.00	Synthetic Rubber	Firestone Plastics Co.	11
Scotchweld No. 585	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
Silastic 90-24-480	R	0.00 s	Silicone Rubber	Dow Corning Co.	11
Silastic 90-24-480	R	0.94 s	Silicone Rubber	Dow Corning Co.	11
Silicone Stopcock Grease	M	0.00	Silicone polymer	Dow Corning Co.	9
Silk Grade E	-	0.00 s	Spec. JAN-C-539	Selectronic Corp.	6
Tenite II, 203A-S2	P	0.21	Cellulosic	Tennessee Eastman Co.	2

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Thiokol LP-2	R	0.00	Polysulfide Rubber	Thiokol Chemical Corp.	11
Vinylite	P	0.00 _s	Polyvinyl Chloride	Noma Electrical Corp.	12
Viskoon R-55-S	P	0.00			
Viskoon R-65-S		0.00			
Viskoon R-85-D		0.00			
Lead Styphnate					
Durite HR-340	P	No Exp.	Phenolic	The Borden Co.	7
IMR-4379 Propellant					
Cycleweld C-14	A	0.00	Epoxy	Cycleweld Cement Prod.	3
IM-142 Incendiary Compound					
Cycleweld C-14	A	0.00	Epoxy	Cycleweld Cement Prod.	3
M2					
Analdite No. 102	P	6.61 _s	Epoxy	Ciba Company Inc.	3
Armstrong A-3	A	2.77 _s	Epoxy	Armstrong Products Co.	3
Armstrong N-111	A	0.89 _s	Synthetic Rubber	Armstrong Cork Co.	11
BM-6102	P	2.83 _s	Phenolic	Bakelite Corp.	7
Cellulose Acetate/Dibutyl Phthalate	P	5.98	Cellulosic	Chemaco Corp.	2
Dez-o-Tex	R	0.55	Neoprene Conductive	Crossfield Products	11
Diacetate Cloth-Bale 25		0.00	Cellulosics		2
Durez No. 12041	A	1.62 _s	Phenolic	Durez Plastics & Chemical Inc.	7
Durez No. 13348	R	8.48 _s	Rubber Phenolic	Durez Plastics & Chemical Inc.	7
Durez No. 14658	R	8.45 _s	Rubber Phenolic	Durez Plastics & Chemical Inc.	7

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Entup No. 2507-F4	P	2.57 _s	Rubber Phenolic	United States Rubber	7
Entup No. 2530	P	2.92 _s	Rubber Phenolic	United States Rubber	7
Entup No. 2532-F2	P	2.39 _s	Rubber Phenolic	United States Rubber	7
Entup No. 2537-F	P	4.43 _s	Rubber Phenolic	United States Rubber	7
Exon No. 402A	P	1.09	Polyvinyl chloride	Firestone Plastics Co.	12
G.E. No. 12487	P	6.02 _s	Wood flour filled Phenolic/ nitrile rubber	General Electric Co.	7
G.E. No. 12809	P	5.72	Chopped fabric filled Phenolic/nitrile rubber	General Electric Co.	7
Geon No. 404	P	0.00	Polyvinyl chloride	B.F. Goodrich Chemical Co.	12
Geon No. 2046	P	3.81	Polyvinyl chloride	B.F. Goodrich Chemical Co.	12
Geon No. 8700	P	0.39	Polyvinyl chloride	B.F. Goodrich Chemical Co.	12
Geon No. 1911	P	4.78	Polyvinyl chloride	B.F. Goodrich Chemical Co.	12
Mylar	P	1.32	Polychethylene Terephthalate	Nystic Adhesive Prod	8
Plastacele	P	4.55	Cellulosic	Tennessee Eastman	2
Polyurethane foam	P	0.92	Polyurethane	Burnett Co.	11
Presstite 106	R	0.81 _s	Polysulfide Rubber	Presstite Engineering Corp.	11
QRS-136	P	0.00 _s	Polyester	Bakelite Corp.	8
Synthetic Rubber W-4610B	R	0.86 _s	Synthetic Rubber	Manhattan Rubber Mfg. Co.	11
Synvar No. 85651	P	8.39 _s	Rubber Phenolic	Synvar Corp.	7
Synvar No. 86512	P	5.13 _s	Rubber Phenolic	Synvar Corp.	7
Tenite II 203A-52	P	4.48	Cellulosic	Tennessee Eastman	2
Vinylite	P	0.00 _s	Polyvinyl chloride	Noma Electrical Corp.	12
XP-195 GRS	R	0.00	Synthetic Rubber	Picatinny Arsenal	1F
Natural Rubber	R	0.00	Elastomer		11
			M6		
Filament Tape No. 880	S	0.00	Glass Fibers/Adhesive Backing	Minnesota Mining & Mfg. Co.	13

Material	Classification As to Use	Reactivity (gas, evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Filament Tape No. 890	S	0.00	Glass Fibers/Adhesive Backing	Minnesota Mining & Mfg. Co.	13
Laminac No. 4116	A	0.00	Polyester/styrene	American Cyanamid Co.	8
Laminac No. 4134	A	0.08	Polyester/styrene	American Cyanamid Co.	8
Mylar	P	0.00	Polyethylene Terephthalate	Mystic Adhesive Prod.	8
Polyurethane foam	P	1.53	Polyurethane	Barnett Co.	11
PS-10-13N	R	0.09	Synthetic Rubber	Parker Appliance Co.	
Presstite No. 261	A	0.00		Presstite Engineering Co.	
Presstite No. 261-6	A	0.00		Presstite Engineering Co.	
Presstite No. 271	A	0.46		Presstite Engineering Co.	
Rubber Comp. W-4930	R	0.00 s	Synthetic Rubber	Raybestos Manhattan Inc.	11
Rubber Comp. No. 5420-15	R	0.00 s	Synthetic Rubber	Quaker Rubber Co.	11
Rubber Comp. No. 5420-45	R	0.00 s	Synthetic Rubber	Quaker Rubber Co.	11
Rubber Comp. No. 5420-60	R	0.00 s	Synthetic Rubber	Quaker Rubber Co.	11
Rubber Comp. RF 60	R	0.00 s	Synthetic Rubber	Collins Packing Co.	11
SX 1883-Rubber Comp.	R	0.00 s	Synthetic Rubber	Acushnet Rubber Co.	11
SX 1884-Rubber Comp.	R	0.00 s	Synthetic Rubber	Acushnet Rubber Co.	11
Shell No. 422	R	0.00	Epoxy	Shell Chemical Corp.	3
Silicone Stopcock Grease	M	0.00	Silicone film	Dow Corning Co.	9
M7					
Acrylated Alkyd MF-SS1	C	0.00	Polyester	Aberdeen Proving Ground	8
Acrylic MF-875	C	0.00	Acrylic Ester	Aberdeen Proving Ground	1
Ankoseal No. 436	P	0.00	Polyvinyl Chloride	Noma Electrical Corp.	12
Chlorinated Paraffin	C	0.00	Miscellaneous	Aberdeen Proving Ground	13
Coumarone Indene	C	0.00	Coumarone-Indene	Aberdeen Proving Ground	13
E.C. No. 520	A	1.73	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 547	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1236	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11

Material	Classification As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
Epoxy MF-876	A	3-96	Epoxy	Armstrong Cork Co.	3
Ethyl Cellulose Lacquer	C	0.00 s	Cellulosic	Picatinny Arsenal	2
Gering X-6178-87-1	P	0.63	Ethyl Cellulose/Polyvinyl Butyral	Hercules Powder Co.	2
Laminac No. 4116	A	0.00 s	Polyester	American Cyanamid Co.	8
Laminac No. 4134	A	0.00 s	Polyester	American Cyanamid Co.	8
Norfolk Varnish	C	0.00 s	Miscellaneous	Norfolk, Mass.	13
Phthalic Alkyd (Drying Oil-MF-894)	C	0.00	Polyester	Aberdeen Proving Ground	8
Polyethylene-Grade P-1000-PM20	P	0.00	Polyethylene	E.I. du Pont de Nemours Co. Inc.	4
Presstite No. 106	R	0.85 s	Polysulfide Rubber	Presstite Engineering Co.	11
Presstite No. 218	P	8-82	Acrodynamic Smoothing Compd.	Presstite Engineering Co.	13
Presstite No. 261	A	0.00	Sealant	Presstite Engineering Co.	13
Presstite No. 261-6	A	0.04	Sealant	Presstite Engineering Co.	13
Presstite No. 271	A	1.79	Sealant	Presstite Engineering Co.	13
Purple Lacquer	C	0.00 s	JAN-L-296	Picatinny Arsenal	2
Rubber Compd. XP-76	R	0.30 s	Butadiene/Styrene	Picatinny Arsenal	11
S-30 Polymer	P	0.00 s	Styrenated-isobutylene	Picatinny Arsenal	10
Styrenated Alkyd-MF-882	C	0.00	Polyester	Aberdeen Proving Ground	8
Tenite II 265 MS	P	0.00 s	Cellulose Acetate Butyrate	Tennessee Eastman Corp.	2
Vinyl Toluene Alkyd	C	0.00	Polyester	Aberdeen Proving Ground	8
Vinyl Acrylic Comp-VAGH	P	0.00 s	Polyvinyl Chloride Acetate	Bakelite Corp.	12
Vinyl Butyral Acetate-MF-871	C	0.00	Vinyl Butyrate	Aberdeen Proving Ground	12
Vinyl Chloride Acetate-MF-972	C	0.00	Vinyl Chloride Acetate	Aberdeen Proving Ground	12
Vinyl Covered Wire	C	0.00 s	Vinylite	Atlas Powder Co.	12
			MS		
Cellophane M-SAT-84	S	0.94	Regenerated Cellulose	E.I. du Pont de Nemours & Co., Inc.	2

Material	Classification As to Use	Reactivity (gas evaluation, ml)	Type Base	Manufacturer of Material	Section
Cellophane MIL-50-11-151	S	0.04	Regenerated Cellulose	E.I. du Pont de Nemours & Co., Inc.	2
Cycleweld C-14	P	6.79	Epoxy Resin	Cycleweld Cement Products	3
Dobackman M-SAT	A	0.00 s	Cellophane	The Dobackman Co.	2
Dobackman M-SAT-L-86	A	0.00 s	Cellophane	The Dobackman Co.	2
Dobackman H-50-M-SAT-86	A	6.80 s	Cellophane	The Dobackman Co.	2
Ethocel Lt 51	P	Storage only	Ethylcellulose	The Dow Chemical Co.	2
Exon No. 402	P	0.00	Polyvinyl Chloride	Firestone Plastics Co.	12
Geon No. 8700	P	0.55	Polyvinyl Chloride	B.F. Goodrich Chemical Co.	12
Pliofilm	R	0.00	Rubber hydrochloride film	Goodyear Tire & Rubber Co.	11
Cellulose Hot Dip No. 215	C	1.93 s	Ethyl Cellulose	Picatinny Arsenal	2
Polyamide Hot Dip No. 220	C	4.22 s	Polyamide	Picatinny Arsenal	6
Cellulose Hot Dip No. 222	C	0.00 s	Cellulose Acc. Butyrate	Picatinny Arsenal	2
Shellmar No. 971-R	A	0.00 s	Cellophane	Shellmar Products Corp.	2
Shellmar No. 1037-B	A	0.00	Cellophane	Shellmar Products Corp.	2
Thiokol LP-2	R	0.00	Polysulfide Rubber	Thiokol Corp.	11
M9					
Acryloid B-72	C	5.06 s	Acrylic Ester	Rohm & Haas Co.	1
Briggs No. 107	R	6.14 s	Butadiene/Acrylonitrile	Briggs Rubber Products Co.	11
Cellulose Nitrate film	P	0.00	Cellulosic	Selectronic Corp.	2
Cycleweld C-14	A	5.28	Epoxy Polysulfide	Cycleweld Cement Products	3
Dex-o-Tex	R	0.00	Neoprene Conductive	Crossfield Products Co.	11
E.C. 582-1S-2	S	0.92	Cellulosic		2
E.C. 15570	S	0.70	Cellulosic		2
Ethyl Cellulose	P	0.00 s	Cellulosic	Hercules Powder Co.	2
S-RF 172-1A	R	0.14	Silicone Rubber	Firestone Tire & Rubber Co.	11
S-RF 172-2	R	1.02 s	Silicone Rubber	Firestone Tire & Rubber Co.	11
S-RF 172-3	R	1.10 s	Silicone Rubber	Firestone Tire & Rubber Co.	11

Material	Classification As to Use	Reactivity (gas evaluation, ml)	Type Base	Manufacturer of Material	Section
Hycar 72-248	R	0.27 s	Butadiene/Acrylonitrile	Goodyear Rubber Co.	11
Lustrax L T 373	P	0.00 s	Polystyrene	Monsanto Chemical Co.	10
Old Gering Plastic X6178-87-1	P	0.00 s	Ethyl Cellulose/Polyvinyl Butyral	Hercules Powder Co.	2
Orox V	P	0.00	Molding Resin	Quay Oils & Resins Inc.	13
Plio-tuf GP-75	P	0.00	Styrene/Butadiene	Goodyear Tire & Rubber Co.	11
Polyethylene	P	0.58	Polyethylene		4
Polyethylene Silk Laminate	P	0.08	Polyethylene	Picatinny Arsenal	4
Polystyrene	P	0.00 s	Straight Polystyrene	Chicago Molded Product, Inc.	10
Polystyrene sealer (solution)	S	0.84 s	Polystyrene/toluene	Monsanto Chemical Co.	10
Presstite 106	R	0.08 s	Polysulfide Rubber	Presstite Engineering Co.	11
Rayon-wax coated	P	0.00	Microcrystalline wax/ polyisobutylene	Transwrap & Co.	13
Silastic 50-24-480	R	0.27 s	Silicone Rubber	Dow Corning Corp.	11
Silastic 80-24-480	R	0.00 s	Silicone Rubber	Dow Corning Corp.	11
Silk	P	0.00	Protein-Organic		6
Thiokol LP-2	R	0.00	Polysulfide	Thiokol Corp.	11
Zodock No. 965	P	0.00	Miscellaneous	Presstite Engineering Co.	13
M-10					
Araldite CV-503	A	0.00	Epoxy	Ciba Chemical Corp.	3
Cellulose Nitrate film	P	3.73	Cellulosic	Selectronic Corp.	2
Corfoam No. 114	P	1.69	Phenolic	Remolin, Los Angeles	7
Cycleweld C-14	A	0.00 s	Epoxy/Polysulfide	Cycleweld Cement Prod.	3
E.C. No. 1113	S	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
Epon 828 with A	P	0.00	Epoxy	Shell Chemical Corp.	3
Fortisan	P	0.00	Cellulose Acetate	Cellanese Corp. of America	2
Mylar Tape	P	0.00	Polyethylene Terephthalate	E.I. du Pont de Nemours & Co., Inc.	8
Cellulose Hot Dip No. 215	C	0.00 s	Ethyl Cellulose	Picatinny Arsenal	2

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Polyamide Hot Dip No. 220	C	0.00s	Polyamide	Picatinny Arsenal	6
Cellulose Hot Dip No. 222	C	0.00s	Cellulose Acetate Butyrate	Picatinny Arsenal	2
Scotch Tape No. 650	A	0.09	Cellulose Nitrate	Minnesota Mining & Mfg. Co.	2
Shell No. 422	A	0.00	Epoxy	Shell Chemical Corp.	3
Vinylite Pipe Marker	C	0.00	Polyvinyl Chloride	Picatinny Arsenal	12
M-15					
Acrylated Alkyd MF-881	C	0.00	Polyester	Aberdeen Proving Ground	8
Acrylic MF 875	C	0.00	Acrylic Ester	Aberdeen Proving Ground	1
Chlorinated Paraffin	C	0.00	Chlorinated Hydrocarbon	Aberdeen Proving Ground	13
Coumarone Indene	C	0.00	Coumarone-Indene Resin	Aberdeen Proving Ground	13
Diacetate cloth - Bale 25	C	0.00	Cellulosic	Aberdeen Proving Ground	2
Epoxy MF-876	C	6.39	Epoxy	Aberdeen Proving Ground	3
Phthalic Drying oil Alkyd MF-884	C	0.00	Polyester	Aberdeen Proving Ground	8
Syreanated Alkyd MF-882	C	0.03	Polyester	Aberdeen Proving Ground	8
Vinyl Butyral Acetate	C	0.00	Vinyl Butyral Acetate	Aberdeen Proving Ground	12
Vinyl Chloride Acetate	C	0.00	Vinyl Butyral Acetate	Aberdeen Proving Ground	12
Vinyl Toluene Alkyd MF-883	C	0.00	Polyester	Aberdeen Proving Ground	8
M-16					
Durez 1905	P	0.36	Phenolic	Durez Plastic & Chem. Co.	7
M-17					
Briggs Rubber No. 107	R	0.85s	Butadiene/Acrylonitrile	Briggs Rubber Co.	11
Dexco-Tex	R	0.90	Neoprene Conductive	Crossfield Products	11
Hycar 72-248	R	0.94s	Butadiene/Acrylonitrile	B.F. Goodrich Chemical Co.	11
Mylar Tape	P	0.00	Polyethylene/Terephthalate	Mystic Adhesive Prod.	8
Polyurethane Foam 6 lb./cu. ft. density	P	7.94	Polyurethane	Picatinny Arsenal	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
S-FR-172-1A	R	3.79	Silicone Rubber	Firestone Tire & Rubber Co.	11
S-FR-172-2	R	4.46 s	Silicone Rubber	Firestone Tire & Rubber Co.	11
S-FR-172-3	R	9.28 s	Silicone Rubber	Firestone Tire & Rubber Co.	11
Silastic 50-24-480	R	0.00 s	Silicone Rubber	Dow-Corning Corp.	11
Silastic 80-24-480	R	0.00 s	Silicone Rubber	Dow-Corning Corp.	11
Vyalite Pipe Marker	C	0.00 s	Polyvinyl Chloride	Picatinny Arsenal	12
M-20					
Cycopal S-102-5	C	No Exp.	Polyester	American Cyanamid Co.	8
Mercury Fulminate					
Fortran No. 404	P	No Exp.	Polyvinyl Chloride	Thermoplastics Plastic Corp.	12
Polyethylene	P	No Exp.	Polyethylene	Bakelite Corp.	4
MOX-28					
BRR-18795	P	0.00	Epoxy	Bakelite Corp.	3
Durez 16621	P	0.00	Phenolic Resin	Durez Plastics & Chems, Inc.	7
Laminac No. 4116	A	0.00	Polyester Resin	American Cyanamid Co.	8
Plaskon No. 951	P	0.00	Polyester	Allied Chem. & Dye Corp.	8
Plaston Alkyd No. 442	P	0.00	Polyester	Libbey Owens Ford Glass Co.	8
Plibond No. 30	A	0.27 s	Rubber	Goodyear Tire & Rubber Co.	11
Titanox IG	C	0.00	Inorganic Pigment	Titanium Alloys Mfg. Co.	13
MRP					
Allite	P	0.00	Polyester	Pittsburgh Plate Glass Co.	8
Armstrong A-1	A	8-10 s	Epoxy	Armstrong Products Co.	3
CMC	P	0.00	Na Carboxymethyl Cellulose	Chemaco Corp.	2
DE-3422	P	0.00	Polyethylene	Bakelite Corp.	4

Material	Classification As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
Ethyl Cellulose No. 346	P	1.72	Ethyl Cellulose	Chemaco Corp.	2
Formvar "E"	P	0.00	Polyvinyl formvar	Shawinigan Resins Ltd.	12
Furane X-2	A	7-96	Furfural Aldehyde	Furane Plastics & Chem. Co.	5
GR-1 (XP-143)	R	0.00	Polyisobutylene isoprene	E.I. du Pont de Nemours & Co., Inc.	11
GR-M (XP-145)	R	1.72	2-Chloro-1,3-Butadiene	E.I. du Pont de Nemours & Co., Inc.	11
GR-S (NP-112)	R	0.47	Butadiene Styrene	E.I. du Pont de Nemours & Co., Inc.	11
Geon No. 494	P	0.00	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12*
Hysol No. 6000	A	0.00 s	Epoxy	Houghton Labs. Inc.	3
KEL-F	P	0.00 s	Trifluoro-chloropolyethylene	M. W. Kellogg Co.	4
Laminac No. 4116	A	0.00	Polyester, styrene	American Cyanamid Co.	8
Laminac No. 4125	A	0.00	Polyester-styrene	American Cyanamid Co.	8
Laminac No. 4134	A	0.00	Polyester-styrene	American Cyanamid Co.	8
Lustrac-LT 373	P	0.40	Styrene	Monsanto Chem. Co.	10
"MR" 25C	P	0.00	Polyester	Celanese Corp. of America	8
Monocork No. 160	R	2.00	Rubber Base	Armstrong Cork Co.	11
Monocork No. 500	R	8-84	Neoprene	Armstrong Cork Co.	11
Nylon FM No. 1	P	0.39	Polyamide	E.I. du Pont de Nemours & Co., Inc.	6
Nylon FM No. 3	P	1.08	Polyamide	E.I. du Pont de Nemours & Co., Inc.	6
Paraplex P-13	P	0.00	Polyester	Rohm & Haas Co.	8
Paraplex P-43	P	0.00	Polyester	Rohm & Haas Co.	8
Penacelite G-1215A	P	0.00	Phenol formaldehyde	Koppers Co. Inc.	7
Phenol-formaldehyde No. 2611	P	0.00	Phenol formaldehyde	Celanese Corp.	7
Phenone "up"	P	0.00	Styrene Acrylonitrile	Rohm & Haas Co.	10
Polyvinyl Alcohol-A	P	0.00	Vinylite	E.I. du Pont de Nemours & Co., Inc.	12
Polyvinyl Alcohol-B	P	0.49	Vinylite	E.I. du Pont de Nemours & Co., Inc.	12
Polyvinyl Formal	P	0.00	Polyvinyl Formal	Resistoflex Corp.	12
Polystyrene	P	0.60	Polystyrene	Picatinny Arsenal	12
S-944 polymer	P	0.07	Styrene isobutylene	Enjay Co. Inc.	10
Sran The M film	P	2.33	Vinylidene Carbide Resin	Enjay Co. Inc.	10
Selection No. 503	P	0.91	Polyester	The Dow Chemical Co.	12
Silastic No. 159	R	0.00	Silicone Rubber	Pittsburgh Plate Glass Co.	8
				Dow Corning Corp.	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Silastic No. 180	R	0.00	Silicone Rubber	Dow Corning Corp.	11
Styrene	P	0.00	Styrene	Picatinny Arsenal	10
Syron No. 666	P	0.00	Polystyrene	Dow Chemical Corp.	10
Teflon	P	0.00	Polytetrafluoroethylene	E.I. du Pont de Nemours & Co., Inc.	4
Thiokol No. 3000	R	1-54	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol No. 3600	R	0.00	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol No. 1620	R	0.47	Polysulfide Rubber	Thiokol Chemical Corp.	11

