

ALSEP
APPROVED MATERIALS LIST

ATM-242 REV. "E"

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PREPARED BY
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ALSEP RELIABILITY DEPARTMENT
BENDIX AEROSPACE SYSTEMS DIVISION
Ann Arbor, Michigan



**Aerospace
Systems Division**

APPROVED MATERIALS FOR
ALSEP EQUIPMENT

NO.	REV. NO.
ATM 242	E
PAGE <u>COVER</u> OF <u>54</u>	
DATE Sept. 15, 1970	

This revision supersedes all previous issues of ATM 242.

ATM 242 is completely revised expanding Section I and Section II and adding Section III.

New materials added in this revision are:

211	322	417	612	806	1111
212	323	418	613		
213	324	419			

Materials reinstated (clarified type no.):

1009

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- 1.0 INTRODUCTION. Materials used in ALSEP equipment are required to be compatible with the use of the end item and to be compatible with the LM vehicle in which they are transported to the lunar surface. Additionally the materials must be selected for stability in the lunar surface environment, to maximize the probability of equipment operation for a period of at least one year.
- 2.0 SCOPE. The use of materials contained in Sections I and II of this report is mandatory for all items of flight hardware. Materials listed herein have been selected from Ref. 1 and Ref. 2 having been approved for use in the Apollo Command Module and the LM, as of the date of their issue.
- 3.0 REQUIREMENTS.
 - 3.1 General. Metals used in ALSEP equipment shall conform to the base metals and alloys contained in Section I. Nonmetals used in ALSEP equipment shall be restricted to those contained in Section II.
 - 3.2 Deviations. If in the design of ALSEP equipment, a requirement exists which cannot be met by materials listed as approved herein, the user shall submit a request for approval to Bendix providing the identification of the material, the intended specific application, and the bases for justifying its use.

SECTION I METALS AND THEIR ALLOYS

1.0 General

The metals and their alloys listed in Table I are approved for use in ALSEP. Column A indicates the limiting use temperature defined by Ref. (1) and Column B stipulates the maximum use temperature based on criteria stated in Ref. (3) as a sublimation rate less than 10^{-5} cm/yr in space.

2.0 Unacceptable Metals

The following metals and alloys in which they predominate are unacceptable because of the sublimation rate at room ambient in vacuum:

Zinc

Cadmium

Note Ref. 2 states the following restrictions on the use of cadmium plating:

"1.2.7.2.1 Cadmium Plating. Cadmium plating shall be accomplished in accordance with QQ-P-416A Type II---. A type II cadmium plating requires the application of a chromate surface treatment subsequent to the application of the cadmium. A sublimation barrier consisting of a non-porous organic film, 0.001 inches or greater in thickness shall be applied to the following types of cadmium plated surfaces:

(a) Surfaces less than one foot (line of sight) distant from optical surfaces or radiative temperature control coatings

(b) Surfaces whose operating temperatures exceed 165°F at any time during their exposure to the low atmospheric pressure aspect of a space environment"

TABLE I
ACCEPTABLE METALS AND THEIR ALLOYS

	A	B	
	Above 1000 °F	1380 °C	2516 °F
Molybdenum	"	750	1382
Chromium	"	920	1688
Titanium	"	770	1418
Iron (Steel)	"	820	1508
Cobalt	"	800	1472
Nickel	"	790	1454
Silicon	"	620	1148
Beryllium	"	630	1166
Copper (except Brasses)	"	660	1220
Gold	"	660	1220
Germanium	"	550	1022
Aluminum	930	480	896
Silver	900	230 *	446
Tin	450 *	270	518
Lead	440	240	464
Bismuth	390	155 *	311
Indium	310 *	125	257
Lithium	260 **	110	230
Magnesium	200	175	347
Brass, Exterior CM	350	120	248
Brass, Interior CM	250		

*Melting Point

**Lithium has been approved in the silver-lithium brazed in PH15-7 Mo and PH14-8 Mo

TABLE 1 A

ALUMINUM ALLOYS
FOIL, STRIP, SHEET & PLATE

<u>ALLOY</u>	<u>FORM</u>	<u>THICKNESS</u>	<u>SPEC</u>	<u>NOTES</u>
AL-99.0 PURE	FOIL	.00025-.005	MIL-A-148	
1100-0	ST	.010-.063	QQ-A-250/1	NHT
-0	SH	.032-.125	"	
1100-F	PL	.250-1.0	"	
-H14	ST	.020-.063	"	
-H14	SH	.032-.125	"	
2024-0	SH	.016-.125	QQ-A-250/4	HT
-0 (CL)	SH	.016, .020, .025	QQ-A-250/5	HT
-T3	SH	.020-.190	QQ-A-250/4	HT
-T3 (CL)	SH	.016-.190	QQ-A-250/5	HT (EXC .100,
-T351	PL	.250-2.50	QQ-A-250/4	.160)
3003-0	ST	.010-.063	QQ-A-250/2	NHT
-0	SH	.020-.190	"	"
-H14	ST	.010-.125	"	"
-H14	SH	.016-.190	"	"
5005-H34	ST	.020-.063		"
	SH	.032-.125		"
5052-0	ST	.020-.080	QQ-A-250/8	"
-0	SH	.020-.190	"	"
-F	PL	.250	"	"
-H32	ST	.020-.090	"	"
-H32	SH	.032-.190	"	"
-H32	PL	.250-1.00	"	"
-H34	ST	.020-.063	"	"
-H34	SH	.020-.190	"	"
5086-H32	SH	.125, .190	QQ-A-250/7	"
-H32	PL	.250-1.0	"	"
6061-0	SH	.032-.190	QQ-A-250/11	HT
-T6	SH	.025-.190	"	"
-T651	PL	.250-2.50	"	"
1075-T651	PL	.250-2.0	QQ-A-250/12	"