Non-gaseous Powder Type II Class A-Spec. AXS-1277

Metacel Tape	A	0.00	Aluminum back pressure-sensitive tape	Industrial Tape Corp.	13

Navy Explosive H-6

Alvar	P	0.03	Polyvinyl Acetal Resin	Shawinigan Products	12
BRR-18795	P	10.80	Epoxy Resin	Bakelite Corp.	3
Titanox TG	C	0.00	Inorganic Pigment	Titanium Alloys Mfg. Co.	13

Potassium Dinitro benzofuroxon

Durite-HR-340	P	No Exp.	Phenolic	The Borden Co.	7

Photoflash Powder Type I

Resinox 5797	P	0.29	Phenolic	Monsanto Chem. Co.	7
Bakelite BM-6260	P	1.64	Phenolic	Bakelite Corp.	7

Potassium Chlorate Primer

Taylor Grade XX Laminate	P	0.00	Phenolic	Taylor & Co.	7
Bakelite BM-6260	P	0.00	Phenolic	Bakelite Corp.	7

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
			NRL Propellant		
Bakelite BM-250	P	0.00	Phenolic	Bakelite Corp.	7
			ONO		
Bakelite-QRS-147	P	0.27	Polyester	Bakelite Corp.	8
C-11 Copolymer	R	0.00	Modified Styrene/Rubber	Lionel Co. Inc.	10
Ciba No. 502-951 hardener	P	10.18	Epoxy	Ciba Inc.	3
Epon 828, with D	P	10.38	Epoxy	Shell Chem. Corp.	3
Hip-185a	P	0.00 s	Modified Styrene	Koppers Chem. Co.	10
Insulating Compound 150-DS-88	P	4.66 s	Aluminum Silicate Rubber	B.F. Goodrich Chemical Co.	13
Laminac No. 4116	A	0.00	Polyester/Styrene	American Cyanamid Co.	8
Paraplex P-13	P	0.00	Polyester	Rohm & Haas Co.	8
Paraplex P-43	P	0.00	Polyester	Rohm & Haas Co.	8
XP-203 Rubber Composition	R	0.00	Neoprene	Picatinny Arsenal	11
			OGK		
Buna-N (O-rings)	R	1.10	Butadiene/Acrylonitrile	Castle Rubber Co.	11
Ethyl Cellulose Lacquer	P	0.62	Ethyl Cellulose	Picatinny Arsenal	2
Pettman Cement	C	5.26 s	PO-DA-28-017-ORD-1331	Lastings Products Co.	13
Permatex No. 2	S	0.94 s	Gasket Sealing Comp.	Permatex Co. Inc.	13
Plastictrim	R	1.12 s	Reclaimed Rubber	R.D. Werner Co. Inc.	11
QRS-147	P	0.00	Polyester	Bakelite Corp.	8
Silicone Rubber	R	0.00	Silicone Rubber	General Electric Co.	11
XP-218	R	0.94	Elastomer	Picatinny Arsenal	11
			PBX		
Amberlac No. 292	C	0.00	Polyester	Rohm & Haas Co.	8
Bakelite No. 30786	P	0.00	Vinylite	Bakelite Corp.	12

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
E.C. 776	A	0.87	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. 833	A	0.41	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. 847	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
Farane X-2	A	0.00	Formaldehyde	Farane Plastics, Inc.	5
Tennessee Eastman No. 910	A	0.00	Acrylate	Tennessee Eastman	1
Tremco	R	0.14	Rubber Base	Tremco Mfg. Co.	11
Pentolite					
Acoustic Cement	A	0.00	Oleoresinous Base	Armstrong Cork Co.	13
Armstrong J-1140-B	A	0.00	Phenol/formaldehyde	Armstrong Cork Co.	7
Armstrong J-1140-D	R	0.00	Chlorinated Rubber	Armstrong Cork Co.	11
Armstrong J-1140-E	A	0.00	Cumar C-6	Armstrong Cork Co.	13
Atlas Glass Filled Polyester	P	0.00	Polyester	Atlas Powder Co.	8
Casco Flexible Cement	A	0.00	Miscellaneous	The Borden Co.	13
Cycleweld C-14	A	2.58	Epoxy Polysulfide	Cycleweld Cement Prod.	3
G.E. No. 12487	R	0.00	Woodflour filled Phenolic/ Nitrile Rubber	General Electric Co.	7
G.E. No. 12840	P	0.00	Phenolic	General Electric Co.	7
Hysol No. 6020	A	3.12	Epoxy	Houghton Laboratories Inc.	3
Panelyte PC No. 41263	P	0.00 ^s	Acrylonitrile Copolymer	St. Regis Sales Corp.	11
Paraplex P-43	P	0.00 ^s	Polyester	Rohm & Haas Co.	8
Silicone Grease-H	M	0.04	Soft film silicone	General Electric Co.	9
Silicone Grease-G	M	4.22	Soft film silicone	General Electric Co.	9
Silicone Grease-A 20644	M	0.08	Soft film silicone	General Electric Co.	9
Silicone Grease A-20046	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease 372-72-539	M	0.29	Soft film silicone	General Electric Co.	9
Silicone Grease XC-4272	M	0.07	Soft film silicone	Dow Corning Corp.	9
Silicone Grease XC-4282	M	0.60	Soft film silicone	Dow Corning Corp.	9
Silicone Grease XC-5012	M	0.00	Soft film silicone	Dow Corning Corp.	9
Silicone Grease XCI-4043	M	0.05	Soft film silicone	Dow Corning Corp.	9
Silicone Electro-lube-Press-o-Valve	M	0.01	Soft film silicone	General Electric Co.	9
Varglas Silicone Tubing	R	0.00	Silicone Rubber	Firestone Tire & Rubber Co.	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
PETN					
Acoustic Cement	A	0.02 s	Oleoresinous Base	Armstrong Cork Co.	13
Aluminum Varnish	C	0.00	Spec. AXS-1680	Picatinny Arsenal	13
Armstrong J-1140-B	A	0.00	Phenol/formaldehyde	Armstrong Cork Co.	7
Armstrong J-1140-D	R	0.00	Chlorinated Rubber	Armstrong Cork Co.	11
Armstrong J-1140-E	A	0.00	Cumar C-6	Armstrong Cork Co.	13
Bakelite No. 18793	P	0.88	Resin Accelerator	Bakelite Co.	3
Bakelite No. 18795	P	0.88	Epoxy	Bakelite Co.	3
Bakelite No. XV-1657	C	0.00	Phenol-formaldehyde	Bakelite Co.	7
Bakelite VF-612	C	0.00	Spec. AXS-1680 Phenol- formaldehyde	Bakelite Co.	7
Casco Flexible Cement	A	0.00	Miscellaneous	The Borden Co.	13
Cellulose Acetate/Diburyl Phthalate	P	0.44	Cellulosic	Chemaco Corp.	2
Durite HR-340	P	0.09	Phenolic Resin	The Borden Co.	7
E.C. E-59-MS	P	0.29	Ethyl Cellulose	Chemaco Corp.	2
E.C. E-12-S6	P	0.33	Ethyl Cellulose	Chemaco Corp.	2
E.C. No. 776	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 833	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 847	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
Furane X-2	A	0.00	Furane	Furane Plastics, Inc.	5
Geon No. 1911	P	0.26	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12
Geon No. 2046	P	0.27	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12
Lucite RM-130	P	0.38	Polymethyl-methacrylate	E.I. du Pont de Nemours & Co., Inc.	1
Palmer Phenolic Resin No. 752	P	0.00	Phenolic	Palmer Products Co.	7
Pamplex P-43	P	0.00 s	Polyester	Rohm & Haas Co.	8
Phenol-Formaldehyde Varnish	P	0.00	Spec. AXS-1680	Picatinny Arsenal	7
Plastacele	P	0.32	Cellulose Acetate	E.I. du Pont de Nemours & Co., Inc.	2
Pluobond No. 20	A	0.05	Synthetic Rubber	Goodyear Tire & Rubber Co.	11
Tenite II 270-A-S2	P	0.82	Cellulose Acetate Butyrate	Eastman Kodak Co. Inc.	2

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Tenite II 203-A-S2	P	0.37	Cellulose Acetate Butyrate	Eastman Kodak Co. Inc.	2
Thiokol LP-2	R	0.10	Polysulfide	Thiokol Chemical Corp.	11
"Tiresal Brush-On"	S	1.05	Gasket Cement	Radiator Specialty Co.	13
Tremco	R	0.05	Polysulfide	Tremco Mfg. Co.	11
VC-1947	P	0.33	Polyvinyl Chloride Acetate	Bakelite Corp.	12
Vinylite-PA-30786	P	0.00	Polyvinyl Chloride	Bakelite Corp.	12
Zapon-3-291-A	C	0.00	Phenol-formaldehyde/ Aluminum varnish	Atlas Powder Co.	7
Picrete					
E.C. No. 981	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1055	S	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1126	S	0.00	Oil Resistant Elastomer	Minnesota Mining & Mfg. Co.	11
E.C. No. 1202	S	0.00	Oil Soluble Elastomer	Minnesota Mining & Mfg. Co.	11
E.C. No. 1365	S	0.00	Butyl Base Elastomer	Minnesota Mining & Mfg. Co.	11
Glidden Cushioning Material	P	0.00	Miscellaneous	Glidden Co.	13
Glidden Inert Sealer No. 589	S	0.00	50% hydrocarbon, 50% glycerol ester rosin	Glidden Co.	13
Glidden Inert Sealer No. 590	S	0.00	100% Para-Coumarone	Glidden Co.	13
Glidden Inert Sealer No. 591	S	0.00	Indene	Glidden Co.	13
Glidden Inert Sealer No. 592	S	3.00	100% ester dehydrogenated rosin	Glidden Co.	13
Glidden Inert Sealer No. 598	S	0.00	Glycerol ester of rosin	Glidden Co.	13
Panelyte Pc No. 41263	P	0.00 s	Acrylonitrile Copolymer	St. Regis Sales Corp.	11
Presstite No. 144-41	R	0.00	Asphalt Rubber	Presstite Engineering Co.	13
Presstite No. 155-6	A	0.00	Asphalt Rubber	Presstite Engineering Co.	13
Presstite No. 218	P	0.42 s	Aerodynamic Smoothing Compd.	Presstite Engineering Co.	13

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Silicone Grease-G	M	0.51	Soft Silicone film	General Electric Co.	9
Silicone Grease-H	M	0.00	Soft Silicone film	General Electric Co.	9
Silicone Grease No. A-20044	M	0.00	Soft Silicone film	General Electric Co.	9
Silicone Grease No. A-20046	M	0.00	Soft Silicone film	General Electric Co.	9
Silicone Grease 372-72-539	M	0.00	Soft Silicone film	General Electric Co.	9
Silicone Grease No. XC-4272	M	0.00	Soft Silicone film	Dow Corning Corp.	9
Silicone Grease No. XC-4282	M	0.00	Soft Silicone film	Dow Corning Corp.	9
Silicone Grease No. XC-5012	M	0.00	Soft Silicone film	Dow Corning Corp.	9
Silicone Grease No. XCF-4043	M	0.08	Soft Silicone film	Dow Corning Corp.	9
Primer Mix-NOL-130					
Acid Proof Black Paint	C	No Exp.	IAN-P-450	Glidden Co.	13
Cycopol-S102-5	C	No Exp.	Polyester	American Cyanamid Co.	8
Durite HR-340	P	No Exp.	Phenolic	The Borden Co.	7
Green Enamel	C	No Exp.	MIL-E-10687	American Cyanamid Co.	2
Green Lacquer	C	No Exp.	MIL-L-10287	American Cyanamid Co.	2
Hypollon S2	P	No Exp.	Chlorosulfonate	E.I. du Pont de Nemours & Co., Inc.	4
Marinol Metal Laminaze	P	No Exp.	Polyethylene		12
Mylar Tape	P	No Exp.	Polyvinyl Chloride	E.I. du Pont de Nemours & Co., Inc.	8
Red Enamel	C	No Exp.	Polyethylene	American Cyanamid Co.	2
Red Lacquer	C	No Exp.	Terephthalate	American Cyanamid Co.	2
S-50 Polymer	P	No Exp.	MIL-E-10687	Enjay Co. Inc.	10
			MIL-L-10287		
			Styrenated Isobutylene		
Primer Mix PA-100					
Acid Proof Black Paint	C	No Exp.	IAN-F-450	Glidden Co.	13
Cycopol S102-5	C	No Exp.	Polyester	American Cyanamid Co.	8
Green Enamel	C	No Exp.	MIL-E-10687	American Cyanamid Co.	2
Green Lacquer	C	No Exp.	MIL-L-10287	American Cyanamid Co.	2

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Hypalon S2	P	No Exp.	Chlorosulfonated Polyethylene	E.I. du Pont de Nemours & Co., Inc.	4
Marrinol Metal Laminate	P	No Exp.	Aluminum backed PVC		12
Red Enamel	C	No Exp.	MIL-E-10687	American Cyanamid Co.	2
Red Lacquer	C	No Exp.	MIL-L-10287	American Cyanamid Co.	2
S-50 Polymer	P	No Exp.	Styrenated Isobutylene	Enjay Co. Inc.	10
Primer-Mix FA 70					
Cellophane No. 300 PC	P	No Exp.	Regenerated cellulose	E.I. du Pont de Nemours Inc.	2
Cycleweld C-14	P	No Exp.	Epoxy Resin	Cycleweld Cement Products	3
Cycopol S-102-5	P	No Exp.	Polyester	American Cyanamid	8
RDX					
Acoustic Cement	A	0.00	Oleoresinous Base	Armstrong Cork Co.	13
Acid Proof Black Paint	C	0.25 s	JAN-P-450	Glidden Co.	13
Ambertite PR-115	A	0.00	Resorcinol/formaldehyde Epoxy	Rohm & Haas Co.	7
Armstrong A-4	A	5.17	Phenol-formaldehyde	Armstrong Products Co.	3
Armstrong J-1140-B	A	0.00	Chlorinated Rubber	Armstrong Cork Co.	7
Armstrong J-1140-D	R	0.00	Cumar C-6	Armstrong Cork Co.	11
Armstrong J-1140-E	A	0.00	Phenolic	Armstrong Cork Co.	13
Bakelite No. 261	P	0.35	Resin Accelerator	Bakelite Corp.	7
Bakelite BRR-18793	P	0.00	Epoxy	Bakelite Corp.	3
Bakelite BRR-18795	P	0.00	Miscellaneous	Bakelite Corp.	3
Casco Flexible Cement	A	0.00	Cellulosic	The Borden Co.	13
Cellulose Acetate/Dibutylphthalate	P	0.22	Polystyrene	Chemaco Corp.	2
Cetex Yellow	P	0.00 s	Polyvinyl Chloride	Monsanto Chemical Co.	10
Coverlac-Orange	C	0.00	Polyester	Spraylac Corp.	12
Cycopol-S102-5	C	0.00	Neoprene Conductive	American Cyanamid Co.	8
Dex-o-Tex	R	0.00		Crossfield Products	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Durite HR-340	P	1.06	Phenolic Resin	The Borden Co.	7
Dylan-KPD-190	P	0.00	Polystyrene	Koppers Co., Inc.	4
Dylene No. 100	P	0.00	Polystyrene	Koppers Co., Inc.	10
Epot No. 828	P	0.00	Epoxy	Shell Chemical Corp.	3
E.C. No. 373	A	0.00	Reclaimed Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 801	S	0.47	Oil Resistant Elastomer	Minnesota Mining & Mfg. Co.	11
E.C. No. 847	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1022	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
F.M. 10001	P	0.00 s	Polyamide	E.I. du Pont de Nemours & Co., Inc.	6
Geon No. 1911	P	0.27	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12
Geon No. 2046	P	0.23	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12
Glaskyd No. 1901	P	0.00	Polyester	Olin Industries	8
Green Enamel	C	0.15	MIL-E-10687 Cellulosic	American Cyanamid	2
Green Lacquer	C	0.00	MIL-L-10287 Cellulosic	American Cyanamid	2
Hypalon S-2	C	0.00	Chlorosulfonated polyethylene	E.I. du Pont de Nemours & Co., Inc.	11
Laminac No. 4116	A	0.00	Polyester	American Cyanamid Co.	8
Laminac No. 4134	A	0.00	Polyester/Styrene	American Cyanamid Co.	8
Lucite HM-130	P	0.31	Polymethyl-methacrylate	E.I. du Pont de Nemours & Co., Inc.	1
Lustrer-Clear	P	0.00 s	Polystyrene	Monsanto Chem. Co.	10
Lustrer LT-3-3	P	0.00 s	Polystyrene	Monsanto Chem. Co.	10
Masters Compound	P	10-36	Miscellaneous	James K. Harbison & Co.	13
Marrinol Metal Laminate	P	0.00	Aluminum backed PVC		12
Nylon No. 6501	P	0.56	Polyamide	E.I. du Pont de Nemours & Co., Inc.	6
Paraplex P-43	A	0.00	Polyester	Rohm & Haas Co.	8
Paraplex P-13	A	0.00	Polyester	Rohm & Haas Co.	8
Plaskon No. 951	P	0.00	Polyester	Allied Chemical	8
Plaskon Alkyd No. 442	P	0.00	Polyester	Libbey Owens Ford Glass Co.	8
Plastecel	P	0.43	Cellulose Acetate	E.I. du Pont de Nemours & Co., Inc.	2
Plastisol	P	-	Polyvinyl Acetate	Picatinny Arsenal	12

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Pliobond No. 20	A	3.57	Synthetic elastomer	Goodyear Tire & Rubber Co.	11
Pliobond No. 30	A	3.22	Synthetic elastomer	Goodyear Tire & Rubber Co.	11
Presstite No. 261	A	0.25		Presstite Engineering Co.	13
Presstite No. 261.6	A	0.56		Presstite Engineering Co.	13
Presstite No. 271	A	0.21		Presstite Engineering Co.	13
Prufcoat	P	0.00	Polyvinyl Chloride	Prufcoat Inc.	12
QRS-147	P	0.00	Polyester	Bakelite Corp.	8
Red Enamel	C	0.00	Spec. MIL-E-10687 Cellulosic	American Cyanamid Co.	2
Red Lacquer	C	0.00	Spec. MIL-L-10287 Cellulosic	American Cyanamid Co.	2
Rubber Composition No. 32S-453	R	0.00	GRS-Rubber	Ohio Rubber Co.	11
S-50 Polymer	P	0.00	Styrenated/Isobutylene	Enjay Co. Inc.	10
Silicone Grease-G	M	0.17	Soft silicone film	General Electric Co.	9
Silicone Grease-H	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease No. A-200.44	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease No. A-200.46	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease No. 372-72-539	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease No. XC-4272	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease No. XC-4282	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease No. XC-5012	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease No. XCT-4043	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease Electro-tube Pres-o-Valve	M	0.00	Soft silicone film	General Electric Co.	9
Styrene Monomer No. 363	P	No Exp.	Polymeric styrene		10
Tenite II-270-A-S2	P	0.28	Cellulose Acetate Butyrate	Eastman Kodak Co. Inc.	2
Tenite II-203-S2	P	0.25	Cellulose Acetate Butyrate	Eastman Kodak Co. Inc.	2
Thiokol LP-2	A	0.27	Polysulfide elastomer	Thiokol Chemical Corp.	11
VG-1947	P	0.34	Polyvinyl Chloride Acetate	Bakelite Co.	12
Vinylite Pipe Marker	C	0.00	Polyvinyl Chloride	Picatinny Arsenal	12
Vistanex B-120-Gel	S	0.00	Miscellaneous		13
Zapon No. 2360	C	0.00	Cellulose Nitrate	Brevolite Co.	2