STANDARD SHEET THICKNESSES:

.010	.020	.040	.080	.125	.250	.500	.875	1.50	2.50	4.00
.012	.025	.050	.090	.160	.312	.625	1.00	1.75	3.00	5.00
.016	.032	.063	.100	.190	.375	.750	1.25	2.00	3.50	6.00

NOTES: NHT is not-heat-treatable, HT is heat-treatable

TABLE I-B

ALUM ALLOYS ROD & BAR

<u>DESIGNATION</u>	<u>SHAPE</u>	<u>O. D.</u>	<u>SPECIFICATION</u>
2011-T3	Rod	.125-3.00	QQ-A-225/3
-T3	Bar-Hex	.250-2.00	"
2017-T4	Rod	.125-.467	QQ-A-225/5
-T4	Bar-Hex	.187-.437	"
-T4	Bar-SQ	.375, .437	"
2017-T451	Rod	.500-5.75	"
-T451	Bar-Hex	.500-3.00	"
-T451	Bar-SQ	.500-2.00	"
2024-T351	Rod	.500-5.50	QQ-A-225/6
-T351	Bar-Hex	.500-3.00	"
-T351	Bar-SQ	.500-8.00	"
2024-T4	Rod	.125-.467	QQ-A-225/6, (E)-200/3
-T4	Bar-Hex	.187-.437	"
6061-T6	Rod	.125-.437	QQ-A-225/8, (E)-200/8
-T6	Bar-Hex	.250-.437	"
6061-T651	Rod	.500-7.00	"
-T651	Bar-Hex	.500-2.50	"
-T6511	Bar-SQ	.500-2.00	"
6262-T9	Rod	.125-3.25	QQ-A-225/10
-T9	Bar-Hex	.250-2.00	"
7075-T6	Rod	.375 Only	QQ-A-225/9, (E)-200/11
-T651	Rod	.500-6.00	QQ-A-225/9

STANDARD ROD DIAMETERS:

$\frac{1}{8}$	$\frac{5}{32}$	$\frac{11}{64}$	$\frac{3}{16}$	$\frac{13}{64}$	$\frac{7}{32}$	$\frac{15}{64}$	$\frac{1}{4}$			
$\frac{17}{64}$	$\frac{9}{32}$	$\frac{19}{64}$	$\frac{5}{16}$	$\frac{11}{32}$	$\frac{3}{8}$	$\frac{25}{64}$	$\frac{13}{32}$	$\frac{7}{16}$	$\frac{15}{32}$	$\frac{1}{2}$
$\frac{17}{32}$	$\frac{9}{16}$	$\frac{19}{32}$	$\frac{5}{8}$	$\frac{21}{32}$	$\frac{43}{64}$	$\frac{11}{16}$	$\frac{23}{32}$	$\frac{3}{4}$		
$\frac{25}{32}$	$\frac{13}{16}$	$\frac{7}{8}$	$\frac{15}{16}$	$\frac{1}{1}$						
1 $\frac{1}{16}$ to 2 $\frac{3}{4}$ in 16ths										
2 $\frac{7}{8}$	3	3 $\frac{1}{8}$	3 $\frac{1}{4}$	3 $\frac{3}{8}$						
3 $\frac{1}{2}$ to 6 in $\frac{1}{4}$ " increments, 7, 8										

TABLE IC

ALUMINUM ALLOYS
TUBING & PIPE

<u>DESIGNATION</u>	<u>SHAPE</u>	<u>OD</u>	<u>SPECIFICATION</u>
2024-T4	Tub, Mech	3.25-8.0	QQ-A-200/3
3003-H14	Tub Drn	.250-3.00	WW-T-700/2
3003-H18	Pipe	.500, .750	MIL-P-25995
6061-T6	Tub Drn	.187-3.00	WW-T-700/6
6061-T6	Tub Ext	.197-3.00	QQ-A-200/8
6061-T6	Tub, Mech	3.25-8.0	QQ-A-200/8
6061-T6	Pipe	.125-8.00	MIL-P 25995
6063-T6	Pipe	1.00-4.00	MIL-P-25995
6063-T52	Tub, Sq	.750-2.00	QQ-A-200/9
6063-T52	Tub, Rect	{ .750 x 1.50 to 2.00 x 5.00 }	QQ-A-200/9