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Squib Mix					
Acryloid B-72	A	0.00 s	Polymethyl methacrylate	Rohm & Haas Co.	1
Polyethylene Grade P-1000 PM20	P	0.00	Polyethylene	E.I. du Pont de Nemours & Co., Inc.	4
Vinyl-Acrylate Mixture	P	1.25 s	Vinyl-Chloride Acetate	Bakelite Corp.	12
Zapon No. 3-291-A	C	1.80	Cellulose Nitrate	Brevolite Co.	2
Swiss Propellant					
Hysol No. 6020	A	10.17 s	Epoxy	Houghton Laboratories	3
QRS-147	P	0.40 s	Polyester	Bakelite Co.	8
RDX-Hystime					
E.C. No. 847	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 531	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
Standard Primer Mix					
Marrinol Metal Laminate	P	No Exp.	Aluminum backed PVC		12
T-2					
Allite	P	0.08	Polyester	Pittsburgh Glass Co.	8
Armstrong A-1	P	6.89 s	Epoxy	Armstrong Products Co.	3
Belden stock No. 8943	C	0.00	Cellulose Nitrate Acetate		2
CMC	P	0.00	Na Carboxymethyl Cellulose	Chemaco Corp.	2
DE-3422	P	0.00	Polyethylene	Bakelite Co.	4
Dextrin	A	0.00 s	Spec JAN-D-232, Type I	National Starch Products, Inc.	2
E.C. No. 770	A	0.00 s	Reclaimed Rubber	Minnesota Mining & Mfg. Co.	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Ethyl Cellulose No. 346	A	1.33	Ethyl Cellulose	Chemaco Corp.	2
Formvar "E"	P	0.00	Polyvinyl formvar	Shawinigan Resins Ltd.	12
Furane X-2	A	0.90	Furfural/formaldehyde	Furane Plastics, Inc.	5
GR-1 (XP-143)	R	0.00	Polyisobutylene-isoprene	Office of Reserve Rubber	11
GR-M (XP-145)	R	0.00	2-Chloro-1, 3-Butadiene	E.I. du Pont de Nemours & Co., Inc.	11
GR-S (XP-142)	R	3.45	Butadiene/Styrene	E.I. du Pont de Nemours & Co., Inc.	11
Geon No. 404	P	0.00	Polyvinyl Chloride	B.F. Goodrich Chemical Co.	12
Hysol No. 6000	A	0.00	Epoxy	Houghton Laboratories	3
Kel F	P	0.00	Polytrifluoro Chloroethylene	M.W. Kellogg Co.	4
Kopper's No. 185A	P	0.00 ^s	Polystyrene	Koppers Chem. Co.	10
Kralastic No. 2183-6	P	0.00	Polystyrene	Naugatuck Chem. Co.	10
Kralastic BM-2146	P	0.00	Polystyrene	Naugatuck Chem. Co.	10
Laminac No. 4116	A	0.00	Polyester	American Cyanamid Co.	8
Laminac No. 4125	A	0.00	Polyester	American Cyanamid Co.	8
Laminac No. 4134	A	0.00	Polyester	American Cyanamid Co.	8
Lustrex Lt No. 373	A	3.05	Polystyrene	Monsanto Chemical Corp.	10
Metal Sealing Compd. No. 1380 Red	S	0.00 ^s	Miscellaneous	E.I. du Pont de Nemours & Co., Inc.	13
Monocork No. 100	R	0.99	Rubber Base	Armstrong Cork	11
Monocork No. 500	R	0.00	Neoprene Base	Armstrong Cork	11
MR-25c	P	0.00	Polyester	Celanese Corp. of America	8
Nylon FM No. 1	P	0.24	Polyamide	E.I. du Pont de Nemours & Co., Inc.	6
Nylon FM No. 3	P	0.69	Polyamide	E.I. du Pont de Nemours & Co., Inc.	6
Paraplex P-13	A	0.00	Polyester	E.I. du Pont de Nemours & Co.	8
Paraplex P-43	A	0.00	Polyester	Rohm & Haas Co.	8
Penacolite G-1215A	P	0.00	Phenol formaldehyde	Koppers Chem. Co.	7
Permatex No. 2	P	0.00 ^s	Gasket Sealing Composition	Permatex Co. Inc.	13
Pettman Cement	C	4.14 ^s	Miscellaneous	Lastings Product Co.	13
Phenol-Formaldehyde No. 2611	P	0.00	Phenol-Formaldehyde	Caralin Corp.	7
Plastictrim	R	0.07	Reclaimed Rubber	R.D. Werner Co. Inc.	11
Plexene "M"	P	0.06 ^s	Styrene Acrylonitrile	Rohm & Haas	10
Pliobond No. 20	A	2.18	Phenol/Formaldehyde, Synthetic Rubber	Goodyear Tire & Rubber Co.	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Pliobond No. 30	A	2.18 s	Phenol/Formaldehyde/ Synthetic Rubber	Goodyear Tire & Rubber Co.	11
Polyethylene	P	0.00 s	Polyethylene	Picatinny Arsenal	4
Polyvinyl Alcohol A	P	0.42	Vinylite	E.L. du Pont de Nemours & Co., Inc.	12
Polyvinyl Alcohol B	P	0.00	Vinylite	Resistoflex Corp.	12
Polyvinyl Formal	P	0.00	Polyvinyl Formal	Picatinny Arsenal	12
RD-51-24	P	0.00	Polystyrene	Bakelite	10
Rubber Comp. XP-101	R	0.07 s	GRS Rubber	Picatinny Arsenal	11
S-50 Polymer	P	0.00	Syrenated Isobutylene	Enjay Co., Inc.	10
S-60 Copolymer	P	0.00 s	Syrene, isobutylene	Enjay Co., Inc.	10
Saran (Type M film)	P	0.00	Vinylidene Chloride Resin	The Dow Chemical Co.	12
Selection No. 5003	P	0.00	Polyester	Pittsburgh Plate Glass Co.	8
Silastic No. 150	R	0.00	Silicone Rubber	Dow Corning Corp.	11
Silastic No. 180	R	0.00	Silicone Rubber	Dow Corning Corp.	11
Styrene	P	0.00	Polystyrene	Picatinny Arsenal	10
Syron No. 666	P	0.00	Polystyrene	Dow Corning Corp.	10
TVA	P	0.00 s	Cellulose Acetate	Monsanto Chem. Co.	2
Teflon	P	0.00	Polytetra fluoroethylene	E.L. du Pont de Nemours & Co., Inc.	4
Thiokol 1605 AH, 3600; 3600; 1620	A	0.00	Polysulfide Rubber	Thiokol Chemical Corp.	11A
Vinyl Composition	P	0.00 s	Polyvinyl Chloride	Aircraft Marine Products Inc.	12
VU-1310	P	0.00 s	Polyvinyl Chloride	Bakelite Co.	12
T-6					
Bakelite QRS-147	P	0.00	Polyester	Bakelite Co.	5
Black Polystyrene	P	0.00 s	Polystyrene	Shaw & Frank Co.	10
C-11 Copolymer	P		Polystyrene/Rubber	Lionel Co.	10
Conductoplast	C	5.70 0.66	Liquid Resin Cement	Atlas Mineral Products	13
Ethyl Cellulose Lacquer	C	0.04	Spec. 3-198	Picatinny Arsenal	2
Laminac No. 4116	A	0.00	Polyester	American Cyanamid Co.	8

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Luxing Compound 12126A	P	0.00	Vinyl Base	Thompson & Co.	12
Metal Sealing Compd. 1380 Red	S	0.00 s	Polymer Solution	E.L. du Pont de Nemours & Co., Inc.	13
Neoprene GRM-10	R	6-12	2-Chloro-Butadiene 1,3	E.L. du Pont de Nemours & Co., Inc.	11
Pettman Cement	C	5.47 s	PO-DA-28-017-ORD-1331	Lastings Prod. Co.	13
Permatex No. 2	P	0.00 s	Gasket Sealing Composition	Permatex Co. Inc.	13
Plastictrim	R	0.64 s	Reclaimed Rubber	R.D. Werner Co. Inc.	11
Polyethylene	P	0.00 s	Polyethylene	Polyplastex United, Inc.	4
Polyvinyl chloride rubes	P	0.54 s	Polyvinyl chloride	Septenat Mfg. Co.	12
Polyvinyl	P	0.00	Vinylite	Picatinny Arsenal	12
Presstite No. 218	A	6-49	Aerodynamic Smoothing Capd.	Presstite Engineering Co.	13
Polystyrene, straight	P	0.05	Polystyrene	Crescent Plastic Co.	10
Royal Cement No. 6159	C	0.36 s	Miscellaneous	U.S. Rubber Co.	13
S-50 Polymer	P	0.00 s	Styrenated/Isobutylene	Enjay Co., Inc.	10
Scotch Tape No. 100	S	0.00	Regenerated Cellulose with Adhesive backing	Minnesota Mining & Mfg. Co.	2
Shellac/Bronze Composition	C	7.64	White Shellac/Bronze pwd./ Alcohol	Picatinny Arsenal	13
Seyron No. 666	P	0.36 s	Polystyrene	Dow Corning Corp.	10
Vinyl Acrylic-VAGH	P	0.00	Vinylite	Bakelite Corp.	12
XP-202	R	0.00	Synthetic Rubber	Picatinny Arsenal	11
XP-203	R	0.00	Synthetic Rubber	Picatinny Arsenal	11
XP-206	R	0.00	Synthetic Rubber	Picatinny Arsenal	11
T-8					
Allite	P	0.00 s	Polyester	Pittsburgh Plate Glass Co.	8
Armstrong A-1	A	7.96 s	Epoxy	Armstrong Products	3
Araldite AN-111	A	8.43	Epoxy	Giba Company	3
CMC	P	0.74	Carboxymethyl Cellulose	Chemaco Corp.	2

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
DE-3422 Polyethylene	P	0.00	Polyethylene	Bakelite Corp.	4
Ethyl Cellulose No. 346	P	1.49 s	Cellulosic		2
Furane X-2	A	7.82	Furfural Formaldehyde	Furane Plastics, Inc.	5
Formvar "E"	P	0.00 s	Polyvinyl Formvar	Shawinigan Resins Ltd.	12
GR-1 (XP-143)	R	0.00 s	Polyisobutylene-isoprene	Office of Reserve Rubber	11
GR-M (XP-145)	R	0.00 s	2-Chloro-1,3-Butadiene	E.L. du Pont de Nemours & Co., Inc.	11
GR-S (XP-142)	R	0.00 s	Butadiene/Styrene	E.L. du Pont de Nemours & Co., Inc.	11
Geon No. 404	P	0.00 s	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12
Hysol No. 6006	P	0.00 s	Epoxy	Houghton Labs	3
KEL-F	P	0.00 s	Polytrifluorochloroethylene	M.W. Kellogg Co.	4
Laminac No. 4116	P	0.00 s	Polyester	American Cyanamid Co.	8
Laminac No. 4125	P	0.00 s	Polyester	American Cyanamid Co.	8
Laminac No. 4154	A	0.11 s	Polyester/Styrene	American Cyanamid Co.	8
Lustrex Lt. 373	P	0.41 s	Modified Polystyrene	Monsanto Chem. Co.	10
MR-25-C	P	0.00 s	Polyester	Celanese Corp. of America	8
Monocork No. 100	R	1.98 s	Rubber Base	Armstrong Cork Co.	11
Monocork No. 500	R	0.60 s	Neoprene	Armstrong Cork Co.	11
Nylon FM-1	P	0.00	Polyamide	E.L. du Pont de Nemours & Co., Inc.	6
Nylon FM-3	P	0.46 s	Polyamide	E.L. du Pont de Nemours & Co., Inc.	6
Paraplex P-13	P	0.00 s	Polyester	Rohm & Haas Co.	8
Paraplex P-43	P	0.00 s	Polyester	Rohm & Haas Co.	8
Penacollite G-1215A	P	0.00 s	Phenol-formaldehyde	Koppers Chem. Co.	7
Permatex No. 2	S	0.00 s	Gasket Sealing Comp.	Permatex Co. Inc.	13
Pettman Cement	C	8.55 s	PO-DA-28-017-ORD-1331	Lastings Prod. Co.	13
Phenol Formaldehyde No. 2611	P	0.00	Cast Resin	Carlin Corp.	7
Plastictrim	R	0.68 s	Reclaimed Rubber	R.D. Werner Co. Inc.	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Plexene M	P	0.00 s	Styrene/Acrylonitrile	Robm & Haas Co.	10
Pliobond No. 20	A	3.72 s	Synthetic Rubber	Goodyear Tire & Rubber Co.	11
Pliobond/Thiokol	R	3.34 s	Rubber Copolymers	Picatinny Arsenal	11
Polyvinyl Alcohol A	P	0.72 s	Vinylite	E.L. du Pont de Nemours & Co., Inc.	12
Polyvinyl Alcohol B	P	0.01 s	Vinylite	Resistoflex Corp.	12
Polyvinyl Formal	P	0.00	Polyvinyl-Formal	Picatinny Arsenal	12
S-50 Polymer	P	0.00 s	Syrenated Isobutylene	Enjay Co., Inc.	10
Saran (Type M film)	P	0.00	Vinylidene Chloride Resin	The Dow Chemical Co.	12
Selectron No. 5003	P	0.20 s	Polyester	Pittsburgh Plate Glass Co.	3
Silastic No. 150	P	0.00 s	Silicone Polymer	Dow Corning Corp.	11
Silastic No. 180	P	0.00 s	Silicone Polymer	Dow Corning Corp.	11
Styrene Acrylonitrile	R	0.00	Acrylonitrile		11
Styrene Isobutylene	R	0.00	Isobutylene Rubber		11
Syron No. 666	P	0.00 s	Polystyrene	Dow Chemical Co.	10
Teflon	P	0.00 s	Polytetrafluoroethylene	E.L. du Pont de Nemours	4
Thiokol-LP-2	R	0.74	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol No. 1605 A.H.	R	0.00 s	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol No. 1620 A.H.	R	0.13 s	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol No. 3000 F.A.	R	0.18 s	Poly sulfide Rubber	Thiokol Chemical Corp.	11
Thiokol No. 3000 PRI	R	0.38 s	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol No. 3000 ST	R	0.00 s	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol No. 3600 ST	R	0.00 s	Polysulfide Rubber	Thiokol Chemical Corp.	11
T-9					
Cellulose Acetate, Dibutyl phthalate		1.53	Cellulosic	Celanaco Corp.	2
E-59-MS		1.64	Cellulosic	Celanaco Corp.	2

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
E-12-S6	P	2.31	Cellulosic	Chemaco Corp.	2
Geon No. 1911	P	1.68	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12
Geon No. 2046	P	2.29	Polyvinyl Chloride	B.F. Goodrich Chem. Co.	12
Lucite HM-130	P	2.22	Polymethyl/methacrylate	E.I. du Pont de Nemours & Co., Inc.	1
Permatex No. 2	S	0.00 _s	Gasket Sealing Composition	Permatex Co. Inc.	13
Pestman Cement	C	0.00 _s	PO-DA-2B-017-ORD-1331	Lastings Prod. Co.	13
Plasticrete	P	0.27	Cellulose Acetate	E.I. du Pont de Nemours & Co., Inc.	2
Plastictrim	R	0.00 _s	Reclaimed Rubber	R.D. Werner Co. Inc.	11
Tenite II 270 A S2	P	1.43	Cellulose Acetate	Eastman Kodak Co.	2
Tenite II 203A S2	P	1.64	Buylate	Eastman Kodak Co.	2
VG-1947 Natural	P	2.04	Buylate	Eastman Kodak Co.	2
			Polyvinyl Chloride Acetate	Bakelite Corp.	12
T-16					
Durez 1905	P	1.68	Phenolic	Durez Plastics & Chem. Co.	7
E.C. No. 826	A	2.71	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 847	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1236	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
Ethyl Cellulose	C	1.18	Ethyl Cellulose	Minnesota Mining & Mfg. Co.	2
Neoprene No. 817	R	0.66	Polysulfide Rubber	E.I. du Pont de Nemours & Co., Inc.	11
O-Rings-Buna N	R	2.36 _s	Buna-Buna Acrylonitrile	Castle Rubber Co.	11
QRS-147	P	0.00 _s	Polyester	Bakelite Corp.	8
Rubber Stoppers No. 7	R	0.07 _s	Synthetic Rubber	Picatinny Arsenal Storeroom	11
Silica Gell	P	2.76	Miscellaneous	Picatinny Arsenal	13
Selectron No. 5003	P	0.56 _s	Polyester	Pittsburgh Plate Glass Co.	8
Vynlite Pipe Marker	P	0.00	Polyvinyl Chloride	Picatinny Arsenal	12
T-18					
Cellulose Nitrate film	P	0.22	Cellulose Nitrate	Selectronic Corp.	2
Corfoam No. 114	P	0.00	Phenolic foam	Rezonlyn, Los Angeles	7
Forislan	P	7.44	Acetate Rayon	Celanese Corp. of America	2
Mylar Tape	P	0.00	Polyethylene/Terephthalate	E.I. du Pont de Nemours & Co., Inc.	8
Polyethylene film	P	0.00 _s	Polyethylene	Emhart Mfg. Co.	4

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
T-19					
Araldite CN-503	A	0.00	Epoxy	Ciba Chem. Co.	3
Araldite AN-100	A	7.85	Epoxy	Ciba Chem. Co.	3
Araldite E-107	A	0.00	Epoxy	Ciba Chem. Co.	3
Armstrong-N-171	P	s	Synthetic Rubber	Armstrong Cork Co.	11
Durez 1905	P	0.00	Phenolic Resin	Durez Plastics & Chem. Inc.	7
Ethyl Cellulose Lacquer	C	0.29	Spec. 3-198	Picatinny Arsenal	2
Epon VI	A	7.56	Epoxy	Shell Oil Co.	3
Phenolic Resin No. 9594	P	s	Phenolic	Catalin Corp.	7
Vibraglas	P	1.86	Phenolic	Glass Cashioning Eng. Co.	7
T-28					
Asphalt Asbestos	A	5.57	MIL-C-13212	Plymouth Industrial	13
Cellulose Nitrate Lacquer	C	0.00	Cellulosic		2
Synvarite-PNL-12-N	P	0.54 _s	Phenolic-woodflour filled	Synvar Corporation	7
F-131					
Epon 828/Laminated fiberglass	P	4.49	Epoxy modification	Shell Chemical Corp.	3
Laminated fiberglass	P	0.00 _s	Polyester	Glass Cashioning Engineering Co.	8
T-31					
Cellulose Acetate	P	0.00	Cellulosic	B.F. Goodrich Chem. Co.	2
Tetryl					
Acid Proof Black Paint	C	1.63 _s	JAN-P-450	Glidden Co.	13
Acoustic Cement	A	2.22	Oleoresinous Base	Armstrong Cork Co.	13
Acrylaxed Alkyd MF-881	C	0.00	Polyester	Aberdeen Proving Ground	8
Acrylic MF-875	A	0.00	Acrylate	Aberdeen Proving Ground	1
Acryloid B-72	C	0.00 _s	Polymethyl methacrylate	Rohm & Haas Co.	1

Material	Classification As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
Alvar	P	0.04	Polyvinyl Acetal	Shawinigan Co. Inc.	12
Amberlac No. 292	C	0.50	Polyester	Roben & Haas Co.	8
Araldite AN-111	P	0.00 s	Epoxy	Giba Company Inc.	3
Armstrong A-6	P	0.60	Epoxy	Armstrong Products Co.	3
Armstrong N-111	A	1.16 s	Synthetic Rubber	Armstrong Cork Co.	11
Armstrong N-171	A	1.33	Synthetic Rubber	Armstrong Cork Co.	11
Armstrong J-1162	A	0.17	Epoxy	Armstrong Cork Co.	13
Bakelite BRR-18795	P	6.53	Epoxy	Bakelite Corp.	3
Bakelite QRS-136	P	0.23	Polyester	Bakelite Corp.	8
Bakelite QRS-147	P	0.00 s	Polyester	Bakelite Corp.	8
C-11 Copolymer	P	0.00 s	Polystyrene/Rubber	Lionel Co. Inc.	10
Bartolon	A	0.54 s	Asphaltic	Plymouth Ind. Prod.	13
Bucyl Rubber 3N-259	R	0.00	Bucyl Rubber	Ohio Rubber Co.	11
Ca-Plugs	P	0.00 s	Polylethylene	Protective Closure Co. Inc.	4
Chlorinated Paraffin MF 871	P	0.00	Chlorinated Hydrocarbon	Aberdeen Proving Ground	13
Cleveland	C	0.10 s	Asphaltic	Plymouth Industrial Prod.	13
Comarone Indene	C	0.00	Comarone - Indene Resin	Aberdeen Proving Ground	13
Covetlac - Orange	C	0.00	Polyvinyl Chloride	Spraylat Corp.	12
Cycleweld C-14	A	2.06 s 7.75	Epoxy	Dow Corning Corp.	3
Cycopol-S102-5	C	0.10	Polyester	American Cyanamid Co.	8
Dicelero Tubing	P	0.00	Phenolic-Lesinate	Continental Diamond Fibre Co.	7
Dioxime No. 1	R	0.00 s	Bucyl Rubber	DeBell and Richardson Inc.	11
Dioxime No. 2	R	0.00 s	Bucyl Rubber	DeBell and Richardson Inc.	11
Dow Corning A-4050	A	0.00	Silicone Rubber	Dow Corning Corp.	11
Durite HR-340	P	0.00	Phenolic	The Borden Co.	7
Dylan Red-KPD-190	P	0.00	Polylethylene	Koppers Chem. Co.	4
Epoxy-MF 876	A	0.00	Epoxy	Armstrong Cork Co.	3
Epos 828	P	0.00	Epoxy	Shell Chem. Corp.	3
E.C. No. 711	A	0.46 s	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 776		1.66	Oil Resistant Elastomer	Minnesota Mining & Mfg. Co.	11
E.C. No. 801	C	1.96	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 826	A	2.38 s	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
E.C. No. 833	A	0.40	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 847	A	1.86	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 981	S	0.04	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1022	A	0.91	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1055	S	1.15	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1126	S	0.09	Oil Resistant Elastomer	Minnesota Mining & Mfg. Co.	11
E.C. No. 1202	S	0.00	Oil Soluble Elastomer	Minnesota Mining & Mfg. Co.	11
E.C. No. 1236	A	0.25	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1365	S	0.00	Butyl Base	Minnesota Mining & Mfg. Co.	11
FM-10001	P	0.00 s	Polyamide	E.I. du Pont de Nemours & Co., Inc.	6
Fiberglass laminated	P	0.00	Polyester	Glass Fibers Inc.	8
Findley's No. 450 Label Weld	A	9.68	Miscellaneous	Upaco-Union Paste Co.	13
Glidden Cushioning Met.	P	0.04	Miscellaneous	Glidden Co.	13
Green Enamel-MIL-E-10687	C	0.11	Spec. MIL-E-10687 Cellulosic	American Cyanamid Co.	2
Green Lacquer MIL-L-19287	C	0.63	Spec. MIL-10287 Cellulosic	American Cyanamid	2
Gray Glid Iron	P	0.00 s	Polyester	Glidden Co.	8
H-00	C	0.00 s	Polyester	F.E. Schumler & Co.	8
H-35	C	0.00 s	Polyester	F.E. Schumler & Co.	8
Hypolon S-2	C	0.03	Chlorosulfonated Polyethylene	E.I. du Pont de Nemours & Co., Inc.	4
Hysol No. 6020 (Cast form)	A	2.92 10.29	Epoxy	Houghton Laboratories	3
Kycar 2202 I, 15-D, C.	R	0.00	Synthetic Rubber	B.F. Goodrich Chemical Corp.	11
Isulite perstop No. 2112	P	0.00	Polyester	Schenectady Varnish Co.	8
Kralastic 2183-6	P	0.44 s	Rubber Modified Polystyrene	Naugatuck Chem. Co.	10
L-719 Adhesive	A	1.04	Spec. AXS-1472	Upaco-Union Paste Co.	13
Laminac No. 4116	A	0.00	Polyester/Styrene	American Cyanamid Co.	8
Laminac No. 4128	A	0.00	Polyester/Styrene	American Cyanamid Co.	8
Laminac No. 4134	A	0.08	Polyester/Styrene	American Cyanamid Co.	8
Lustrex Lt. 373	P	0.00 s	Polystyrene	Monsanto Chem. Co.	10
M-339 Adhesive	A	1.46	Spec. AXS-1472	Upaco-Union Paste Co.	13
Marinol Met. Laminate	P	0.00	Polyvinyl Chloride	Robin & Haas Co.,	12
Master's Metallic Compd.	P	10-34	Miscellaneous	Haibinson & Co.	13