TABLE I-D

ALUMINUM ALLOYS
SHAPESSTRUCTURAL ANGLE
6061-T-6 EXTR
QQ-A-200/8

SIZE	WALL THK						
	.125	.187	.250	.312	.375	.500	.625
.750 Sq	X						
1.00 Sq	X	X	X				
1.25 Sq	X	X	X				
x 1.500		X	X				
x 1.750	X	X					
1.500 Sq	X	X	X				
1.500 x 2.000	X		X				
1.75 Sq	X	X	X				
2.000 Sq	X	X	X		X		
x 2.500		X	X				
x 3.000		X	X	X	X		
2.500 Sq	X	X	X		X		
x 3.000			X				
x 3.500			X	X			
3.000 Sq		X	X		X	X	
x 4.000			X		X	X	
x 5.000					X		
3.500 Sq			X	X	X	X	
x 5.000					X		
4.000 Sq			X		X	X	
x 6.000					X		
5.000 Sq					X		
6.000 Sq					X		

ARCHITECTURAL ANGLE
6063-T52 EXTR
QQ-A-200/9

SIZE	ALCOA NUMBER (XXX) WALL THK
.500 Sq	(.062) 1312 (.125) 79-H
.500 x 1.000	(.094) 1943 (.125) 7201
x 1.250	(.125) 895
.625 Sq	(.125) 79-0
.750 Sq	(.062) 472 (.125) 79-A
x 1.00	(.125) 7385
x 1.50	(.125) 5137
1.000 Sq	(.062) 79-M (.125) 79-G
1.000 Sq	(.187) 79-B
x 1.500	(.125) 7613
x 2.000	(.125) 6844
1.250 Sq	(.125) 79-T (.187) 79-P
1.500 Sq	(.125) 79-V (.187) 79-N
2.000 Sq	(.125) 79-X (.187) 79-Q
	(.250) 79-E

ARCHITECTURAL CHANNEL (ALL .125 THK) ALCOA	
WIDTH	NUMBER (XXX) LEG LENGTH
.500	(.375) 2335 (.750) 8997
.625	(.625) 4533
.750	(.375) 2715 (.750) 3547
1.000	(.500) 1940 (1.000) 7484
1.250	(.500) 4286 (1.250) 4542
1.500	(.500) 4300
1.750	(.500) 8449 (.750) 2105
1.750	(1.000) 5714
2.000	(.500) 2388 (1.000) 5527
5.000	(2.000) 17146

SECTION II Nonmetallic Materials

1.0 Introduction

The selection of and the listing of nonmetallic materials in this section is based primarily on the prior use of such materials in Apollo Command Module and LM as listed in Refs 1, 2, and 3. Additionally acceptable materials contained in Ref. 4 were used as a guide in supplementing the initial list. The criteria for acceptance in Refs 1, 2 and 3 were contained in Ref 5, (which is now superseded by Ref. 6).

2.0 Scope

Nonmetallic materials tabulated in this section are primarily organic compounds which are tested to the criteria described in par 3.0 below. Inorganic materials such as glasses and ceramics do not ordinarily pose a compatibility hazard when tested to the criteria stated.

3.0 Requirements

The requirements for approval of nonmetallic material for use in the Apollo Command Module are contained in Ref. 5. The types of tests applicable and the acceptable limits are as follows:

1. Combustion Rate: Less than 0.5"/sec in oxygen at 5 psia.
 - *2. Odor: Sample detected by 10 qualified panel members receives an average score of 20 or less indicating "barely detectable" or "easily detectable".
 - *3. Carbon Monoxide: Offgas less than 20 ppm of sample weight.
 - *4. Total Organics: Offgas less than 100 ppm of sample weight.
 5. Flash Point: 400°F or higher in 95% oxygen at 5 psia.
 6. Fire Point: 450°F or higher in 95% oxygen at 5 psia.
- *Gas sample extracted from test chamber after baking specimen 72 hours at 155°F in 5 psia (260 torr) oxygen.

For ALSEP equipment which does not operate in the oxygen environment of the cabin, the principle criteria are categories 3 and 4 above which indicates the stability of a material at elevated temperature and reduced pressure. The test temperature of 155°F approximate the expected maximum temperature (160°F) for ALSEP Central Station electronics. (The value of 155°F was selected to offer a 20°F margin over the maximum short-time cabin temperature excursion to 135°F.)