Material	Classification As to Use	Reactivity (gms evolution, ml)	Type Base	Manufacturer of Material	Section
Mylar Tape No. 7300	P	0.00 s	Polyethylene/Terephthalate	Mystic Adhesive Products	8
Neoprene GRM-10	R	1.60	Polysulfide Rubber	E.L. du Pont de Nemours & Co., Inc.	11
Panelite Pc No. 41263	P	0.02 s	Acrylonitrile Copolymer	Sa. Regis Sales Corp.	11
Phen. Form. Varnish	P	0.00	Phenol. Formaldehyde	Picatinny Arsenal	7
Phenol Formaldehyde Varnish	P	0.00	Phenol-Formaldehyde- AXS-1680	Bakelite Corp.	7
Phthalic Alkyd (Drying Oil)	P	0.63	Polyester	Picatinny Arsenal	8
Plasmount Pre-Set No. 2	A	0.09 s	Miscellaneous	Gindler Process	13
Plastic Cement VPX-27	P	0.00	Polystyrene	Victory Plastics	10
Pliobond No. 20	A	2.94	Synthetic Rubber	Goodyear Tire & Rubber Co.	11
Pliobond No. 30	A	2.40 s	Synthetic Rubber	Goodyear Tire & Rubber Co.	11
Polyester Fiberglass	P	0.00	Polyester	Crystal Plastics Co.	8
Polyethylene	P	0.00	Polyethylene	Picatinny Arsenal	4
Polystyrene (Modified)	P	0.00	Polystyrene	Picatinny Arsenal	10
Presstite 155.6	A	0.00	Sealant	Presstite Engineering Co.	13
Presstite No. 218	P	0.18	Acrodynamic Smoothing Compd	Presstite Engineering Co.	13
Presstite No. 261	A	0.38	Sealant	Presstite Engineering Co.	13
Presstite No. 261.6	A	0.48	Sealant	Presstite Engineering Co.	13
Presstite No. 271	A	2.13	Sealant	Presstite Engineering Co.	13
Presstite No. 144-41	S	0.97	Sealant	Presstite Engineering Co.	13
Purple Lacquer	C	0.00	JAN-L-29G-Cellulosic	Picatinny Arsenal	2
Red Enamel	C	0.02	Spec. MIL-E-10687- Cellulosic	American Cyanamid	2
Red Lacquer	C	0.24	Spec. MIL-L-10287- Cellulosic	American Cyanamid	2
Resinox	P	0.20	Phenol-formaldehyde Laminate	Monsanto Chemical Co.	7
Rock Island F-18FE	R	0.39	Synthetic Elastomer	Rock Island Arsenal	11
Royal Industrial Cement No. 6159	C	0.00	Miscellaneous	United States Rubber Co.	13
Rubber Comp. 32S-453	R	0.00	Synthetic Elastomer		11
S-50 Polymer	P	0.00	Styrene/isobutylene		10

Material	Classification As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
Silicone Grease G	M	0.60	Soft silicone film	General Electric Co.	9
Silicone Grease H	M	0.09	Soft silicone film	General Electric Co.	9
Silicone Grease No. 20044	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease No. 20046	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease No. 372-72-535	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease No. XC-4272	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease No. XC-4282	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease No. XC-5012	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease No. XCT-4043	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Electro-tube-Press-on Valve	M	0.00	Soft silicone film	General Electric Co.	9
Sponge Rubber/polyethylene	F	0.00	Synthetic Elastomer		11
Styrenated Alkyd	P	4.19	Polyester	Picatinny Arsenal	8
Syron No. 700	P	0.00	Polystyrene	Dow Chemical Co.	10
Sulfur No. 1	R	0.00 ^s	Rubber Composition	DeBell & Richardson Inc.	11
Sulfur No. 2	R	0.00 ^s	Rubber Composition	DeBell & Richardson Inc.	11
Thiokol-LP-2 with C-5	R	1.48	Polysulfide Rubber	Thiokol Chemical Corp.	11
Thiokol-LP-3/Epo 828	R	1.86	Polysulfide Rubber	Thiokol Chemical Corp.	11
Titanox TG	C	0.00	Titanium Dioxide	Titanium Alloys Co.	13
Tremco	S	1.06	Rubber Base		11
Tub-Kove Sealing Strip	S	0.41	Vinylite	Keller Products	12
VAGH-271	P	0.00	Polyvinyl Chloride Acetate	Bakelite Corp.	12
Varnish	C	0.07	Spec. AXS-1680		13
Vinyl Butyral MF-891	C	0.00	Vinyl Butyral	Picatinny Arsenal	12
Vinyl Chloride Acetate MF 871	C	0.00	Vinyl Chloride Acetate	Aberdeen Proving Ground	12
Vinyl Chloride Acetate MF 872	C	0.00	Vinyl Chloride Acetate	Aberdeen Proving Ground	12
Vinylite PA-30786	P	0.00	Vinyl Chloride Acetate	Bakelite Corp.	12
Vinylite Pipe Marker		0.00	Polyvinyl Chloride		12
Vinyl Toluene Alkyd-MF 881		0.19	Polyester		8
Vinyl No. 6242	P	0.00	Vinylite		12
World Bestos	A	0.32	Phenolic/Acrylonitrile	World Bestos Corp.	7
XC-271	A	0.00	Silicone Rubber	Dow Corning Corp.	11
Z 2E Hypalon	R	0.00	Rubber	Rock Island Arsenal	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Z 40 Silicone	R	0.00	Rubber Composition	Rock Island Arsenal	11
Z 46 Adiprene	R	0.54	Adiprene/Rubber	Rock Island Arsenal	11
Z 47 Hycar 4021	R	0.46		Rock Island Arsenal	11
Zapon No. 2360	C	0.00	Cellulose Nitrate Lacquer	Brevolite Co.	2
Zorlock No. 965		0.00	Miscellaneous	Presstite Engineering Co.	13
Tetrytel					
Acoustic Cement	A	2.22	Oleoresinous Base	Armstrong Cork Co.	13
Armstrong J-1140B	A	2.43	Phenol-formaldehyde	Armstrong Cork Co.	7
Armstrong J-1140-D	R	3.66	Chlorinated Rubber	Armstrong Cork Co.	11
Armstrong J-1140-E	P	2.03	Cumar C-6	Armstrong Cork Co.	13
Casco Flexible Cement	A	3.39	Miscellaneous	The Borden Co.	13
Dilectro Tubing	P	0.00	Phenolic Laminate	Continental Diamond Fibers Inc.	7
Epon VI with A	A	3.43	Epoxy	Shell Chemical Corp.	3
FM-10001	P	0.00 s	Polyamide	E. I. du Pont de Nemours & Co., Inc.	6
Laminated Fiberglass	P	1.46	Polyester	Glass Fibers Inc.	8
Pan Glaze	M	1.41 s	Silicone (Soft film)	Dow Corning Corp.	9
Purple Lacquer	C	5.38	JAN-L-296-Cellulosic	Picatinny Arsenal	2
TNT					
Acoustic Cement	A	0.00	Oleoresinous Base	Armstrong Cork Co.	13
Acid Proof Black Paint	C	0.02	JAN-P-450	Glidden Co.	13
Armstrong J-1140-B	A	0.00 s	Phenol-Formaldehyde	Armstrong Cork Co.	7
Armstrong J-1140-D	R	0.00	Chlorinated Rubber	Armstrong Cork Co.	11
Armstrong J-1140-E	P	0.00	Cumar C-6	Armstrong Cork Co.	13
Bakelite-BM-13080	P	0.04	Phenolic	Bakelite Corp.	7
Bakelite QRS-136	P	0.00	Flexible Polyester	Bakelite Corp.	8
Bakelite QRS-147	P	6.00 s	Rigid Polyester	Bakelite Corp.	8
Battalon	A	0.24 s	Asphaltic	Plymouth Industrial Prod.	13
Burl Rubber SN759	R	0.00	Burl Rubber	Ohio Rubber Co.	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Casco Flexible Cement	A	0.00	Miscellaneous	The Borden Co.	13
Cerex Yellow	P	0.00 s	Polystyrene	Monsanto Chemical Co.	10
Cleaveland	A	0.12 s	Asphaltic	Plymouth Industrial Prod.	13
Coverlac Orange	C	0.06	Polyvinyl Chloride	Spraylat Corp.	12
Cycleweld C-14	A	11+	Epoxy Resin	Cycleweld Cement Products	3
Dampcoat Enamel	C	0.00	Rubbertized Dampcoat Enamel	Wilbur & Williams Co.	11
Der-o-tex	R	0.25	Neoprene Rubber	Crossfield Products Co.	11
Dilectro tubing	P	0.05	Phenolic Laminare	Continental Diamond Fibre Co.	7
Dylan-Red	P	0.00	Polyethylene	Koppers Chem. Co.	4
Epon VI	A	1.44	Epoxy	Shell Chem. Corp.	3
Epon 828 with A	A	4.60	Epoxy	Shell Chem. Corp.	3
E.C. No. 711	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 981	A	0.11	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1055	A	0.13	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1126	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1202	A	0.00	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1365	A	0.02	Butyl Base	Minnesota Mining & Mfg. Co.	11
FM-10001	P	0.00 s	Polyamide	E.L. du Pont de Nemours & Co., Inc.	6
Flexseal No. 258	A	0.00	Polyvinyl Butyral	Vibradamp Corp.	12
Formula No. 320	R	0.00 s	Rubber Coat Insl-x	Wilbur & Williams Co.	13
Formula No. 330	R	7.24	Rubber Coat Insl-x	Wilbur & Williams Co.	13
G.E. No. 12840	P	0.00	Modified Phenolic	General Electric Co.	7
Glidden Cushioning Mat.	S	0.00	Miscellaneous	Glidden Co.	13
Glidden Inert Sealer No. 587	S	0.00	Miscellaneous	Glidden Co.	13
Glidden Inert Sealer No. 589	S	0.00	50% glycerol ester of rosin; 30% hydrocarbon	Glidden Co.	13
Glidden Inert Sealer No. 590	S	0.00	100% Para Coumarone Indene	Glidden Co.	13
Glidden Inert Sealer No. 591	S	0.00	50% glycerol ester of rosin; 30% Para Coumarone Indene	Glidden Co.	13
Glidden Inert Sealer No. 592	S	0.00	100% glycerol ester of rosin	Glidden Co.	13

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Glidden Inert Sealer No. 598	S	0.00	100% glycerol ester of rosin	Glidden Co.	13
Glidden Inert Sealer No. 600	S	0.00	100% glycerol ester of rosin	Glidden Co.	13
Gray Glid Iron	S	0.00 s	Polyester	Glidden Co.	8
H-00	P	0.00 s	Polyester	Schundler	8
H-35	P	0.00 s	Polyester	Schundler	8
Hycar I-10 DC-2202	R	0.00			11
Laminac No. 4116	A	0.00	Polyester/Styrene	American Cyanamid Co.	8
Laminac No. 4134	A	0.00	Polyester/Styrene	American Cyanamid Co.	8
Laminated Fiberglass	P	0.00	Polyester	Glass Fibers Inc.	8
Lustrex Lt. 373	P	0.00 s	Polystyrene	Monsanto Chem. Co.	10
Lustrex Clear	P	0.00 s	Polystyrene	Monsanto Chem. Co.	10
MX-172 Celanese	P	0.00	Polyester	Celanese Corp. of America	8
Melmac No. 1502	P	L31	Melamine-formaldehyde- cellulose filled	American Cyanamid	7
Metaseal No. 19V5	S	0.04 s	Polyester	American Metaseal Corp.	8
Mylar Tape	P	0.00 s	Polyethylene/Terephthalate	Mystic Adhesive Prod.	8
Nylon No. 6501	P	0.00 s	Polyamide	E.I. du Pont de Nemours Co.	6
Permaceal No. 30	P	0.14	Vinyl film electrical tape	Industrial Tape Corp.	12
Permatex No. 2	S	10.62	Gasket Sealing Compound	Permatex Co. Inc.	13
Phenolic Epoxy	P	0.00	Phenolic-Epoxy	U.S. Rubber	7
Polyplastic MC	P	0.01 s	Polyester	Polyplastic United Inc.	8
Preset-Plasmount No. 2	A	0.00 s	Miscellaneous	Girdler Process	13
Presstite No. 155	R	0.21	Polyisobutylene/Asbestos	Presstite Engineering Co.	13
Presstite No. 155.6	A	0.26	Sealant	Presstite Engineering Co.	13
Presstite No. 218	A	L70	Aerodynamic Smoothing Compd.	Presstite Engineering Co.	13
Presstite No. 261	A	0.03	Sealant	Presstite Engineering Co.	13
Presstite No. 261-6	A	0.13	Sealant	Presstite Engineering Co.	13
Presstite No. 271	A	0.20	Sealant	Presstite Engineering Co.	13
Presstite No. 144-41	S	0.13	Asphalt Rubber	Presstite Engineering Co.	13

Material	Classification As to Use	Reactivity (gas evolution, ml)	Type Base	Manufacturer of Material	Section
Resinox		0.00	Miscellaneous		13
Rock Island F-18FE	R	0.35	Synthetic Elastomer	Rock Island Arsenal	11
Rubber Comp. 325453	R	0.00	Synthetic Elastomer	Ohio Rubber Co.	11
Silastic D-250	R	0.00	Silicone Rubber	Dow Corning Corp.	11
Silicone Grease G	M	2.12	Soft silicone film	General Electric Co.	9
Silicone Grease H	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease No. 20044	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease No. 20046	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Grease No. XC-4272	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease No. XC-4282	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease No. XC-5012	M	3.01	Soft silicone film	Dow Corning Corp.	9
Silicone Grease No. XCI-4043	M	0.00	Soft silicone film	Dow Corning Corp.	9
Silicone Grease No. 372-72-539	M	0.00	Soft silicone film	General Electric Co.	9
Silicone Electro-lube-Pressure-Valve	M	0.00	Soft silicone film	General Electric Co.	9
Thiokol LP-2 with C5	R	0.35	Polysulfide Rubber	Thiokol Chemical Corp.	11
Tub-Kove Sealing Strip	S	0.00	Vinylite	Keller Products	12
Vinylite MA-28-4		0.00	Vinylite	Bakelite Corp.	12
Vinylite Pipe Maktet		0.00	Polyvinyl Chloride		12
Z-2E-Hypalon	R	0.02		Rock Island Arsenal	11
Z-40-Silicone	R	0.00	Silicone Rubber	Rock Island Arsenal	11
Z-46E-Adiprene	R	0.00	Adiprene	Rock Island Arsenal	11
Z-47 Hycar 4021	R	1.09	Buryl Rubber	Rock Island Arsenal	11
			Tracer Composition R-45		
Pliobond No. 30	R	0.08	Synthetic Rubber	Goodyear Tire & Rubber Co.	11
			Tritonal		
E.C. No. 981	S	0.17	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1055	S	0.20	Synthetic Rubber	Minnesota Mining & Mfg. Co.	11
E.C. No. 1126	S	0.10	Oil Resistant Elastomer	Minnesota Mining & Mfg. Co.	11

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
E.C. No. 1202	S	0.00	Oil Soluble Elastomer	Minnesota Mining Mfg. & Co.	11
E.C. No. 1365	S	0.00	Butyl Base	Minnesota Mining Mfg. & Co.	11
Glidden Cushioning Material	S	0.00	Miscellaneous	Glidden Co.	13
Glidden Inert Sealer No. 587	S	0.00	Miscellaneous	Glidden Co.	13
Glidden Inert Sealer No. 589	S	0.00	50% hydrocarbon; 50% glycerol ester of rosin	Glidden Co.	13
Glidden Inert Sealer No. 590	S	0.00	100% Para-Coumarone	Glidden Co.	13
Glidden Inert Sealer No. 591	S	0.00	Indene	Glidden Co.	13
Glidden Inert Sealer No. 592	S	0.00	50% glycerol ester of rosin; 50% Para-Coumarone	Glidden Co.	13
Glidden Inert Sealer No. 598	S	0.00	Indene	Glidden Co.	13
Glidden Inert Sealer No. 600	S	0.00	100% glycerol ester of rosin	Glidden Co.	13
Gray Glid Iron	S	0.00 s	100% glycerol ester of rosin	Glidden Co.	13
Panelyte Pc No. 41263	P	0.00 s	Polyester Resin	Glidden Co.	8
Permacel No. 30	A	0.00	Acrylonitrile Copolymer	St. Regis Sales Corporation	11
Permatex No. 2	S	10.70	Vinylite	Industrial Tape Corp.	12
Pliobond No. 30	R	0.95	Gasket sealant	Permatex Co. Inc.	13
Presstite No. 155.6	A	0.05	Butadiene Acrylonitrile	Goodyear Tire & Rubber Co.	11
Presstite No. 218	A	1.82	Acrylonitrile	Presstite Engineering Co.	13
Teflon	P	0.00	Aerodynamic Smoothing Compd.	Presstite Engineering Co.	13
Silicone Grease Form G	M	0.00	Polyethylene	E.I. du Pont de Nemours & Co., Inc.	4
Silicone Grease Form H	M	1.83	Silicone	General Electric Co.	9
Silicone Grease A-20044	M	0.00	Silicone	General Electric Co.	9
Silicone Grease A-20046	M	0.00	Silicone	General Electric Co.	9
Silicone Grease 372-72-539	M	0.00	Silicone	General Electric Co.	9
Silicone Grease XC-4272	M	1.91	Silicone	General Electric Co.	9
Silicone Grease XC-4282	M	0.07	Silicone	Dow Corning Corp.	9
Silicone XCT-4043	M	0.00	Silicone	Dow Corning Corp.	9

Material	Classification As to Use	Reactivity (gas evolu- tion, ml)	Type Base	Manufacturer of Material	Section
Silicon Grease XC-5012	M	0.00	Silicone	Dow Corning Corp.	9
Silicone Electro Lube Pres-o-Valve	M	0.00	Silicone	General Electric Co.	9
S-60-Copolymer	P	0.00 s	Styrene/isobutylene	Enjay Co., Inc.	10
TVA	P	0.00 s	Cellulose Acetate	Monsanto Chem. Co.	2
VU-1310	P	0.00 s	Polyvinyl Chloride	Bakelite Corp.	12
Yellow Flare					
Epon 828	P	0.00	Epoxy	Shell Chemical Corp.	3
Zirconium Hydride					
Cycleweld C-14	P	0.00	Epoxy	Cycleweld Cement Products	3
Tetranitrocarbazole					
Cycleweld C-14	A	0.06	Epoxy	Cycleweld Cement Products	3
Pyrotechnic Composition FF101L					
S-50 copolymer	A	0.00	Polystyrene	Enjay Co., Inc.	10
Syron 666	A	0.00	Polystyrene	Dow Corning Corp.	10

POLYMER/EXPLOSIVE INDEX

Acoustic Cement-Adhesive-Armstrong Cork Co.