In the following tables the status of the material is listed indicating the approval status contained in references 1, 2, and 4. The column headed "N" symbolizes approval by North American Aviation in ref. 1, and the column headed G denotes listing in Ref. 2. Symbol "A" means acceptable and "R" means rejected. For the column headed MSC the status given in ref. 4 has the following significance. (Each of the 6 columns represent the requirements stated above in that order left to right):

- A Tested. Meets MSC-ASPO requirements
- B Tested to non-standard requirements; judged acceptable
- C Not tested. Established as acceptable by similarity of application
- U Tested. Does not meet MSC-ASPO requirements.
- W Tested to non-standard requirements. Judged unacceptable.
- Y Not tested. Established as unacceptable by similarity.

The column headed DESC is a cross reference to Table II-L which lists these materials by function or form and provides additional descriptive information including the manufacturer's recommended use temperature range.

Table II-L is provided as an aid to designers to select materials for specific applications.

The file number represents a file maintained by the Parts & Materials group which contains manufacturer's literature providing application and property data as well as recommended processing information.

REFERENCES

1. North American Aviation Spec. No. MC999-0058 "Approved Materials for use in the Apollo Spacecraft, General Specification for" Rev. D 15 June 1966.
2. Grumman Aircraft Engineering Corp I. C. D. # LIS-360-22101 "LEM Scientific Equipment Materials Compatability Requirements" 21 October 1965.
3. General Electric Missile & Space Div. NE0060-07-03 "SNAP-27 Selected Materials List" 21 March 1966.
4. NASA/MSC MSC-A-D-66-4 "Crew Bay Nonmetallic Materials Status Report of Unacceptable /Acceptable Materials, Revision F" 30 December 1966.
5. NASA/MSC MSC-A-66-3 "Procedure and Requirements for the Evaluation of Apollo Crew Bay Materials".
6. NASA/MSC D-NA-0002 "Procedures and Requirements for the Flammability and Offgassing Evaluation of Manned Spacecraft Non-metallic Materials".

<u>FILE</u>	<u>DESIGNATION</u>	<u>VENDOR</u>	<u>MSC</u>	<u>STATUS</u>		<u>DESC</u>
				<u>N</u>	<u>G</u>	
101	HT-424	BLOOMINGDALE	CBBBCC		A	A1
102	FM-1000	"	BBAAAA		A	A4
103	CORFIL 615	"	YWWBCC		A	A5
104	EC1933B/A	3M-ACD	BBBBCC		A	A15
105	METLBOND 329	NARMCO	BBBBCC		A	A3
106	EPON 919	SHELL ADH	BWBBCC		A	A6
107	EPON 923	"	CAWWCC		A	A7
108	EPON 934	"	BBBBCC		A	A8
109	3135/7111	NARMCO	CBWWCC			A13
110	7343/7139	"	CBBBCC			A23
111	EPON VI	SHELL ADH	BWBBBC			A9
112	EPON VIII	"	BWBBBC			A10
113	DELTABOND 152	WAKEFIELD				A21
114	AEROBOND 422	ADHES ENG				A2
115	EC-870	3M-ACD	CBBBCC	R		A16
116	EPON 901/B-1	SHELL ADH				A11
117	EPON 901/B-3	"				A12
118	EC-1357	3M-ACD				A17
119	X-81	ARMSTRONG				A14
120	ECCOBOND 56C/9	EMERSON & CUM	CBCBBC			A22
121	A-4000	DOW-C	CWBWYC			A20
122	SILASTIC 140	DOW-C	BAAABC			A18
123	ECCOBOND 45	EMERSON & CUM	CBAACC			A19

TABLE II-A ADHESIVES

<u>FILE</u>	<u>DESIGNATION</u>	<u>VENDOR</u>	<u>MSC</u>	<u>STATUS</u>		<u>DESC</u>
				<u>N</u>	<u>G</u>	
201	SR634-70	STILLMAN	CCBBAA			C1
202	77-545	PARKER	CBCBAC			C2
203	SILASTIC 50	DOW-C ENPD	CBBBAA			C4
204	SILASTIC 651	DOW-C ENPD	CBBBCC			C5
205	SILASTIC 1410	DOW-C ENPD	CBAACC			
206	TH 1025	STILLMAN		A		C7
207	CANCELLED					
208*	SILASTIC 960U	DOW-C ENPD	CAAACC			C6
209	CANCELLED					
210	9-70-1	AGC INC	BBBBBC			C8
211	VITON A	DUPONT ELASTOMER	CBBBCC			C3
212	CHO-SEAL 1214	CHOMERICS				J5
213	CHO-SEAL 1215	CHOMERICS				J6

*STALWART RUBBER ADEL COMP NO 7010

TABLE II B ELASTOMERS

<u>FILE</u>	<u>DESIGNATION</u>	<u>VENDOR</u>	<u>MSC</u>	<u>STATUS</u>		<u>DESC</u>
				<u>N</u>	<u>G</u>	
1101	VELCRO	VELCRO CORP	WBBBBC		A	D1
1102	MIN-K 503	JOHNS-MANV	CBWBCC			G1
1103	7402	MYSTIK	BBBBCC			M20
1104	MIL-W-19078A	PHOENIX TRIM		A		J3
1105	CANCELLED					
1106	KAPTON	DUPONT FILM	ABBBCC			K4
1107	TEFGLAS 90LOF13A	WESTERN FIL	ABBBCC			M1
1108	TEMPILABEL	TEMPIL	CBACCC			J2
1109	EE-6600	PERMACEL	CBBBCC			M23
1110	G-102700	SCHJELDAHL				M21
1110	G-103500	"				M22
1111	721-H	GUDEBROD				M2

TABLE II-K MISCELLANEOUS

TABLE II-L INDEX BY FUNCTIONAL DESCRIPTION

<u>ADHESIVES</u>			
<u>DESIGNATION</u>	<u>DESCRIPTION</u>	<u>TEMP RANGE</u>	<u>FILE NO</u>
<u>Structural, film type, supported</u>			
A1	HT-424 Epoxy-phenolic, glass-fabric	-400 + 500	101
A2	AEROBOND 422 Epoxy-phenolic glass-fabric	- 67 + 400	114
A3	METLBOND 329 Epoxy-modif. Dacron-fabric	-423 + 450	105
<u>Structural, film type unsupported</u>			
A4	FM 1000 Epoxy-polyamide, white	-423 + 200	102
<u>Structural, core filler</u>			
A5	CORFIL 615 Paste	- 85 + 350	103
<u>Epoxy, 2-part, general purpose</u>			
A6	EPON 919 Flexible	- 67 + 180	106
A7	EPON 923	- 67 + 140	107
A8	EPON 934	- 67 + 375	108
A9	EPON VI	- 67 + 190	111
A10	EPON VIII	- 67 + 260	112
A11	EPON 901/B-1	- 67 + 250	116
A12	EPON 901/B-3	- 67 + 325	117
A13	3135/7111 R.T. Cure	-300 + 200	109
A14	X-81 Adj. flexibility	-	119
A15	EC-1933B/A	- 85 + 250	104
<u>Elastomeric</u>			
A16	EC-870	- 20 + 180	115
A17	EC-1357	- 20 + 220	118
A18	SILASTIC 140 Silicone, 1-part, clear	- 85 + 300	122
A19	ECCOBOND 45	- 70 + 250	123
A20	A-4000	- 65 + 400	121
<u>Epoxy, thermal conductive</u>			
A21	DELTABOND 152 Alumina filler	- 70 + 300	113
<u>Epoxy, Electrical Conductor (Solder)</u>			
A22	ECCOBOND 56C/9 Silver filled	- 70 + 350	120
<u>Urethane</u>			
A23	7343/7139	-423 + 250	110

<u>COATINGS</u>		<u>TEMP</u>	<u>FILE</u>
	<u>DESIGNATION</u>	<u>RANGE</u>	<u>NO</u>
	<u>Ablative</u>		
B1	DC-325 Silicone	- 90 + 1000	409
	<u>Anti-friction</u>		
B2	EMRALON 310 TFE dispersion, phenolic binder	+ 350	407
B3	EMRALON 320 TFE dispersion	+ 175	408
	<u>Conformal - (elec. insulating)</u>		
B4	APCO 1260 clear, fluorescent	-	402
B5	SOLITHANE 113/C-113-300 Clear	+ 250	412
B6	LAMINAR X-500/7-C-23 Clear	- 67 + 250	413
B7	HUMISEAL 1B12		419
	<u>Reflective, optical</u>		
B8	NEXTEL 401, Polyester	+ 350	401
	<u>Thermal Control white</u>		
B9	PV-100 Silicone-alkyd	+ 300	410
B10	DC 92-007 Silicone elastomer	- 85 to + 500	411
B11	S-13G silicone, zinc oxide	- 300 + 200	414
B12	Z-93 Potassium silicate, zinc oxide	- 383 + 500	416
	<u>Sealant, for castings</u>		
B13	DAPON SEALANT		404
	<u>Paint sea-water resistant</u>		
B14	9365		406
<u>ELASTOMERS</u>			
	<u>Butyl rubber, molded</u>		
C1	SR634-70 fuel resis.,	- 65 + 158	201
	<u>Fluoroelastomer</u>		
C2	77-545	- 20 + 400	202
C3	VITON		211
	<u>Silicone</u>		
C4	SILASTIV 50 white	- 70 + 500	203
C5	SILASTIC 651 red	- 130 + 500	204
C6	SILASTIC 960 U	- 130 + 480	208
C-7	TH-1025	- 80 + 437	206
C8	9-70-1	- 103 + 248	210
<u>FASTENER</u>			
	<u>Hook & Pile</u>		
D1	VELCRO	- 85 + 250	1101