Oleoresinous Base-(Asbestos Fibers, Inert Clay/Naphtha)

Explosive/Propellant	Reactivity (gas evolution, ml.)	Reference (Picatinny Arsenal Report Number)	Section
Composition A	0.00	52-M2-110	13
Composition B	0.00	52-M2-110	
Composition C-3	1.86	52-M2-110	
Composition C-4	0.00	52-M2-110	
Dynamite	No Exp.	52-M2-110	
PEIN	0.02 s	52-M2-110	
Pentolite 50/50	0.00	52-M2-110	
RDX	0.00	52-M2-110	
Tetryol 75/25	2.22	52-M2-110	
TNT	0.00	52-M2-110	

Acid Proof Black Paint-Coating-The Glidden Co.

Type I-Spec. JAN-P-450 (U. S. A. 3-106F)

Composition A-3	0.00 s	56-M2-27	13
Composition B	1.19 s	56-M2-27	
Composition C-4	0.73 s	51-8-26	
Lead Azide	No. Exp.	53-M2-89	
K-20	No. Exp.	53-M2-89	
Nol-100	No. Exp.	53-M2-89	
RDX	0.25 s	53-M2-89	
Tetryl	1.63	53-M2-89	
TNT	0.02 s	56-M2-27	

The subscript s indicates that storage reports are available.

Acrylated Alkyd-Plastic-Aberdeen Proving Ground
Polyester MF-881

Explosive/Propellant	Reactivity (gas evolution, ml.)	Reference (Picatinny Arsenal Report Number)	Section
Amatol	4.25	56-M2-12	8
M-7	0.00	56-M2-12	
M-15	0.00	56-M2-12	
Tetryl	0.00	56-M2-12	

Acrylic-MF-875-Aberdeen Proving Ground

Acrylate MF-875

Amatol	0.03	56-M2-12	1
Black Powder	0.00	57-H1-321	
M-7	0.00	56-M2-12	
M-15	0.00	56-M2-12	
Tetryl	0.00	56-M2-12	

-Acryloid-B-72-Adhesive-Rohm and Haas
Polymethyl-Methacrylate-40% Solid in Toluene

Black Powder A-5	0.38	56-M2-5	1
Composition B	0.00 _s	52-M2-143	
M-9	5.06 _s	53-M2-19	
Squib Mix	0.00 _s	51-S-4	
Tetryl	0.00 _s	51-H1-136470	

Allite-Plastic-Pittsburgh Plate Glass Co.
Polyallyldiglycol Carbonate

JPB	0.00 _s	53-M2-4	13
MRP	0.00 _s	53-M2-4	
T ₂	0.08 _s	53-M2-4	
T ₈	0.00 _s	53-M2-4	

Alvar-Adhesive-Shawinigan Products Co.
Polyvinyl Acetal Resin

Explosive/Propellant	Reactivity (gas evolution, ml.)	Reference (Picatinny Arsenal Report Number)	Section
Composition C-3	0.55	53-M2-46	12
H-6 (Navy Explosive)	0.03	53-M2-46	
MOX	0.00	53-M2-46	
Tetryl	0.04	53-M2-46	

Amberlac No. 292-Plastic-Rohm and Haas
Modified Polyester Resin

Black Powder A-5	0.00	56-M2-77	8
Composition B	0.00	56-M2-77	
Lead Azide	No Exp.	56-M2-77	
PBX	0.00	56-M2-8	
Primer Mix-Class I	No Exp.	56-M2-77	
Tetryl	0.50	56-M2-77	

Amberlite-PR No. 115-Adhesive-Rohm and Haas
Resorcinal-Formaldehyde Resin

HBX-6	0.00	56-M2-42	7
RDX	0.00	56-M2-42	

Araldite AN-111, CN-503-Adhesive-Ciba Co. Inc.
Epoxy Resin

Black Powder (CN-503)	0.00	(CN-101) 0.02	3
Composition B (CN-503)	11+	(AN-111) 0.00 _g (E) 0.23	
M-2-(102) with 951	6.61 _g	55-HI-1112, 51-HI-2419	
M-10 (CN-503)	0.00	55-M2-41, 54-M2-32,	
T-8 (101)	8.43	55-HI-1112	
T-19 (AN-100)	7.85	52-M2-84	
		55-HI-1112	
		51-HI-2419	
		56-M2-14, 54-HI-2100,	
		54-HI-2107, 54-HI-1740	

Armstrong (J-1140-B) (J-1140-D) (J-1140-E) Adhesives-Armstrong Cork Co.

Explosive/Propellant	J-1140-B (Phenol-Formaldehyde) Section 7	J-1140-D (Chlorinated Rubber) Section 11	J-1140-E (Cumar C-6 Base) Section 13	Reference (Picatinny Arsenal Report Number)
Composition A	0.00	0.00	0.00	52-M2-110
Composition B	0.27	0.00	0.00	52-M2-110
Composition C-3	1.15	1.10	0.12	52-M2-110
Composition C-4	0.20	0.00	0.02	52-M2-110
Dynamite	No Exp.	No Exp.	No Exp.	52-M2-110
PETN	0.00	0.00	0.00	52-M2-110
Pentolite 50/50	0.00	0.00	0.00	52-M2-110
RDX	0.00	0.00	0.00	52-M2-110
TNT	0.00	0.00	0.00	52-M2-110
Tetrytol 75/25	2.43	3.66	2.03	52-M2-110

Armstrong (N-111) (N-171) Adhesive-Armstrong Cork Co.

Explosive/Propellant	N-111 (Synthetic Rubber) Section 11	N-171 (Synthetic Rubber) Section 11	J-1162 Section 13	Reference (Picatinny Arsenal Report Number)
Black Powder A-1	0.06s	0.00s	-	53-M2-26
Black Powder A-5	0.33s	-	-	54-M2-14
Composition B	2.42s	0.77	-	53-M2-26
Fuze Powder	0.00	-	-	54-M2-14
M-1	0.00s	0.00	-	53-M2-26
M-2	0.85s	0.00s	-	52-M2-84
Nitrated Yarn	0.00	-	-	54-M2-14
Tetryl	1.16s	1.33s	0.17	53-M2-26

Armstrong A-1-Adhesive-Armstrong Products Co.
Epoxy Type Resin

Explosive/Propellant	Reactivity	Report Number	Section
JPN	7.58 _s	53-M2-4	3
MRP	8.10 _s	53-M2-4	
T-2	6.89 _s	53-M2-4	
T-8	7.96 _s	53-M2-4	
A-4; A-6; A-3; C-4			
Composition B (A-6)	4.77 (with E); 5.53 (with A)	55-M2-53	
Cyclotol (A-6; C-4)	3.67 (A-6); 10.56 (C-4)	56-M2-10; 55-M2-38	
M-2 (A-3)	2.77 _s	52-M2-84	
RDX (A-4)	5.17	52-HI-632	
Tetryl (A-6)	0.60	55-M2-33	

Asphalt-Asbestos-Adhesive-Plymouth Industrial Corp.
Compensator Recoil-Mil-C-13212

T-28	5.57	56-HI-502	13

Barrier Material
P. A. 203

Composition B	0.13	56-HI-1402	13

Bakelite C-11
Styrene/Rubber
Section 11

BM-6102
Phenolic
Section 7

BM-13080
Phenolic
Section 7

Black Powder A-4 Composition B	0.00 _s	0.00	—	52-M2-48
M-2	—	0.49	—	53-M2-21
KClO ₃ -Primer Mix	2.83 _s	—	—	52-M2-44
Photograph Flashlight Powder	—	0.00	—	52-M2-144
Tetryl	0.00 _s	1.64	—	53-M2-64
TNT	—	—	0.04	52-M2-48

Bakelite BR-18795-Plastic-Bakelite Corp
Epoxy Resin

Explosive/Propellant	Reactivity	Report Number	Section
Black Powder	0.00	53-HI-499	3
Composition A-3	0.00	53-M2-76	
Composition C-3	10.39, 8.62	53-HI-496	3
Cyclorol 75/25	0.61	53-M2-76	
H-6 Navy Explosive	10.55, 10.78	53-HI-496	
MOX-2B	3.44, 2.06	53-HI-496	
RDX-Hystine	0.00	53-M2-76	
Tetryl	2.40	53-HI-499, 53-HI-496, 54-HI-2763	

Bakelite BRS-147-Plastic-Bakelite Corp.

Polyester Resin

Composition A-3	0.00	56-M2-24	8
Composition B	0.14	55-HI-2298	
Cyclorol 75/25	0.00	56-M2-24	
HEX-6	0.53	56-M2-73	

Ankosed No. 436-Plastic-Nome Electrical Corp.

Polyvinyl Chloride

M-7	0.00	135157	12

Bakelite BM-250-Plastic-Bakelite Corp.

Phenoic

NRL-Propellant	0.00	56-HI-1159	7

Bakelite DE-3422-Plastic-Bakelite Corp.

Polyethylene

Explosive/Propellant	Reactivity	Report Number	Section
JPN	0.20 s	53-M2-4	4
MRP	0.00 s	53-M2-4	
T ₁	0.00 s	53-M2-4	
T ₂	0.00 s	53-M2-4	

Bakelite QRS-136-Plastic-Bakelite Corp.

Polyester

Black Powder A-1	0.17s	53-M2-26, 52-M2-153	8
Composition B	0.00		
M-1	0.00		
M-2	0.00s		
Tetryl	0.23		
TNT	0.00		

Bakelite QRS-147-Plastic-Bakelite Corp.

Polyester/Styrene

BaCrO ₄ /KClO ₄ /Zr-Ni	0.00 s	52-M2-166	8
Composition B	0.00 s		
OGX	0.00		
RDX	0.00		
Swiss Propellant	0.40 s		
T ₁	0.00		
T ₂	0.00 s	52-M2-20; 52-M2-49	52-M2-132, 52-M2-100
Tetryl	0.22 s	52-M2-174	
TNT	0.00 s	54-M2-46	

Bakelite RD-51-24-Plastic-Bakelite Corp.				Section
Explosive/Propellant	Reactivity	Modified Polystyrene	Report Number	
Black Powder A-5 T ₃	0.00 0.00		53-H1-499 52-H1-2066	10
C-4 Spec. 3-221 No. 2	0.00 _s	Bakelite BV-1600-Coating-Bakelite Corp. Phenol-Formaldehyde Baked Varnish	51-8-26	7
Ammonium Perchlorate	0.00	Bakelite DYNH-Plastic-Bakelite Corp. Polyethylene	54-M2-39	4
Lead Azide	No Exp.	Bakelite PC-Mk-73-2-250c-Spacers Phenolic	52-M2-172	7
M-7 T-6 Tetryl	0.00 _s 0.00 _s 0.00 _s	Bakelite VAGH-Adhesive-Bakelite Corp. Vinyl Acrylic	52-M2-150 52-M2-4 51-8-5	12
C-4	0.00	Bakelite VF-612-Coating-Bakelite Corp. Acid Proof Block Paint-Spec. AXS-1680 Type 2	51-8-26	13

Bakelite VU-1310-Coating-Bakelite Corp.

Polyvinyl Chloride Acetate

Explosive/Propellant	Reactivity	Report Number	Section
T ₁	0.00 s	51-8-6	12
Type O Propellant	0.00 s		

Bakelite VGNA-59679

Polyvinyl Chloride Acetate

Black Powder A-5	0.00 s	54-M2-7	12

Bakelite-30786 Vinylite

Vinyl Acetate

PBX	0.00 s	56-M2-29	12
PETN	0.00 s	56-M2-29	
Tetryl	0.00 s	56-M2-29	

Bakelite XV-1657-Coating

Phenol-Formaldehyde

C-4	0.00 s	51-8-26	7

Bakelite-BM-261-Plastic

Phenolic

Igniter Charge	0.00	56-M2-11	7
Lead Azide	No Exp	56-M2-11	
RDX	0.35	56-M2-11	

Bartalon-Adhesive-Plymouth Industrial Prod. Inc.

Asphaltic

Black Powder	0.00 s	56-M2-26	13
Tetryl	0.54 s	56-M2-26	
TNT	0.24 s	56-M2-26	

Explosive/Propellant	Reactivity	Report Number	Section
Bondmaster No. M-373 Adhesive-Rubber and Asbestos Corp. Synthetic Rubber Base	0.04 _s	56-M2-80	11
Bondmaster No. M-620-Adhesive-Rubber and Asbestos Corp. Formerly AB-2A-1-Plastic-Epoxy Resin	0.00	56-M2-34	3
Bondmaster No. M-698-Plastic-Rubber and Asbestos Corp. Epoxy-Phenolic	0.00 _s	56-M2-40	7
Briggs Rubber No. 107-Briggs Rubber Butadiene Acrylonitrile	0.00 _s 0.00 _s 0.85 _s	57-TM2-33 57-TM2-33 57-TM2-33	11
Buna-N-Rubber-O-Rings-Castle Rubber Co. Butadiene/Acrylonitrile	1.10 1.61	56-M2-66 56-M2-41	11
Butyl Rubber No. 5N259 (32B-62) Ohio Rubber Co. Butyl GR-1	0.00 _s 0.00 _s 0.00 _s	55-M2-20 55-M2-20 55-M2-20	11

Explosive/Propellant	Reactivity	Report Number	Section
Butvar B-76-Plastic-Monsanto Chem. Corp			
Polyvinylaldehyde			
	0.00	55-M2-13	12
Cyclotol 75/25			
Casco Flexible Cement-Adhesive-The Borden Co.			
Miscellaneous			
Composition A	0.00	52-M2-110	13
Composition B	0.00	52-M2-110	
Composition C-3	0.11	52-M2-110	
Composition C-4	0.00	52-M2-110	
Dynamite	No Exp.	52-M2-110	
PETN	0.00	52-M2-110	
Pentolite 50/50	0.00	52-M2-110	
RDX	0.00	52-M2-110	
TNT	0.00	52-M2-110	
Tetryol 75/25	3.39	52-M2-110	
Ca Plugs-Plastic-Protective Closure Co. Inc.			
Polyethylene			
Tetryl	0.00 _s	52-M2-21	4
Calanese-MX-172-Plastic-Calanese Corp.			
Polyester			
Composition B	0.00	56-M2-49	8
TNT	0.00	56-M2-49	
No. 300 P. C. Callophane-Plastic-E. I. duPont de Nemours & Co., Inc.			
Regenerated Cellulose			
Black Powder A-5	0.19	53-M2-72	2
Primer Mix F. A. No. 70	No Exp.	53-M2-72	

Cement No. 4678-Adhesive-E. I. duPont de Nemours & Co., Inc.

Miscellaneous

Explosive/Propellant	Reactivity	Report Number	Section
HNX	0.00	57-HI-583	13
PBX	0.06	57-HI-583	

Cellophane-Plastic-E. I. duPont de Nemours & Co., Inc.

Regenerated Cellulose

M-8 Spec. MIL-50-11-151
M-8 M-Sar-84

0.00 53-MZ-85
0.47 54-MZ-49

2

Cellulose Acetate-Plastic-B. F. Goodrich Chem. Co.

Cellulosic

Black Powder
T-31

0.00 52-HI-4188
0.00 55-MZ-46

2

Cellulose Acetate/Dibutyl Phthalate-Plastic-Chemaco Corp.

Cellulosic

Double Base Propellant M-2
Halcite
PETN
RDX
Single Base Propellant M-1
T-9

5.98 53-HI-2757
1.24 53-HI-2757
0.44 53-HI-2757
0.22 53-HI-2757
0.18 53-HI-2757
1.53 53-HI-2757

2

Cellulose Nitrate Film (Plastic) Selectronic Corp

Cellulosic

Black Powder
M-1
M-9
M-10
T-18

0.00 52-MZ-6
0.00 52-MZ-6
3.75 51-HI-136287
0.22 54-HI-2110
0.00 54-HI-2110

2

Cerex Yellow-Plastic-Monsanto Chemical Co.

Polystyrene

Explosive/Propellant	Reactivity	Report Number	Section
RDX	0.00 _s	52-M2-146	10
TNT	0.00 _s	52-M2-146	

No. 825 Chematex-Plastic-Entectic Welding Alloys Corp.

Epoxy

Composition B	10.21	53-M2-67	3

No. 823-Plastic-Entectic Welding Alloys Corp.

Epoxy

Composition B	2.51	53-M2-67	3

Chlorinated Paraffin-Plastic-Aberdeen Proving Ground

MF-877 Hydrocarbon-Chlorinated

Amarol	0.26	56-M2-12	4
M-7	0.00	56-M2-12	
M-15	0.00	56-M2-12	
Tetryl	0.00	56-M2-12	

Cleveland-Plymouth Industrial Prod.

Asphaltic

Black Powder A-5	0.00 _s	56-M2-26	13
Tetryl	0.10 _s	56-M2-26	
TNT	0.12 _s	56-M2-26	

CMC-No. 346-Plastic-Chemaco Corp
Sodium-Carboxymethyl Cellulose

Explosive/Propellant	Reactivity	Report Number	Section
JPN	0.00 _s	53-M2-4	2
MRP	0.00 _s	53-M2-4	
T-2	0.00 _s	53-M2-4	
T-8	0.74 _s	53-M2-4	

Collins-RF No. 60 Rubber-Collins Packing Co.
Synthetic Rubber

M-6	0.00 _s	52-M2-45	11

Conductoplast-Liquid Resin-Atlas Mineral Products
Cement Conductive

T-6	5.70 _s 0.66 _s	53-M2-80; 51-8-36	13

Covertec-Orange-Coating-Spraylat Corp.
Polyvinyl Chloride

RDX	0.00 _s	57-TM2-35	12
TNT	0.06 _s	57-TM2-35	
Tetryl	0.00 _s	57-TM2-35	

Corfoam No. 114-Plastic-Resolin, Los Angeles

Phenolic Foam

HBX-6	1.21	56-M2-63	7
M-10	1.69	55-M2-51	
T-18	0.00	55-M2-51	

Ciba No. 502-Plastic-Ciba Chem. Co.

Glass-Filled Epoxy

Section

Report Number

Reactivity

Explosive/Propellant

3

53-M2-90

10.18

OIO

Coumarone-Indene-Aberdeen Proving Ground

MF-874

13

56-M2-12

10.02

Anarol

56-M2-12

0.00

M-7

56-M2-12

0.00

M-15

56-M2-12

0.00

Tetryl

Cycleweld C-14-Adhesive-Cycleweld Cement Products
Epoxy Resin

3

53-M2-13

3.12

Bararol

53-M2-82

0.00

Barium Nitrate

55-M2-55

0.00s

Black Powder

56-M2-34

0.48

Composition A-3

56-M2-34, 55-H1-1822

10.56, 10.49+

Composition B

56-H1-140

No Exp.

FA-70 Primer Mix

52-H1-2023

7.74

Flash Powder Bullseye No. 2

56-M2-4

10.11

HRX-6

53-M2-99

0.00

IMR-4879-Propellant

53-M2-99

0.00

Incendiary Compd. IM-142

57-TM2-15

6.77

M-8

57-TM2-15

5.28

M-9

56-M2-34

0.00s

M-10

53-M2-82

8.58

Pentolite 50/50

55-M2-55

0.00

Silicon

56-M2-34

11-16 hrs.

TNT

53-M2-55

0.00

Tetranitrocarbazole

53-M2-99; 56-M2-34

2.06, 7.75

Tetryl

55-M2-55

0.00

Zirconium Hydride

Cycopal-5-102-5-Coating-American Cyanamid
Styrenated Alkyd

Explosive/Propellant	Reactivity	Report Number	Section
Fuze Powder	0.00 _s	53-M2-87	8
Lead Azide	No Exp.	52-H1-2065	
Primer Mix-M-20	No Exp.	52-H1-2065	
Primer Mix 70	No Exp.	52-M2-148	
Primer Mix 100	No Exp.	52-H1-2065	
Primer Mix NOL-130	No Exp.	52-H1-2065	
RDX	0.00	53-M2-89, 52-M1-489	
Tetryl	0.10, 0.58	53-M2-89, 52-H1-489	

Dampcoat Enamel-Coating-Wilbur and Williams Co.

Rubberized Coating

Amarol 60/40	10.11 _s	51-8-1	11
TNT	0.00 _s	51-8-1	

Dex-o-Tex-Rubber-Crossfield Products Corp.

Neoprene Conductive Rubber

Lead Azide	No Exp.	56-M2-76	11
M-2	0.55 _s	57-M2-1	
M-9	0.00 _s	57-M2-1	
M-15	0.22 _s	57-M2-1	
M-17	0.00 _s	57-M2-1	
RDX	0.00 _s	57-M2-1	
TNT	0.25 _s	57-M2-1	

Diacetate Cloth-Bale 25

Black Powder	0.00	57-H1-321	2
M-1	0.00	57-H1-321	
M-2	0.00	57-H1-321	
M-15	0.00	57-H1-321	

Dielectro Tubing-Plastic-Continental Diamond Fibre Co.
Phenolic Laminate

Explosive/Propellant	Reactivity	Report Number	Section
TNT	0.05	55-M2-46	7
Tetryl	0.00	55-M2-46	
Tetrytol	0.00	55-M2-46	

Dobackman-Coating-Dobackman Co.
Regenerated Cellulose

M-Sar-clear	0.00	53-M2-134	2
M-Sar-L-86	0.00	53-M2-134	
H-50-M Sar-86	6.80	53-M2-134	

C-11 Copolymer-Plastic-Lionel Co. Inc.
Polystyrene

Composition B	0.00 _s	52-M2-130	10
Tetryl	0.00 _s	52-M2-130	

Dylene No. 100-Koppers Chem. Co.
Polystyrene

RDX	0.00	55-M2-50	10

Dispersite No. 1789-Rubber-U. S. Rubber Co.
Reclaim Rubber

Composition C-3	1.83 _s	133744	11
Composition C-4	0.00 _s	133744	

Dispersite No. 1822A-Rubber-U. S. Rubber Co.
Butyl Rubber

Composition C-3	1.80 _s	133744	11
Composition C-4	0.00 _s	133744	

Dylan-KPD-160-Plastic-Koppers Co. Inc.