<u>FOAMS</u>		<u>TEMP</u> <u>RANGE</u>	<u>FILE</u> <u>NO</u>
	<u>DESIGNATION</u> <u>DESCRIPTION</u>		
	<u>Sheet Stock, rigid & semirigid</u>		
E1	ECCOFOAM S Urethane	- 94 + 304	513
E2	" SH "	- 94 + 400	514
	<u>Sheet Stock, resilient</u>		
E3	COHRLASTIC R-10470 Silicone	- 100, + 500	508
E4	AGC 3-172-1 Silicone	-100, + 500	509
E5	POLYFOAM 17-6 Urethane	- 40, + 200	506
E6	SCOTTFOAM 60PP1 Urethane, reticulated	- 50, + 250	507
E7	CPR 9800 Urethane	- 70, + 250	512
	<u>Resin, rigid & semi-rigid</u>		
E8	VULTAFOAM 15 L-206	+ 200	501
E9	ISOFOAM L-131	+ 225	502
E10	ECCOFOAM FP	-95, + 225	510
E11	" FPH	- 95, + 275	511
E12	NOPCOFOAM A 206	+ 250	503
E13	ISOFOAM PE-6W	+ 200	505
E14	STAFOAM AA604	+ 325	504
<u>LUBRICANTS</u>			
	<u>Dry film, powder</u>		
F1	MOLYKOTE Z Molybdenum Disulfide	- 375, + 750	601
	<u>Dry film, bonded</u>		
F2	LUBECO 905	- 452, + 500	604
F3	LUBECO N350A	-	605
F4	MOLYKOTE X-15	- 300, + 1200	608
F5	ELECTROFILM 2306	- 300, + 1200	609
F6	MOLYKOTE 321	-300, + 1000	610
	<u>Dry film, impinged</u>		
F7	MICROSEAL 100-1	- 400, + 2000	611
	<u>Oil & Grease</u>		
F8	INVELCO #33	+ 500	606
F9	KRYTOX 240AC		612
F10	VERSILUBE G300 Silicone		613
F11	DC 11 Silicone grease	- 40 + 500	906
F12	XL-1-2005 Silicone grease, FDA approved	- 40 + 450	907
<u>INSULATION THERMAL</u>			
G1	MIN-K 503	to + 500°F	1102

<u>MARKING MATERIALS</u>		<u>TEMP RANGE</u>	<u>FILE NO</u>
	<u>DESIGNATION</u>	<u>DESCRIPTION</u>	
H1	<u>Ink, rubber stamp</u> 73-X	-	403
H2	<u>Paint, screen-process</u> CAT-L-INK 50-XXX Epoxy, 2-pt	to + 225	415
H3	<u>Label, self-adhesive</u> PS-9	- 85 to + 325	405
H4	<u>Foil, marking</u> KT-26		417
H5	K-36		418

MISCELLANEOUS

J1	<u>Heat Sink Compound</u> DC 340	+ 392° F	602
J2	<u>Indicator, surface temperature</u> TEMPILABEL	to 500° F	1108
J3	<u>Webbing, dacron, latex-treated</u> MIL-W-19078A		1104
J4	<u>Bearing liner</u> FABROID woven TFE/woven glass	- 120 to +250	603
J5	<u>Shielding Gasket, elastomeric</u> CHO-SEAL	to 257	1112
J6	CHO-SEAL	to 257	1113
J7	<u>Window, glazed, impact resistant</u> SS3330 acrylic cast interlayer	- 40 + 200	1006

PLASTICS

	<u>DESIGNATION</u>	<u>DESCRIPTION</u>	<u>TEMP</u>	<u>FILE</u>
	<u>Film and Sheet Stock</u>		<u>RANGE</u>	<u>NO</u>
K1	MYLAR		- 75 to + 266	1012
K2	TEFLON FEP		-427 to + 392	1002
K3	TEFLON TFE		- 450 to + 500	1001
K4	KAPTON		- 320 to + 500	1106
	<u>Laminated</u>			
	<u>B-Stage Phenolic-glass</u>			
K5	VOLAN A CTL 91LD		to + 525	803
	<u>B-Stage Silicone-glass</u>			
K6	F1 30-40		to + 500	804
	<u>Polyester-glass</u>			
K7	F-141		-	805
	<u>Epoxy-glass</u>			
K8	SCOTCHPLY 1002		- 60 to + 250	801
	<u>Laminated, copper-clad</u>			
	<u>Epoxy-glass</u>			
K9	G-11-861-1		- 60 to + 250	802
K10	MX6500		to + 266	806

PLASTICS (CONT)		TEMP	FILE
<u>DESIGNATION</u>	<u>DESCRIPTION</u>	<u>RANGE</u>	<u>NO</u>
<u>Molding Stock</u>			
<u>ABS</u>			
K10	ROYALITE PR55		1011
<u>Acrylic</u>			
K11	LUCITE	to + 180	1014
K12	PLEX II UVA	- 310 to + 180	1005
<u>Diallyl Phthalate</u>			
K13	DIALL FS-80	+ 425	702
K14	DIALL 52-70-70	+ 350	703
K15	DIALL FS-10	+ 425	704
K16	RX-1360-T	to + 325	701
<u>Epoxy</u>			
K17	EPIALL 1908	+ 350	705
<u>Fluorocarbon</u>			
K18	TEFLON TFE	- 450 to + 500	1001
K19	KEL-F 81	- 400 to + 400	1003
K20	RULON-LD	- 400 to + 500	1016
<u>Polyamide (nylon)</u>			
K21	ZYTEL 101	- 85 to + 170	706
K22	NYLATRON GS		
<u>Polyimide</u>			
K23	VESPEL SP-1	- 320 to + 500	1015
<u>Polypropylene</u>			
K24	5224-100	- 10 to + 200	1010
<u>Polystyrene</u>			
K25	REXOLITE 1422	- 60 to + 150	1009
K26	BAUM X252	165°F	1007
<u>Polyvinyl Fluoride</u>			
K27	KYNAR	- 80 to + 300	1008

POTTING COMPOUNDS & SEALANTS

(For foamed compounds, see FOAMS)

	<u>DESIGNATION</u>	<u>DESCRIPTION</u>	<u>TEMP</u> <u>RANGE</u>	<u>FILE</u> <u>NO.</u>
	<u>Epoxy, 2-Part</u>			
L1	EPOCAST	3E8028	+ 200	909
L2	EPON	828/Z	-	912
L3	EC1663B/A		+ 500	913
L4	STYCAST	2850 FT/11	+ 300	915
L5	EPON	826/D		
L6	EPOXYLITE	6203	- 75 + 450	917
L7	STYCAST	1090SI Microballoon filled	- 100 + 300	923
L8	STYCAST	1090/11 Black, filled,	- 100 + 400	901
	<u>Epoxy-phenolic-urethane</u>			
L9	MARAGLAS A	(655/555)	+ 250	916
	<u>Silicone, 2-part R-T cure</u>			
L10	RTV	560 red	- 150 + 400	902
L11	RTV	60 red	- 90 + 500	903
L12	RTV	90 red	- 90 + 500	904
L13	SILASTIC	RTV601 white	- 90 + 300	910
L14	SYLGARD	183 black	- 85 + 482	911
	<u>Silicone 2-part oven cure</u>			
L15	DC XR-6-3501	clear, hard	- 85 + 392	919
	<u>Silicone 1-part</u>			
L16	SILASTIC	731 white	- 85 + 350	914
L17	DC	92-024 gray	- 70 + 600	922
	<u>Thread Sealant</u>			
L18	LOCKTITE	A, B, C, E, H	- 65 + 250	918
	<u>Urethane, clear</u>			
L19	PR-1538	amber, translucent	- 70 + 300	908
	<u>Urethane opaque</u>			
L20	PR-1538	Black	- 70 + 300	908
L21	PR-1542	Black or dark amber	- 70 + 300	905

<u>TAPE</u>	<u>DESIGNATION</u>	<u>DESCRIPTION</u>	<u>TEMP RANGE</u>	<u>FILE NO.</u>
<u>Lacing</u>				
M1	TEFGLAS 90LOF 13A Glass/Teflon		to 550°F	1107
M2	721H Nomex-Silicone		to 275°F	1101
<u>Insulation, Electrical, Self-Adhesive</u>				
<u>Teflon back, silicone adhesive</u>				
M3	MYSTIK 7503 6.0 Mil 9KV		- 100 to + 500°F	312
M4	7504 7.0 Mil 11KV		" "	312
M5	7505 7.7 Mil 11KV		" "	312
M6	7506 13 Mil 16KV		" "	312
M7	SCOTCHBRAND #60 3.5 Mil		- 100 to + 500	319
M8	" 61 6.5 Mil		" "	319
M9	" 62 3.5 Mil Bondable		" "	320
M10	TEMP-R-TAPE T 6.0 Mil 10KV		-100 to + 500	310
<u>Teflon/Glass back, silicone adhesive</u>				
M11	TEMP-R-GLAS A2005 5.0 Mil 4KV		- 100 to + 500	311
M12	" A2007 7.0 Mil 5 KV		" "	
M13	" A2008 8.0 Mil 7KV		" "	
M14	" A2012 12.0 Mil 6KV		" "	
<u>Polyester back silicone adhesive, white</u>				
M15	MYSTIK 7302 3.2 Mil 4KV		- 100 to + 266°	309
M16	" 7302 5.0 Mil 7 KV		" "	309
M17	" 7305 7.5 Mil 13KV		" "	309
<u>Kapton back, silicone adhesive</u>				
M18	MYSTIK 7366 5.0 Mil 7.5KV (double-coated)		- 110 to + 550	318
<u>Transfer Tape Unsupported</u>				
M19	#465 (3M) 2.0 Mil			324
<u>Copper Foil, silicone adhesive</u>				
M20	MYSTIK 7402 4.0 Mil		- 110 to + 550	1103
<u>Thermal Insulating, Reflective, Aluminized 1 Side, Silicone Adhesive</u>				
M21	G102700 Kapton 0.5 Mil (with Oxide)		-110 to + 530	1110
M22	G103500 Kapton 0.5 Mil (less oxide)		" "	1111
M23	EE6600 Mylar		- 30 to + 300	1109