Polyethylene

Explosive/Propellant	Reactivity	Report Number	Section
RDX	0.00	55-M2-50	4
TNT	0.00	56-M1-748	
Tetryl	0.00	56-H1-748	

Duralac-R-1900-P

Ethyl Cellulose Lacquer

Composition B	0.00 _s	51-8-12	2

Dioxime No. 1 and No. 2-Rubber-DeBell and Richardson Inc.

Butyl Rubber

Composition B	0.00 _s	52-M2-85	11
Lead Azide	0.00	52-M2-85	
Primer Mix-M-18	0.00	52-M2-85	
Tetryl	0.00 _s	52-M2-85	

Dryply No. 81-Plastic-Flexfirm Products

Glass Filled Reinforcing Material-Impregnated with Polyester Resin

Composition B	0.00 _s	55-H1-2120, 57-TM2-4	8
HBX-6	0.00 _s		

Durite-HR-340-Plastic-The Borden Co.

Phenolic-Spec. Mil-P-10420

Lead Azide	No Exp.	53-M2-84	7-
Lead Scyphate	No Exp.	53-M2-84	
Nol-130-Primer Mix	No Exp.	53-M2-84	
PETN	0.09	53-M2-84	
Potassium Dinirobenzo	No Exp.	53-M2-84	
Furazan	1.06	53-M2-84	
RDX	No Exp.	53-M2-84	
Tetracene	No Exp.	53-M2-84	
Tetryl	0.00	53-M2-84	
		53-M2-84	

Durez No. 1905-Plastic-Durez Plastics Chem. Co. Inc.
Phenolic-Fabric Filled

Explosive/Propellant	Reactivity	Report Number	Section
M-16	0.36 _s	57-TM2-6	7
T-16	1.68	55-M2-6	
T-19	0.00 _s	57-TM2-6	
MOX-2B	0.00	56-M2-69	7
Composition A-3	1.54	54-M2-23	7
M-2	1.62 _s	52-M2-84	7
M-2	8.48 _s	52-M2-44	7
M-2	8.45 _s	52-M2-44	7
Composition C-3	4.48, 2.38	55-M2-21	12

Durez No. 16621
Glass Filled Phenolic

Durez No. 11864
Class 8-Asbestos Phenolic

Durez No. 12041
Phenolic Resin

Durez No. 13348

Durez No. 14658

Elvanol No. 70-05-Coating-E. I. du Pont de Nemours & Co., Inc.
Polyvinyl Film

Epon No. 828-Plastic-Shell Chemical Corp.

Explosive/Propellant	Reactivity	Epoxy	Report Number	Section
Black Powder	0.00		55-HI-1122	3
Composition B with D, Cl, Z	6.72	10.64 0.02 _s 1.97	55-M2-5 56-M2-15	
Flash Composition	2.34		55-HI-620	
HBX-6 with A, Cl, Versamid 125	9.79	0.00 _s 10.49	55-M2-49, 56-M2-70, 57-HI-772	
Lead Azide	No. Exp.		55-HI-620	
M-10 with A	0.00		55-HI-1122	
OIO with D	10.38		54-M2-26	
RDX with Z	0.00 _s		56-HI-940	
TNT with A	4.60		56-HI-571	
Tetryl with Thiokol LP-3	1.86		54-M2-47	
T-131	4.49 _s		55-HI-1118, 56-M2-23	
Yellow Flare	0.00		56-HI-1216	

Epon No. 6 Adhesive-Shell Chemical Corp.

	Epoxy Resin	
Composition B, Shavings	11+- 16 hrs 3.17	3
T-19	7.56	
TNT	1.44	
Tetryl	0.26	
Thiokol 65-35	3.43	
		55-HI-2116, 55-HI-2372
		54-HI-1740
		54-M2-45
		54-M2-45
		54-M2-45

Epon-Plastic-United States Rubber
Clay Filled Rubber Phenolic

M2 with 257-F4	2.57 _s	7
M2 with 2530	2.92 _s	
M2 with 2532-F2	2.59 _s	
M2 with 2537-F7	4.43 _s	
		52-M2-44
		52-M2-44
		52-M2-44
		52-M2-44

Eronel Grease No. 900

Composition B	0.00 _s	9
		56-M2-22

Exon No. 400 XR-61-Plastic-Firestone Plastics Co.

P. V. C.

Explosive/Propellant	Reactivity	Report Number	Section
Fuze Powder	0.00 _s	53-M2-7	12

Ethocel-Lx51
Ethyl Cellulose

M-8	Storage only	BZ-3-11	2

Exon No. 402 A-Plastic-Firestone Plastics Co.

Unplasticized PVC

Composition B	0.00	57-TN2-8; 55-HI-1106	12
M-2	1.09	57-TN2-8; 55-HI-1106	
M-8	0.00	57-TN2-8; 55-HI-1106	

Ethyl Cellulose-Plastic-Federal Cartridge Co.
Cellulosic

M-9 E/c 582-JS-2	0.92	55-M2-45	2
M-9 E/c 15570	0.70	55-M2-45	
Black powder E-12-S6	11+	53-HI-2757	
Halcite	1.28	53-HI-2757	
M-1	0.20	53-HI-2757	
M-2	4.20	53-HI-2757	
PEIN	0.30	53-HI-2757	
RDX	0.25	53-HI-2757	
T-9	2.31	53-HI-2757	

Black Powder E-59-MS

Halcite	11+	53-HI-2757	
M-1	1.05	53-HI-2757	
M-2	0.22	53-HI-2757	
PEIN	4.50	53-HI-2757	
RDX	0.29	53-HI-2757	
T-9	0.35	53-HI-2757	
	1.64	53-HI-2757	

Ethyl Cellulose No. 346-Plastic-Chemaco Corp.

Cellulosic

JPN	1.67 _s	53-M2-4	2
MRP	1.72 _s	53-M2-4	
T-2	1.33 _s	53-M2-4	
T-8	1.49 _s	53-M2-4	

Furane X-2-Adhesive-Furane Plastics and Chemical Co.
Furfural-Formaldehyde

Explosive/Propellant	Reactivity	Report Number	Section
Cyclorol 75/25 with CM	0.00	56-HI-867	5
HMX with CM, PC	4.33 2.95	57-HI-19, 57-HI-32	
JPN	7.44s	53-M2-4	
MRP	7.96s	53-M2-4	
PBX	0.00	57-HI-20	
T-2	9.90s	53-M2-4	
T-8	7.82s	53-M2-4	

Fortran No. 404-Plastic-Thermo Plastic Plastics Corp.

Glass Fabric-Woven Type No. 3-Coated with PVC

No Exp.
No Exp.

Lead Azide
Mercury Fulminate

54-M2-67
54-M2-67

12

Fortisan-Plastic-Celanese Corp. of America

Epoxy-Coated Regenerated Cellulose

0.00
7.44

M-10
T-18

54-M2-54
54-M2-54

2

Formvar "E"-Plastic-Shawinigan Resins Ltd.

Polyvinyl Formvar

0.00s
0.60s
0.00s
0.00s

JPN
MRP
T-2
T-8

53-M2-4
53-M2-4
53-M2-4
53-M2-4

12

Flexseal No. 258-Adhesive-Vibradamp Corp.

Polyvinyl Butyral

0.00
0.00

Composition B
TNT

51-8-16
51-8-16

12

Firestone No. S-FR172-3-Rubber-Firestone Tire and Rubber Co.

Explosive/Propellant	Reactivity	Report Number	Section
M-1	0.00 _s	56-HI-1629	11
M-9	1.10 _s	56-HI-1629	
M-17	9.28 _s	56-HI-1629	

Firestone No. S-FR172-2-Rubber

M-1	0.00 _s	56-HI-573	11
M-9	1.02 _s	56-HI-573	
M-17	4.46 _s		

Firestone No. S-FR172-1A-Rubber

M-1	0.00	56-HI-573	11
M-9	0.14	56-HI-573	
M-17	3.79	56-HI-573	

Fiberglass-Laminated Plastics-Glass Fibers Inc.

Polyester

Composition B -			
T-131	0.00	54-HI-1734	8
Tetryl	0.00 _s 4.49 _s	54-HI-1734, 56-M2-25	
Tetrytol	0.00	54-HI-1734	
TNT	1.46	54-HI-1734	
	0.00	54-HI-1734	

G. E. No. 12487-Plastic-General Electric Co.

Rubber Modified Phenolic

Composition B			
M-2	1.42	53-M2-21	7
Petrolite 50/50	4.29, 5.50, 6.02, 5.98, 6.63, 5.13	51-HI-2271, 52-M2-44	
	0.00		

GR-M-10-Rubber-E. I. duPont de Nemours & Co., Inc.
Neoprene

Black Powder	0.00	52-M2-141	11
Tetryl	1.60	52-M2-141	

Explosive/Propellant Composition B	Reactivity	Report Number	Section
G. E. No. 12494-Plastic-General Electric Co. Phenolic-Rubber Modified	2.64	55-HI-396	7
G. E. No. 12809-Plastic-General Electric Co. Phenolic	5.72		7
M-2			
Hi-185a-Plastic-Kopper Chemical Co. Polystyrene	0.00s	52-M2-138	10
OIO			
GR-1-Rubber-Picatinny Arsenal Butyl or Government Rubber-160 Butylene	0.00s 0.00s 0.00s 0.00s	53-M2-4 53-M2-4 53-M2-4 53-M2-4	11
JPN MRP T-2 T-8			
CR-M-Rubber-Picatinny Arsenal Neoprene	2.85s 1.72s 0.00s 0.00s	53-M2-4 53-M2-4 53-M2-4 53-M2-4	11
JPN MRP T-2 T-8			
GR-S-Rubber-Picatinny Arsenal Butadiene/Styrene	0.00s 0.00s 0.00s 0.00s	53-M2-4 53-M2-4 53-M2-4 53-M2-4	11
JPN MRP T-2 T-8			

G. E. No. 12840-Plastic-General Electric Co.
Wood-Floor-Filled Phenolic

Section

7

Report Number

52-M2-48
53-M2-17
52-M2-48

Reactivity

0.00
0.00
0.00

Geon No. 404-Plastic-B. F. Goodrich Chem. Co.

PVC Resin

53-M2-4
52-HI-874
53-M2-4
53-M2-4
53-M2-4

0.00 s
0.00
0.00 s
0.00 s
0.00 s

JPN
M-2
MRP
T-2
T-8

Geon No. 1911-Plastic-B. F. Goodrich Chem. Co.

PVC

53-HI-2757
53-HI-2757
53-HI-2757
53-HI-2757
53-HI-1257
53-HI-2757
53-HI-2757

11+
4.78
1.05
0.26
0.27
0.18
1.68

Black Powder A-5
Double Base Propellant M-2
Halite
PETN
RDX
Single Base Propellant M-1
T-9

Geon No. 2046-Plastic-B. F. Goodrich Chem. Co.

PVC

53-HI-2757
53-HI-2757
53-HI-2757
53-HI-2757
53-HI-2757
53-HI-2757
53-HI-2757

3.81
1.10
0.27
0.23
0.20
2.29

Black Powder A-5
Double Base Propellant (M-2)
Halite
PETN
RDX
Single Base Propellant (M-1)
T-9

Geon No. 8700-Plastic-B. F. Goodrich Chem. Co.

PVC

Explosive/Propellant	Reactivity	Report Number	Section
Composition B			
M-2	0.11 _s	57-TM2-8, 55-HI-1106	12
M-8	0.39 _s	57-TM2-8	
	0.55 _s	57-TM2-8	

Glaskev No. 1901-Plastic-Olin Industries
Fiberglass Reinforced Polyester

Lead Azide	No Exp.	55-HI-620	8
RDX	0.00	55-HI-620	

Glidden Cushioning Material-No. 39A-Glidden Co.
Rubbery White Solid

Composition B	0.01 _s	56-M2-36	13
Picrato'	0.00 _s	56-M2-36	
TNT	0.00 _s	56-M2-36	
Tetryl	0.04 _s	56-M2-36	
Tritonal	0.00 _s	56-M2-36	

Glidden Inert Sealers Nos. 587 - 600-Glidden Co.

Glyceral Esters of Rosin

Composition B	0.00	56-M2-52, 55-HI-2121, 56-HI-864	13
Picrato	0.00	56-M2-52, 55-HI-2121, 56-HI-864	
Tritonal	0.00	56-M2-52, 55-HI-2121, 56-HI-864	
TNT	0.00	56-M2-52, 55-HI-2121, 56-HI-864	

Gray Glid Iron-Plastic-Glidden Co.
Polyester

Black Powder	0.00 _s	57-TM2-23	8
Composition B	0.00 _s	57-TM2-23	
TNT	0.00 _s	57-TM2-23	
Tetryl	0.00 _s	57-TM2-23	
Tritonal 90/20	0.13, 0.00 _s	57-TM2-23	

No. 1017-Gliddol-Adhesive-Glidden Co.		Section
Polyester Resin		
Explosive/Propellant	Reactivity	Report Number
Composition B	0.00 _s	56-M2-35
	Green Enamel-Coating-Cellulosic	
	Spec. MIL-E-10687	
Lead Azide	No Exp.	53-M2-89
Primer Mix-M-20	No Exp.	53-M2-89
Primer Mix-100	No Exp.	53-M2-89
Primer Mix NOL-130	No Exp.	53-M2-89
RDX	0.15	53-M2-89
Tetryl	0.11	
	Green Lacquer-Coating-Cellulosic	
	Spec MIL-I-10287	
Lead Azide	No Exp.	53-M2-89
Primer Mix-M-20	No Exp.	53-M2-89
Primer Mix-100	No Exp.	53-M2-89
Primer Mix NOL-130	No Exp.	53-M2-89
RDX	0.00	53-M2-89
Tetryl	0.63	
	Garing X-6178-87-1-Plastic-Hercules Powder	
	Cellulosic	
Black powder	0.00 _s	51-8-13
M-7	0.63 _s	51-8-13
	H-00-Plastic-F. E. Schindler Co.	
	Unfilled Polyester Resin	
Composition B	0.00 _s	55-M2-54
TNT	0.00 _s	55-M2-54
Tetryl	0.00 _s	55-M2-54

Explosive/Propellant	Reactivity	Report Number	Section
H-35-Plastic-F. E. Schandler Filled Polyester Resin			
Composition B	0.00 _s	55-M2-54	8
TNT	0.00 _s	55-M2-54	
Tetryl	0.00 _s	55-M2-54	
Hycar 76-248-Rubber-Goodyear Rubber Co. Butadiene/Acrylonitrile			
M-1	0.00	57-TM2-33	11
M-9	0.27	57-TM2-33	
M-17	0.94	57-TM2-33	
Hydraulic Oil-Mold Release MIL-O-5606			
Composition B	0.00	53-M2-27	13
OIO	0.24	53-M2-27	
PETN	0.00	53-M2-27	
Tetryl	0.00	53-M2-27	
Hypalon S-2-Plastic-E. I. duPont de Nemours & Co., Inc. Chloro-Sulfonated Polyethylene			
Fuze Powder	0.00	53-M2-87	4
Lead Azide	No Exp.	53-M2-89	
Primer Mix M-20	No Exp.	53-M2-89	
Primer Mix 100	No Exp.	53-M2-89	
Primer Mix NOL-130	No Exp.	53-M2-89	
RDX	0.00	53-M2-89	
Tetryl	0.00	53-M2-89	
Hysol No. 6000-Adhesive-Houghton Laboratories Epoxy Resin			
JPN	0.00 _s	53-M2-4	3
MRP	0.00 _s	53-M2-4	
T-2	0.00 _s	53-M2-4	
T-8	0.00 _s	52-M2-4	

Hysol No. 6020—Adhesive—Houghton Laboratories			
Explosive/Propellant	Reactivity	Report Number	Section
Epoxy Resin			
HBX-6	10.33 2.03	56-M2-60	3
Pentolite 50/50	3.12	54-M2-48	
Swiss Propellant	10.17 _s	52-M2-174	
Tetryl	10.29	53-M2-83	
Isolite No. 2112 Perstop—Schenectady Varnish Co.			
Polyester			
Composition B Tetryl	0.30	54-H1-1447	8
	0.00	54-H1-1447	
Insulating Compound—150-DS-88—B. F. Goodrich Chemical Co.			
Aluminum Silicate with Rubber Type Binder			
OIO	5.40 4.66 _s 3.55	53-M2-45	13
Johnson's Waxes, W-5015, 5016, 6118—S. C. Johnson and Sons			
Composition B	0.17, 0.07, 0.00	53-M2-71	13
Aal-F-Plastic—M. W. Kellogg and Co.			
Polymonochlorotrifluoroethylene			
JPN	0.00 _s	53-M2-4	4
MRP	0.00 _s	53-M2-4	
T-2	0.00 _s	53-M2-4	
T-8	0.00 _s	53-M2-4	
Kralastic BM-2146—Nauvotuck Chemical			
Acrylonitrile Styrene			
Composition B Tetryl Type J-2183-6	0.00 _s 0.65	54-M2-5, 53-F-1791	10
	6.44 _s	53-M2-56, 53-I-823	

Laminac No. 4116-Adhesive-American Cyanamid

Polyester Resin

Explosive/Propellant	Reactivity	Report Number	Section
Cycloal 75/25	0.00	53-M2-81	8
JPN	0.00s	53-M2-4	
M7	0.00s	52-M2-111, 52-M2-92	
MOX-2B	0.00	55-M2-12	
MRP	0.00s	53-M2-4	
OHO	0.00s	53-M2-90	
RDX	0.00	53-M2-81, 52-M2-131	
T-2	0.00s	53-M2-4	
T-6	0.00	54-M2-46	
T-8	0.00s	53-M2-4	
TNT	0.00s	55-M2-31	
Tetryl	0.00	136521	

Laminac No. 4128

0.00s
0.00s

Composition B
Tetryl

317

Laminac No. 4125

0.00s
0.00s
0.00s
0.00s

JPN
MRP
T-2
T-8

Laminac No. 4134

0.13s
0.00s
0.01s
0.00s
0.00s
0.00s
0.00s

Black Powder A-1
Composition B
JPN
M-1
M-7
MRP
RDX

53-M2-26
53-M2-26
53-M2-4
53-M2-26
52-M2-111
53-M2-4
52-M2-131

Laminac No. 4134-Adhesive-American Cyanamid Co.

Explosive/Propellant	Reactivity	Polyester Resin	Report Number	Section
Swiss Propellant	0.04		51-HI-2596	8
TNT 4134/80% 4116/20%	0.08 _s		53-M2-26	
T-2	0.00 _s		55-M2-31	
T-8	0.11 _s			
Tetryl	0.08 _s		53-M2-26	
Lining Compound-Coating-Dewy Almy Chem. Co.				
		Spec PA-PD-128		
Composition B	0.48 _s		52-M2-17	13
Lock Foam-Plastic-Polyurethane Foam-Nopco				
HBX-6				
C-408P/64%				
C-408T/36%	1.91		56-M2-62	11
Lustrex Lt. 373-Plastic-Monsanto Chem. Co.				
		Modified Polystyrene		
Composition B Lustrex LT-373	0.56 _s		52-M2-128	10
JPN	0.64 _s		53-M2-4	
M-9	0.00 _s		52-M2-3	
MRP	0.40 _s		53-M2-4	
RDX - Lustrex LT (Red)	0.00 _s		52-M2-146	
TNT - Lustrex LT (Red)	0.00 _s		52-M2-146	
T-2	3.05 _s		53-M2-4	
T-8	0.41 _s		53-M2-4	
Tetryl - Lustrex LT-373	0.00 _s		52-M2-128	
3M-Sealants-E. C. No. 711-Minnesota Mining and Mfg. Co.				
		Oil-Resistant Elastomer		
Composition B	0.00 _s		55-M2-19	11
Composition C-3	0.05 _s		55-M2-21	
TNT	0.00 _s		55-M2-19	
Tetryl	0.46 _s		55-M2-19	

3M-Sealant No. E. C. 776—Adhesive—Minnesota Mining and Mfg. Co.

Oil Resistant Elastomer

Explosive/Propellant	Reactivity	Report Number	Section
PBX	0.87 s	56-M2-29	11
PETN	0.00 s	56-M2-29	
Tetryl	1.66 s	56-M2-29	

3M-Sealant No. E. C. 250—Minnesota Mining and Mfg. Co.

Synthetic Rubber-Paperbacked Tape

Composition C-3

1.00

11

3M-Sealant No. E. C. 373—Rubber—Minnesota Mining and Mfg. Co.

Reclaim Rubber

Lead Azide
RDX

No Exp.
0.00

53-HI-1347
53-HI-1347

11

3M Sealant No. E. C. 801—Sealant—Minnesota Mining and Mfg. Co.

Oil Resistant Elastomer

Composition A-3
Cyclotol 75/25
RDX
RDX-Hystine
Tetryl

0.41
0.76
0.00
0.47
1.96

53-M2-76
53-M2-76
53-M2-44
53-M2-76
53-M2-44

11

3M Sealant No. E. C. 826—Adhesive—Minnesota Mining and Mfg. Co.

Buna-N-Synthetic Rubber-Oil Resistant Elastomer

Black Powder A-3
Composition B
M-7
T-16
Tetryl

0.09 s
3.94
1.73
2.71 s
2.38 s

54-M2-56, 56-M2-80
54-M2-56
54-M2-56
54-M2-56
54-M2-56

11

3M Sealant and E. C. 233-Adhesive-Minnesota Mining and Mfg. Co.

Oil Soluble Elastomer

Explosive/Propellant	Reactivity	Report Number	Section
PBX	0.41 _s	56-M2-29	II
PETN	0.00 _s	56-M2-29	
Tetryl	0.40 _s	56-M2-29	

3M Sealant No. 847-Adhesive-Minnesota Mining and Mfg Co.

Oil Resistant Elastomer

Black Powder A-5	0.00	54-M2-56	II
Composition A-3	0.00	54-M2-56	
Composition B	0.00	53-M2-76	
Cyclotol 75/25	0.00	53-M2-76	
M-7	0.00	53-M2-76	
PBX	0.00 _s	56-M2-29	
PETN	0.00 _s	56-M2-29	
RDX-Hydrine	0.00	56-M2-29	
T-16	0.00	54-M2-56	
Tetryl	1.86 _s 0.32	54-M2-56, 55-HI-813	

3M Sealant No. 870-Adhesive-Minnesota Mining and Mfg. Co.

Neoprene-Oil Resistant Elastomer

HBX-1	0.03	55-M2-15	II

3M Sealant No. 1022-Adhesive-Minnesota Mining and Mfg. Co.

Oil Resistant Elastomer

RDX	0.00	53-M2-44	II
Tetryl	0.91	53-M2-44	

3M Sealant No. 1113-Sealant-Minnesota Mining and Mfg Co.

Oil Resistant Elastomer

Composition B	0.05 _s	53-M2-96	II
M-10	0.00	54-HI-256	

3M Sealant No. 1055—Adhesive—Minnesota Mining and Mfg. Co.

Oil Soluble Elastomer

Explosive/Propellant	Reactivity	Report Number	Section
Composition B	0.39	54-HI-2106	11
Picratol	0.00	54-HI-2106	
TNT	0.13	54-HI-2106	
Tetryl	1.15	54-HI-2106	
Tritonal	0.20	54-HI-2106	

3M Sealant No. 1236—Adhesives—Minnesota Mining and Mfg. Co.

Oil Resistant Elastomer

Black Powder A-5	0.00	54-M2-56	11
Composition B	0.00	54-M2-56	
M-7	0.00	54-M2-56	
T-16	0.00	54-M2-56	
Tetryl	0.25	54-M2-56	

3M Sealant No. 1365—Sealant—Minnesota Mining and Mfg. Co.

Butyl Rubber Base

Composition B	0.06	54-M2-44	11
Picratol	0.00	54-M2-44	
TNT	0.02	54-M2-44	
Tetryl	0.00	54-M2-44	
Tritonal	0.00	54-M2-44	

3M Sealant No. 770—Adhesive—Minnesota Mining and Mfg. Co.

Pacloim Rubber

Black Powder A-1	0.00 _s	137253	11
T-2	0.00 _s	137253	

Lucite-Plastic—E. I. duPont de Nemours & Co., Inc.

Polymethyl Methacrylate

Haleite	1.20	53-HI-2757	1
PETN	0.38	53-HI-2757	
RDX	0.31	53-HI-2757	
T-9	2.22	53-HI-2757	

3M Sealant No. 770—Sealant—Minnesota Mining and Mfg. Co.

Reclaim Rubber

Explosive/Propellant
Black Powder A-5
T-2

Reactivity
0.00_s
0.00_s

Report Number
137253
137253

Section
11

3M Sealant No. 981—Sealant—Minnesota Mining and Mfg. Co.

Oil Soluble Elastomer

Composition B
Picratol
TNT
Tetryl
Tritonal

0.00
0.00
0.11
0.04
0.17

54-HI-2106
54-HI-2106
54-HI-2106
54-HI-2106
54-HI-2106

11

3M Sealant No. 1126—Sealant—Minnesota Mining and Mfg. Co.

Oil Resistant Elastomer

Composition B
Picratol
TNT
Tetryl
Tritonal

0.00
0.00
0.00
0.00
0.00

54-HI-2106
54-HI-2106
54-HI-2106
54-HI-2106
54-HI-2106

11

3M Sealant No. 1202—Sealant—Minnesota Mining and Mfg. Co.

Oil Soluble Elastomer

Composition B
Picratol
TNT
Tetryl
Tritonal

0.00
0.00
0.00
0.00
0.00

54-HI-2106
54-HI-2106
54-HI-2106
54-HI-2106
54-HI-2106

11

3M Sealant No. 1469—Adhesive—Minnesota Mining and Mfg. Co. Modified Epoxy Resin

Composition B

0.04_s

56-M2-54

11

Marrinol Metal Laminate-Plastic
Aluminum Backed Blue PVC

Explosive/Propellant	Reactivity	Report Number	Section
Lead Azide	No Exp.	55-HI-1828	12
Primer Mix NOL-100	No Exp.	55-HI-1828	
Primer Mix PA-100	No Exp.	55-HI-1828	
RDX	0.00	55-HI-1828	
Standard Primer Mix	No Exp.	55-HI-1828	
Tetryl	0.00	55-HI-1828	

Master's Metallic Compound-Harbinson and Co.

RDX	10.36+	52-M2-154	13
Tetryl	10.34+	52-M2-154	

No. 1380-Metal Sealing Compound-Adhesive-E. I. duPont de Nemours & Co., Inc.

Polymer Solution

T-6	0.00 s	52-M2-4	13

Metaseal No. 19V5-Plastic-American Metaseal Corp.
Polyester

Composition B	0.01s	53-M2-8	8
TNT	0.04s	53-M2-8	

Micarta-Plastic-Westinghouse Electric Co.
Phenol-Formaldehyde

Composition C-4	0.00	56-M2-47	7

No. 100-Manocork-Rubber-Armstrong Cork Co.

JPN	0.03s	53-M2-4	11
MRP	2.00s	53-M2-4	
T-2	0.99s	53-M2-4	
T-8	0.93s	53-M2-4	

No. 500-Monocork-Rubber-Armstrong Cork Co.

Explosive/Propellant

Reactivity

Report Number

Section
11

53-M2-4
53-M2-4
53-M2-4
53-M2-4

2.48 g
8.84 g
0.00 g
0.60 g

MR-25c-Plastic-Calamese Corp. of America
Polyester/Styrene

JPN
MRP
T-2
T-8

0.00 g
0.00 g
0.00 g
0.09 g

53-M2-4
53-M2-4
53-M2-4
53-M2-4

8

Mylar Tape No. 7300-Plastic-E. I. duPont de Nemours & Co., Inc.
(Polyester)-Polyethylene-Terephthalate

Black powder A-5

M-2
M-6
M-10
M-17
NOL-130 Primer Mix
T-18
TNT
Tetryl

0.00 0.01 g
1.36
0.00
0.00
0.00
No Exp.
0.00
0.00 g
0.00

56-H1-572, 56-M2-26
56-H1-572
56-H1-572
56-H1-572
56-H1-572
56-M2-67
54-312-54
56-M2-26
56-M2-26

8

MX-172-Plastic-Calamese Corp.
Flexible Polyester/Styrene

Composition B
TNT

0.00 g
0.00 g

56-M2-49
56-M2-49

8

Nylon No. 1-Plastic-E. I. duPont de Nemours & Co., Inc.

Polyamide

Explosive/Propellant	Reactivity	Report Number	Section
MRP	0.39	134829	6
T-2	0.24		
T-8	0.00		

Plastiktrim-Rubber-R. D. Werner Co. Inc.
Reclaimed Rubber

OGK	1.12	52-M2-43	11
T-2	0.07 _s		
T-6	0.64 _s		
T-8	0.68 _s		
T-9	0.07 _s		

Luting Compound No. 12128A-Thompson and Co.

Vinyl Base

T-6	0.00	52-M2-93	12

Polyvinyl Chloride Tubes-Irvington Varnish Co.
P. V. C.

T-6	0.54 _s	53-M2-61	12

PV-845-Plastic-Specialty Coatings Inc.
Aluminum-Vinyl Pigmented Plastic

Composition B	0.00 _s	57-TM2-9	12
RDX	0.00 _s		
TNT	0.00 _s		
Tetryl	0.11 _s		

Micro-Balloons-Plastic-Union Carbon and Carbide

Phenol-Formaldehyde

Explosive/Propellant	Reactivity	Report Number	Section
HSX-6	0.53 _s	56-M2-61	7

Norfolk Varnish

Black Powder A-5	0.00 _s	52-M2-16	13
M-7	0.60 _s	52-M2-16	

Nylon-FM-10001-Plastic-E. I. duPont de Nemours & Co., Inc.

Polyamide

Composition B	0.00 _s	52-M2-99	6
Match head Composition	No Exp.	55-H1-60	
RDX	0.00 _s	52-M2-99	
TNT	0.00 _s	52-M2-99	
Tetryl	0.00 _s	52-M2-99	
Tetrytol	0.00 _s	52-M2-99	

Nylon-FM3-Plastic-E. I. duPont de Nemours & Co., Inc.

Polyamide

JPN	1.55 _s	53-M2-4	6
MRP	1.08 _s	53-M2-4	
T-2	0.69 _s	53-M2-4	
T-β	0.46 _s	53-M2-4	

Nylon No. 6501-Plastic-E. I. duPont

Polyamide

HBX	0.53	56-M2-51, 55-H1-1117	6
RDX	0.56	56-M2-51,	
TNT	0.00 _s	56-M2-51	

O Rings-Rubber-Castle Rubber Co.

Butadiene/Acrylonitrile

OGK	1.10	56-M2-31	11
T-16	2.36 _s 1.61 _s	56-M2-31, 56-M2-41	

OKUN-Adhesive- A. L. Okun Company

Organic Filler-Cold Solder

Explosive/Propellant	Reactivity	Report Number	Section
Black Powder A-5	0.00	55-M2-10	13

"Orez" V-Plastic-Onyx Oils and Resins Inc.

Molding Resin

M-9	0.00	52-M2-133	13

Perplex-P-13-Adhesive-Rohm and Haas

Polyester

Composition C-2/RDX	3.00 _s	53-M2-60	P-43 - 85% Mixture
Composition C-3/RDX	0.00 _s	53-M2-60	P-13 15%
Composition C-4/RDX	0.00 _s	53-M2-60	
JPN	0.00 _s	53-M2-4	
MRP	0.00 _s	53-M2-4	
OKO	0.00 _s	53-M2-90	
P-13 } 25%			
P-43 } 75%			
RDX	0.00 _s	53-M2-60	P-43 85/15 mix.
T-2	0.00 _s	53-M2-4	
T-8	0.00 _s	53-M2-4	

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Perplex-P-43-Adhesive-Rohm and Haas

Polyester

Composition B	0.00 _s	52-M2-60	8
Composition C-3	0.00 _s	52-M2-60	
JPN	1.61 _s	53-M2-4	
MRP	0.00 _s	53-M2-4	
PETN	0.00 _s	52-M2-60	
Peatolite 50/50	0.00 _s	52-M2-60	
T-2	0.00 _s	53-M2-4	
T-8	0.00 _s	53-M2-4	

Palmer No. 752-Plastic-Palmer Products Co.

Phenolic

Explosive/Propellant	Reactivity	Report Number	Section
PETN	0.00	55-M2-32	7

Pen Gloze-Mold Release-Dow Corning Corp.

Silicone Film

Tetrytol 65/35	1.41 _s	53-M2-15	9

Penolyte P: No. 41263-Plastic-Sr. Regis Sales Corp.

Acrylonitrile Copolymer

Composition B/RDX	0.00 _s	52-M2-121	11
HBX	0.00 _s	52-M2-121	
Lead Azide	No Exp. s	52-M2-121	
Penolite 50/50	0.00 _s	52-M2-121	
Picramol 52/48	0.02 _s	52-M2-121	
Tetryl	0.00 _s	52-M2-121	
Tritonal 80/20	0.00 _s	52-M2-121	

Penacolite G-1215A-Plastic-Keppers Co. Inc.

Phenol-Formaldehyde

JPN	0.00 _s	52-M2-4	7
MRP	0.00 _s	52-M2-4	
T-2	0.00 _s	52-M2-4	
T-8	0.00 _s	52-M2-4	

Permacol No. 30-Plastic-Industrial Tape Corp.

Vinyl Film Electrical Tape

Amard	5.83	56-M2-13	12
INT	0.14	56-M2-13	
Tritonal	6.00	56-M2-13	

Permatex No. 2-Sealant-Permatex Co. Inc.

Gasket Sealant

Explosive/Propellant	Reactivity	Report Number	Section
Composition B	10.45	55-M2-18	13
OGK	0.94	52-M2-43	
T-2	0.00 _s	52-M2-43	
T-6	0.00	52-M2-43	
T-8	0.00 _s	52-M2-43	
T-9	0.00 _s	52-M2-43	
TNT	0.00 _s	52-M2-43	
Trimeal 80/20	10.62	55-M2-18	
	10.70	55-M2-18	

Pettman Cement-PO-DA-26-017-ORD-1331-Lestings Prod. Co.

OGK	5.26 _s	52-M2-43	13
T-2	4.14 _s	52-M2-43	
T-6	5.47 _s	52-M2-43	
T-8	8.55 _s	52-M2-43	
T-9	0.00 _s	52-M2-43	

Pleskon No. 442-Plastic-Libbey Owens Ford Glass Co.

Alkyd

Composition C-2/RDX	0.00 _s	53-M2-57	8
Composition C-3/RDX	0.00 _s	53-M2-57	
Composition C-4/RDX	0.00 _s	53-M2-57	
MOX-2B	0.00	53-H1-1436	
RDX	0.00	53-M2-57	

Plasmount-Pre-set No. 2-Adhesive-Girder Process

Composition B	0.00 _s	52-M2-47	13
Tenyl	0.00 _s	52-M2-47	
TNT	0.00 _s	52-M2-47	

Explosive/Propellant	Reactivity	Report Number	Section
Phenol-Formaldehyde No. 2611-P-Catalin Corp.			
Phenolic			
JPN	0.00 _s	53-M2-4	7
MRP	0.00 _s	53-M2-4	
T-2	0.00 _s	53-M2-4	
T-8	0.00 _s	53-M2-4	
Phenol-Formaldehyde Foam-Plastic-Bakelite Corp.			
Phenolic			
Composition B	0.85 _s	52-M2-127	7
Phenol-Formaldehyde Varnish AXS-1680			
Phenolic			
Black Powder	0.00 _s	51-8-20	7
Composition C-4	0.00	51-8-26	
Lead Azide	0.00	51-8-3	
PETN	0.00	52-M2-151	
Resinox No. 5797-Plastic-Monsanto Chem. Corp.			
Phenolic			
Photoflash Powder	0.29	52-M2-115	7
Styrene/Acrylonitrile			
Acrylic			
MRP	0.00	134829	1
T-2	0.00	134829	
T-8	0.00	134829	
Vinyl/Acrylic-VAGH/Acryloid B-72			
Squib Mix	0.00	51-8-4	12

Plastic Cement VPX-27-Adhesive-Victory Plastics Co.

Explosives/Propellant	Reactivity	Report Number	Section
Composition B	0.00	56-HI-1635	13
Tetryl	0.00	56-HI-1635	

Pleskon No. 951-Plastic-Allied Chem. and Dye Corp.

Polyester

MOX-2B	0.00	55-M2-53	8
RDX	0.00	55-M2-53	

Plexiglas-Plastic-Rohm and Haas

Polymethyl-Methacrylate

Composition C-4	0.00	51-8-35	1

Polystyrene-Plastic

Straight Polystyrene

M-9	0.00 _s	52-M2-173	10
T-6	0.05	52-M2-102	

Polystyrene-Plastic

Modified Polystyrene

Composition B	0.00 _s	53-M2-22	10
Composition C-4	0.00 _s	52-M2-22	
Igniter Mix K-29	0.00 _s	52-M2-143	
Iron Oxide	0.00 _s	56-M2-93	
Lead Peroxide	0.00	53-M2-93	
Tetryl	0.00	53-M2-22	

Polystyrene Soder-Solution-Monsanto Chem. Co.

M-9	0.00	52-M2-173	10

Plaxene "M"-Plastic-Rahn and Haas

Styrene/Acrylonitrile

Explosive/Propellant	Reactivity	Report Number	Section
JPN	0.00 _s	53-M2-4	10
MRP	0.00 _s	53-M2-4	
T-2	0.00 _s	53-M2-4	
T-8	0.00 _s	53-M2-4	

Plisbond No. 20-Rubber-Goodyear Tire and Rubber Co.

Phenol-Formaldehyde/Syn. Rubber

Black Powder A-5	0.05	53-H1-877	11
Composition B	3.19	53-H1-877	
M-1	1.25	53-H1-877	
PEIN	0.05	55-M2-29	
T-2	2.18	52-M2-139	
Tetryl	2.94	53-H1-877	

Plisbond No. 30-Rubber-Goodyear Tire and Rubber Co.

Phenol-Formaldehyde/Syn. Rubber

Igniter Comp. K-29	4.78 _s	56-M2-20	11
Incendiary Mix M-68	0.08 _s	56-M2-20	
Incendiary Mix M-136	0.29 _s	54-H1-432, 56-M2-20	
Incendiary Mix M-142	0.00 _s	56-M2-20	
MOX-2B	0.27 _s	54-H1-432, 56-M2-20	
RDX	3.27 _s	56-M2-20	
Tetryl	2.40	56-M2-20	
Tracer Comp. R-45	0.08 _s	56-M2-20	
Trinonal 80/20	0.95	54-M2-15	
SW-11452-25-Pynotech.	0.00 _s	52-M2-155	

Plisfilm-Rubber-Goodyear Tire and Rubber Co.

Rubber HCl-Film

M-8	0.00	53-M2-134	11

GP-75-Plio-Tuf-Plastic-Goodyear Tire and Rubber Co.
Styrene/Butadiene

Explosive/Propellant	Reactivity	Report Number	Section
M9	0.00	54-M2-65	10

Hot Dip Ethyl Cellulose No. 215-Plastic

Black Powder	0.00 _s	56-M2-75	2
Cyclotol 75/25	0.50 _s	56-M2-75	
M-8	1.95 _s	56-M2-75	
M-10	0.00 _s	56-M2-75	

Polyamide Hot Dip No. 220

Polyamide

Black Powder	0.00 _s	56-M2-75	6
Cyclotol 75/25	0.67 _s	56-M2-75	
M-8	4.22 _s	56-M2-75	
M-10	0.00 _s	56-M2-75	

Hot Dip No. 222 E. I. duPont de Nemours & Co., Inc.

Cellulose Acetate Butyrate

Black Powder	0.00 _s	56-M2-75	2
Cyclotol 75/25	0.00 _s	56-M2-75	
M-8	0.00 _s	56-M2-75	
M-10	0.00 _s	56-M2-75	

Polyethylene-Plastics

Polymerized Ethylene

Black Powder A-1	0.00	53-M2-18	4
K-29 Igniter Mix	No Exp.	51-8-17	
T-2	0.00 _s	52-M2-14	Debell and I. Hardson
T-6	0.00 _s	53-HI-502	
Tetryl with sponge rubber	0.00	52-M2-73	

Presstite No. 106-Rubber-Presstite Engineering Co.

Polysulfide Rubber

Explosive/Propellant	Reactivity	Report Number	Section
M-2	0.81s	52-M2-84	11
M-7	0.85s	52-M2-171	
M-9	0.08s	52-M2-173	

Presstite No. 144.4-Rubber-Presstite Engineering Co.

Asphalt Rubber Resin

Explosive/Propellant	Reactivity	Report Number	Section
Composition B	0.43	54-M2-17	13
Picratol	0.00	54-M2-17	
TNT	0.13	54-M2-17	
Tetryl	0.97	54-M2-17	
Tritonal	0.19	54-M2-17	

Presstite No. 155-Rubber-Presstite Engineering Co.

Polyisobutylene/Asbestos

Explosive/Propellant	Reactivity	Report Number	Section
Aluminum Flake	0.09	56-M2-81, 56-HI-236	13
Aromized Aluminum Powd.	0.00	56-M2-81	
H8X-6	0.79	56-HI-236	
Potassium Perchlorate	0.01	56-M2-81	
TNT	0.21	56-M2-81	

Presstite No. 155.6

Explosive/Propellant	Reactivity
Composition B	0.00
Picratol	0.00
TNT	0.26
Tetryl	0.00
Tritonal	0.05

Polyethylene Film-Plastic-Enhart Co.

Explosive/Propellant	Reactivity	Report Number	Section
T-18	0.00s	54-M2-35	4

Presstite No. 218-Plastic_Pressstite Engineering Co.

Aerodynamic Smoothing Compound

Explosive/Propellant	Reactivity	Report Number	Section
Black Powder A-5	0.00	54-M2-20	13
Composition B	2.31	54-M2-6	
HBX-6	4.98	54-M2-72	
M-7	8.82	54-M2-20	
Picratol	0.42	54-M2-6	
T-6	6.49	54-M2-20	
TNT	1.70	54-M2-6	
Tetryl	0.18	54-M2-6	
Tritonal	1.82	54-M2-6	

Presstite No. 261

Composition B	0.19	53-M2-12	13
M-6	0.00	53-M2-12	
M-7	0.00	53-M2-12	
RDX	0.25	53-M2-12	
TNT	0.03	53-M2-12	
Tetryl	0.38	53-M2-12	

Presstite No. 261-6

Composition B	0.32	53-M2-12	13
M-6	0.00	53-M2-12	
M-7	0.04	53-M2-12	
RDX	0.56	53-M2-12	
TNT	0.13	53-M2-12	
Tetryl	0.48	53-M2-12	

Pliofilm-Plastic-B. F. Goodrich

Rubber HCl film

M-8	0.00 s	53-M2-134	11

Explosive/Propellant	Presstite No. 271	Reactivity	Report Number	Section
Composition B				
M-6		0.00	53-M2-12	13
M-7		0.00	53-M2-12	
RDX		0.00	53-M2-12	
TNT		0.00	53-M2-12	
Tetryl		1.4	53-M2-12	
	EP-601-Pro-Seal-Rubber-Coast Present Mfg. Co.			
	Polysulfide Rubber			
Composition B		2.46 _s	56-M2-30	11
	Prufcoat-Coating-Prufcoat Inc.			
	PVC			
Composition C-4		0.00 _s	56-M2-50	12
RDX		0.00 _s	56-M2-50	
	Purple Lacquer-Coating-Picatinny Arsenal			
	JAN-L-296			
Black Powder A-5		0.11 _s	52-M2-117	2
M-7		0.00 _s	52-M2-117	
Tetryl		0.00	56-HI-1564	
Tetryl 75/25		5.38	56-HI-1564	
	Red Enamel-Coating-American Cyanamid			
	Spec-MIL-E-10687			
Lead Azide		No Exp.	53-M2-89	2
Primer Mix 100		No Exp.	53-M2-89	
Primer Mix M-20		No Exp.	53-M2-89	
Primer Mix NOL-130		No Exp.	53-M2-89	
RDX		0.00	53-M2-89	
Tetryl		0.02	53-M2-89	

Red Lacquer-Coating-American Cyanamid
Spec. MIL-L-10287

Explosive/Propellant	Reactivity	Report Number	Section
Lead Azide	No Exp.	53-M2-89	2
Primer Mix-100	No Exp.	53-M2-89	
Primer Mix M-20	No Exp.	53-M2-89	
Primer Mix NOL-130	No Exp.	53-M2-89	
RDX	0.00	53-M2-89	
Tetryl	0.24	53-M2-89	
Royal Cement-Sealant-United States Rubber			
No. 6159			
T-6	0.36 s	51-8-36	13
Tetryl	0.00	51-HI-1573	
Rubber Compositions			
M-6	0.00 s	52-M2-45	11
M-6	0.00 s	52-M2-45	
M-6	0.00 s	52-M2-45	
M-6	0.00 s	52-M2-45	
M-6	0.00 s	52-M2-45	
M-6	0.00 s	52-M2-45	
PS-10-13N	0.00 s	52-M2-45	
Rubber Composition 325453-Ohio Rubber Co.			
GR-S			
Composition B	0.00 s	56-M2-68	11
RDX	0.00 s	56-M2-68	
TNT	0.17 s	56-M2-68	
Tetryl	0.00 s	56-M2-68	
RD-SI-24-Plastic-Bakelite Corp.			
Polystyrene			
Black Powder	0.00	52-HI-2066	10
T-2	0.00	52-HI-2066	

Rubber Composition—Firestone Tire & Rubber Co.

Explosive/Propellant	Uncured Cured	Reactivity	Report Number	Section
M-1		0.00 s	56-M2-38	11
M-1		0.00 s	56-M2-38	
M-1		0.00	52-M2-112	
M-2		0.00	54-HI-1183	
M-6		0.00	52-M2-112	
M-6		0.00 s	52-M2-45	
Composition B				
TNT		0.00	55-M2-20	
Tetryl		0.00		
T-16		0.02 s	52-M2-23	
T-6		0.02 s		11
T-6		0.00 s	56-M2-59	
OIO		0.00 s	56-M2-59	
OGK		0.00 s	56-M2-59	
Composition B		0.94 s	56-M2-59	
TNT		0.14	54-HI-775	
Tetryl		0.00	54-HI-775	
		0.39	54-HI-775	
Composition B				
TNT		0.00	56-M2-58	
Tetryl		0.00	56-M2-58	
Composition B		0.00	56-M2-58	11
Tetryl		0.54	56-M2-58	
Composition B		0.00	56-M2-58	
TNT		0.00	56-M2-58	
Composition B		0.02	56-M2-58	
Tetryl		1.01	56-M2-58	
		0.46	56-M2-58	
Composition B				
TNT		0.00	56-M2-58	
Tetryl		1.09	56-M2-58	
		0.00	56-M2-58	

Selection No. 5003-Plastic-Pittsburgh Plate Glass Co.

Polyester resin

Explosive/Propellant	Reactivity	Report Number	Section
Composition B (No. 5081)			
JPN	0.00	54-M2-24	8
MRP	0.04 _s	53-M2-4	
T-2	0.91 _s	53-M2-4	
T-8	0.00 _s	53-M2-4	
T-16	0.20 _s	53-M2-4	
	0.56 _s	52-M2-49	

Shell No. 422-Plastic-Shell Chemical Corp.

Experimental (Epoxy) Epoxy Resin

M-6	0.00 _s	55-M2-44	3
M-10	0.00 _s	55-M2-44	

Shellac/Bronze-Coating

T-6	7.64	51-B-36	13

Shellmar-Adhesive-Shellmar Products Corp.

Cellulosic

M-8	971-R	53-M2-134	2
M-8	1037-B	53-M2-134	

Silastic No. 150 & No. 180-Rubber-Dow Corning Corp

Silicone Polymer

JPN	0.00 _s	53-M2-4	11
MRP	0.00 _s	53-M2-4	
T-2	0.00 _s	53-M2-4	
T-8	0.00 _s	53-M2-4	

Silastic No. D-250-Rubber-Dow Corning Corp.
Silicone Rubber

Explosive/Propellant	Reactivity	Report Number	Section
Composition B TNT	0.00 0.00	56-HI-213 56-HI-213	11
Silastic-80-24-480 and 50-24-480-Rubber-Dow Corning Corp.			
Silicone Rubber			
M-1	0.00 _s	57-TM2-33	11
M-9	0.00 _s	57-TM2-33	
M-17	0.00 _s	57-TM2-33	
Silico Gel			
T-16	2.76	53-HI-1350	13
Silicone Grease Form H-Mold Release-General Electric			
Silicone film			
Black Powder A-5	0.00	55-M2-43	9
Composition A-3	0.77	55-M2-43	
Composition B	0.00	55-M2-43	
Composition C-4	0.00	55-M2-43	
Picratol	0.00	55-M2-43	
RDX	0.00	55-M2-43	
TNT	0.00	55-M2-43	
Tetryl	0.00	55-M2-43	
Tritonal	0.00	55-M2-43	
Stryen No. 700-Plastic-Dow Chem. Co.			
Polystyrene			
Composition B	0.00	54-M2-28	10
Tetryl	0.00	54-M2-28	

Silicone film

Explosive/Propellant	Reactivity	Report Number	Section
Black Powder A-5	0.00	55-M2-43	9
Composition A-3	0.00	55-M2-43	
Composition B	1.21	55-M2-43	
Composition C-4	0.04	55-M2-43	
Pestrolite 50/50	4.72	55-M2-43	
Picramol	0.51	55-M2-43	
RDX	0.17	55-M2-43	
TNT	2.12	55-M2-43	
Tetryl	0.60	55-M2-43	
Tritonal	1.83	55-M2-43	

Silicone Greases—A20044—A20046—372-72-539

Black Powder A-5	0.00	55-M2-43
Composition A-3	0.00	55-M2-43
Composition B	0.00	55-M2-43
Composition C-4	0.00	55-M2-43
Pentolite 50/50	0.00	55-M2-43
Picrarol	0.29	55-M2-43
RDX	0.00	55-M2-43
TNT	0.00	55-M2-43
Tetyl	0.00	55-M2-43
Tritonal	0.00	55-M2-43

Silicone Greases—XC-4272, 4282, XCT-4043, XC-5012

Black Powder A-5	0.00	55-M2-43
Composition A-3	0.00	55-M2-43
Composition B	0.00	55-M2-43
Composition C-4	0.00	55-M2-43
Pentolite 50/50	0.07	55-M2-43
Picraol	0.00	55-M2-43
RDX	0.00	55-M2-43
TNT	0.00	55-M2-43
Tetryl	0.00	55-M2-43
Trisonal	1.91	55-M2-43

Silk Grade E--Selectronic Corp.

Organic Compound

Explosive/Propellant	Reactivity	Report Number	Section
Black Powder A-5	0.00 _s	52-M2-6	6
M-1	0.00 _s	52-M2-6	6

S-50 Polymer--Plastic--Enjay Co.

Styrene/Isobutylene

Black Powder A-5	0.00 _s	53-M2-5	10
JPN	0.00 _s	53-M2-4	10
Lead Azide	No Exp.	53-M2-89	10
M-7	0.00 _s	53-M2-5	10
M-20	No Exp.	53-M2-89	10
MRP	0.07 _s	53-M2-4	10
Primer Mix-NOL-130	No Exp.	53-M2-89	10
Primer Mix-100	No Exp.	53-M2-89	10
Pyrotech. Cap. FF 101L	0.00 _s	52-M2-155	10
with aluminum			
RDX	0.00	53-M2-89	10
Squib Mix-M1A1	No Exp.	53-M2-5	10
SW-11452-25 with Aluminum	0.00 _s	52-M2-155	10
T-2	0.00 _s	53-M2-4	10
T-6	0.00 _s	52-M2-4	10
T-8	0.00	53-M2-4	10
Tetryl	0.00	53-M2-89	10

S-60 Polymer--Plastic--Enjay Co.

Styrene/Isobutylene

T-2	0.00 _s	51-8-6	10
Type O-propellant	0.00 _s	51-8-6	10

Seep Cock Grease--Mold Release--Dow Corning

Silicone film

M-1	0.00	136572	9
M-6	0.00	136572	9

Synthesized Alkyd-Plastic-Aberdeen Proving Ground

Polyester

Section

Report Number

Explosive/Propellant

Anatol
M-7
M-15
Tetryl

Reactivity
5.85
0.00
0.03
4.19

56-M2-12
56-M2-12
56-M2-12
56-M2-12

8

Seller No. 1 & No. 2-Rubber-Debell & Richardson Inc.

Beryl Rubber

Composition B
Lead Azide
M-18
Tetryl

0.00_s
0.00_s
0.00_s
0.03_s 0.00

52-M2-85
52-M2-85
52-M2-85
52-M2-85

11

Synon No. 666-Plastic-Dow Chem. Co.

Polystyrene-Black red

JPN
MRP
Pyrotech. Compd.
T-2
T-6
T-8

0.00_s
0.00_s
0.00_s
0.00_s
0.56
0.00_s

53-M2-4
53-M2-4
53-M2-95
53-M2-4
54-M2-12
53-M2-4

10

Synvar Rubber-Synvar Corp.
Rubber Phenolic

M-2

8.39_s 5.13

52-M2-44

7

Synvarine No. PNL-12-H

T-28

0.54_s

57-TM2-29

7

Explosive/Propellant	Reactivity	Report Number	Section
Teflon-Plastic-E.I. du Pont de Nemours & Co., Inc.			
Polytetrafluoroethylene			
JPN	0.00 s	53-M2-4	4
MRP	0.00 s	53-M2-4	
T-2	0.00 s	53-M2-4	
T-8	0.00 s	53-M2-4	
Temflex-Plastic-Irving Varnish & Insulator Co.			
PVC			
Composition Smoke No. 259	0.00	54-M2-64	12
Charge Detonator No. 260	0.00	54-M2-64	
Tenite II 265 MS-Coating-Tennessee Eastman Co.			
Cellulose Acetate Butyrate			
M-7	0.00 s	52-M2-140	2
(LP-3) Thiokol-Adhesive-Thiokol Corp.			
Polysulfide Rubber			
Composition B	1.43	52-M2-29	11
RDX	0.27	52-M2-29	
TNT	0.35	52-M2-29; 52-M2-28	
Tetryl	1.86	54-M2-47; 52-M2-29	
(LP-2) Thiokol-Adhesive-Thiokol Corp.			
Polysulfide Rubber			
Black Powder A-5	0.00	52-M2-149	11
Composition A-3	0.00 s	55-M2-57	
M-1	0.00 s	55-M2-57	3
M-8	0.00	55-M2-57	
M-9	0.00 s	55-M2-57	
Tetryl	1.48	52-M2-149	

Tenite II 203-A-SZ-P -Eastman Kodak
Cellulose Acetate Butyrate

Explosive/Propellant

Reactivity

Report Number
53-HI-2757
53-HI-2757
53-HI-813
51-HI-136889
51-HI-136883
51-HI-136883
51-HI-136883

Section
2

Black Powder
Halcite
M-1
M-2
PETN
RDX
T-9

1.70
1.11
0.21
4.48
0.37
0.25
1.64

Tenite II 270-A-SZ-F -Eastman Kodak
Cellulose Acetate Butyrate

Black Powder
Halcite
M-1
M-2
PETN
RDX
T-9

11+
1.14
0.28
4.64
0.32
0.28
1.43

Report Number
53-HI-2757
53-HI-2757
53-HI-813
51-HI-136889
51-HI-136883
51-HI-136883
51-HI-136883

2

TVA-P
Cellulose Acetate

T-2
Type O propellant

0.00 s
0.00 s

51-B-6
51-B-6

2

Thiokol-1605 AH-Adhesive-Thiokol Corp.
Polysulfide Rubber

JPN
MRP
T-2
T-8

0.00 s
0.24 s
0.00 s
0.00 s

53-M2-4
53-M2-4
53-M2-4
53-M2-4

11

Thiokol-1620 AH-Adhesive-Thiokol Corp.
Polysulfide Rubber

Explosive/Propellant	Reactivity	Report Number	Section
JPN	0.34 s	53-M2-4	11
MRP	0.47 s	53-M2-4	
T-2	0.00 s	53-M2-4	
T-8	0.13 s	53-M2-4	

Thiokol-3000 FA-Adhesive-Thiokol Corp.
Polysulfide Rubber

JPN	0.50 s	53-M2-4	11
MRP	1.54 s	53-M2-4	
T-2	0.00 s	53-M2-4	
T-8	0.18 s	53-M2-4	

Thiokol-3000 PR-1-Adhesive-Thiokol Corp.
Polysulfide Rubber

JPN	0.10 s	53-M2-4	11
MRP	0.00 s	53-M2-4	
T-2	0.00 s	53-M2-4	
T-8	0.38 s	53-M2-4	

Thiokol-3000 ST-Adhesive-Thiokol Corp.
Polysulfide Rubber

JPN	0.00 s	53-M2-4	11
MRP	0.67 s	53-M2-4	
T-2	0.00 s	53-M2-4	
T-8	0.00 s	53-M2-4	

Thiokol-3600 ST-Adhesive-Thiokol Corp.
Polysulfide Rubber

Explosive/Propellant	Reactivity	Report Number	Section
JPN	0.00 s	53-M2-4	11
MRP	0.25 s	53-M2-4	
T-2	0.00 s	53-M2-4	
T-8	0.00 s	53-M2-4	

Titanox TG-Coating-Titanium Alloys Mfg. Co.
Inorganic Pigment

Composition C-3	0.02	53-M2-46	13
Navy Explosive H-6	0.00	53-M2-46	
MOX-2B	0.00	53-M2-46	
Tetryl	0.00	53-M2-46	

Tremco-Sealcat-Tremco Mfg. Co.
Polysulfide

PBX	0.14	55-M2-8	11
PEIN	0.05	55-M2-8	
Tetryl	1.06	55-M2-8	

Triacetate Cloth

Black Powder	-0.00	57-H1-321	2
M-1	0.00	57-H1-321	
M-2	0.00	57-H1-321	
M-15	0.00	57-H1-321	

Tab-Kove-Adhesive-Keller Products Inc.
Vinyl Sealing Strip

Composition B	0.00	53-M2-86	12
INT	0.00	53-M2-86	
Tetryl	0.41	53-M2-86	

Explosive/Propellant	Reactivity	Report Number	Section
Turbotherm No. 103—Firestone Tire & Rubber Co. Electrical Insulating Material			
Composition B	0.00	52-M2-27	11
		Tygonfilm No. TR-216-Blue—Coating—Liberty Products Co.	
Composition C-4	0.00	Paint	
		56-M2-48	13
Composition C-4	0.50	Volspon No. 182-C-7—Coating—Liberty Powder Co. Enamel	
Composition B Pentolite 50/50	0.00 0.00	56-M2-48 Varglas—Rubber Silicone Tubing	13
		56-HI-197S; 57-TM2-19	11
T-19	1.86	Vibraglas No. 9594—Plastic—Glass Cushioning Engineering Co. Phenolic—glass laminate	
		55-M2-4	7
T-61 Primer Mix	No Exp.	Vibwin No. 115A—Plastic—Nauvabuck Chem. Polyester Resin	
		53-HI-1190	8
Black Powder	0.00	Viscose Rayon Cloth G-14	
M-1	1.98		
M-2	3.82	57-HI-321 57-HI-321 57-HI-321 57-HI-321	2
M-15	0.00		

Vistanex-Plastic-Standard Oil Co.
Polyisobutylene

Explosive/Propellant	Reactivity	Report Number	Section
Fuze Powder	0.00	53-M2-87	11

XA-4000 Adhesive-Dow Corning Corp.

Silicone

Composition B
Tetryl

0.00	53-H1-395	11
0.00	53-H1-395	

Vinyl Butyral-MF-891-Aberdeen Proving Ground

Amatol
M-7
M-15
Tetryl

1.32	56-M2-12	12
0.00	56-M2-12	
0.00	56-M2-12	
0.00	56-M2-12	

Vinyl Chloride Acetate-MF-871-Aberdeen Proving Ground

Amatol
M-7
M-15
Tetryl

2.26	56-M2-12	12
0.00	56-M2-12	
0.00	56-M2-12	
0.00	56-M2-12	

Vinyl Chloride Acetate-MF-872-Aberdeen Proving Ground

Amatol
M-7
M-15
Tetryl

1.15	56-M2-12	12
0.00	56-M2-12	
0.00	56-M2-12	
0.00	56-M2-12	

Vinyl Toluene Alkyd-MF-883-Aberdeen Proving Ground

Amatol
M-7
M-15
Tetryl

4.14	56-M2-12	8
0.00	56-M2-12	
0.00	56-M2-12	
0.19	56-M2-12	

Explosive/Propellant	Reactivity	Vinylite-MA-28-4	Report Number	Section
Black powder	0.00		51-HI-2424	12
TNT	0.00		51-HI-2424	
Tetryl	0.00		51-HI-2424	
Black powder	0.00	VGGB-Vinylite 19409	53-HI-874	12
Black Powder	0.15	Wash Primer No. X2676-B		
M-1	0.00 ^s	Spec. 15328		
M-16	0.00		56-HI-726; 57-TM2-5	13
M-17	0.00		56-HI-726; 57-TM2-5	
			56-HI-726; 57-TM2-5	
Composition A-3	0.00	World Bestos-Adhesive-World Bestos Co.		
Composition C-3	1.25	Phenolic/Acrylonitrile	53-M2-69	7
Tetryl	0.32		53-M2-69	
			53-M2-69	
Composition A-3	0.11	XA-47 Resin-Plastic-Minneapolis Honeywell Corp.		
Cyclotal 75/25	2.77		53-M2-76	pyrrolidine catalyst
RDX-Hystine	6.39		53-M2-76	pyrrolidine catalyst
			53-M2-76	pyrrolidine catalyst
Tetryl	0.00 ^s	Znmod V-Lionel Co. Inc.		13
		98% Zinc	52-M2-130	

Zarlock No. 965 -Plastic-Pressite Engineering Co.

Explosive/Propellant	Reactivity	Report Number	Section
Black Powder A-5	0.00	54-M2-55	13
Composition B	0.00	54-M2-55	
M-9	0.00	54-M2-55	
Tetryl	0.00	54-M2-55	

XC-269 Adhesive Silicone

Black Powder A-5

0.00

53-HI-1790

11

Zinc Chromate Primer-Coating Inorganic Pigment

M-7 Spec. JAN-P-735
OGK Spec. JAN-P-735
T-6 Spec. JAN-P-735
T-16 Spec. JAN-P-735
T-19 Spec. JAN-P-735
Composition B MIL-P-6889
OGK MIL-P-6889
M-7 MIL-P-6889
T-6 MIL-P-6889
T-16 MIL-P-6889
T-19 MIL-P-6889
OGK MIL-P-6889

0.00 s
0.13 s
0.00 s
0.00 s
0.36 s
0.01
0.00 s
0.00 s
0.19 s
0.77 s
0.00 s
0.35 s
0.00 s
0.00 s
0.71 s
0.00 s

54-M2-27
54-M2-27
54-M2-27
54-M2-27
54-M2-27
53-M2-63
54-M2-27
54-M2-27
54-M2-27
54-M2-27
54-M2-27
54-M2-27
54-M2-27
54-M2-27
54-M2-27
54-M2-27

13

with Reducer No. 213

Zapon No. 2360-Coating-Brevolite Co.

Cellulose Nitrate

Lead Azide
PETN

0.00
0.00

51-8-3
51-8-3

2

Zapon No. 2360-Coating-Brevolite Co.
Cellulose Nitrate

Explosive/Propellant	Reactivity	Catistolast Nitrate	Report Number	Section
RDX	0.00		53-MZ-44	2
Squib Mix	1.80		51-8-19	
Tetryl	0.00		53-MZ-44	
XC-271 Adhesive-Dow Corning Corp.				
		Silicone		
Black Powder	0.00		55-HI-2083	11
Tetryl	0.00		55-HI-2083	

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