<u>TUBING</u>	<u>DESIGNATION</u>	<u>DESCRIPTION</u>	<u>TEMP RANGE</u>	<u>FILE NO</u>
<u>Flexible, electrical insulating</u>				
	N1 TUY-XX	Teflon, clear, medium wall	- 300 to + 450	301
	N2 TUZ-XX	Teflon, clear, thin wall	- 300 to + 450	301
<u>Flexible, electrical insulating, heat-shrinkable</u>				
	N3 PENNTUBE SMT-II-XX	FEP teflon	- 275 to + 400	321
	N4 SILASTIC 1410	silicone rubber	- 148 to + 500	205
<u>WIRE</u>				
<u>Wire, Electrical, Insulated, Hookup</u>				
P1	M16878/E-XX	Teflon std wall	- 85 + 392	302
P2	M16878/ET-XX	Teflon thin wall (TFE)	- 85 + 392	307
P3	M16878/KT-XX	Teflon thin wall (FEP)	- 85 + 392	307
P4	M8138111	Kapton-FEP wrapped	+ 392	313
P5	M81381/2	Kapton-FEP wrapped	+ 392	314
P6	M81381/3	Kapton-FEP wrapped	+ 392	315
P7	M81381/4	Kapton-FEP wrapped	+ 392	316
P8	Surok TFE	insulated	- 85 + 392	306
<u>Wire, Electrical Magnet</u>				
P9	AI-220	Polyamide-imide	to 428°	308
P10	NYLESE, HEAVY	Urethane-Nylon	to 266°	317
P11	POLYTHERMALEZE	Polyester-Linear polyester	to 311°	322
P12	ML MAGNET WIRE	Polyimide	to 428°	323

LIST II-M MANUFACTURER'S ADDRESSES

- | | |
|---|--|
| <p>1. AGC Inc.
106 Evansville Av
Meridan Ct 06450
203-235-3361
FSCM 98500</p> | <p>8. CPR Div
Upjohn Co
555 N Alaska Av
Torrance Ca 90503
213-320-3550
FSCM 18975</p> |
| <p>2. Acheson Colloids Co
4650 Washington Av
Port Huron Mi 48060
313-984-4171
FSCM 70079</p> | <p>8a. Chomerics, Inc
77 Dragon Ct
Woburn, Ma 01801
617-935-4850
FSCM 18565</p> |
| <p>3. Adhesive Engineering Co
1411 Industrial Rd
San Carlos Ca 94070
415-591-2686
FSCM 17433</p> | <p>9. Coast Mfg & Supply Co
P.O. Box 71
Livermore Ca 94551
415-447-1000
FSCM 91610</p> |
| <p>4. Applied Plastics Co. Inc
130 Penn St
El Segundo Ca 90266
213-777-2207
FSCM 05866</p> | <p>10. Connecticut Hard Rubber Co
Subs U.S. Polymeric
407 East St
New Haven Ct 06509
203-777-3631
FSCM 71643</p> |
| <p>5. Armstrong Products Co. Inc
P.O. Box 1-C
Warsaw, In 46580
219-267-3226
FSCM 98911</p> | <p>11. Dixon Corp
386 Metacom Av
Bristol RI 02809
401-253-7500
FSCM 04813</p> |
| <p>6. Baum Chemical
625 Nash St
El Segundo Ca 90245
FSCM None</p> | <p>12. Dow Corning Corp
Engineering Products Div
P.O. Box 592
Midland Mi 48640
517-636-8000
FSCM 71984</p> |
| <p>7. Bloomingdale Div
American Cyanamid Co
Havre de Grace Md 21078
301-939-1910
FSCM 07542</p> | <p>13. Drilube Co
723 W Broadway
Glendale Ca 91204
213-245-1806
FSCM 06186</p> |
| <p>7a. Brand-Rex Div
American Enka Corp
West Main St
Willimantic Ct 06226
203-423-7771
FSCM 71124</p> | |

14. Dupont deNemours E. I. & Co
Film Dept
Nemours Bldg
Wilmington De 19898
302-774-1000
- 14a. DuPont deNemours, E.I. & Co
Plastics Dept
DuPont Bldg
Wilmington De 19898
302-774-1000
FSCM 18873
- 14b. DuPont deNemours, E.I. & Co
Elastomer Chemicals Dept
Nemours Bldg
Wilmington De 19898
302-774-1000
FSCM 18873
- 14c. DuPont deNemours, E.I. & Co
Petroleum Chemicals Div
Nemours Bldg
Wilmington De 19898
302-774-1000
FSCM 18873
15. Electrofilm Corp
7111 Laurel Canyon
North Hollywood Ca 91605
213-875-1000
FSCM 85932
16. Emerson & Cuming Inc
59 Walpole St
Canton Ma 02021
617-828-3300
FSCM 04552
17. Epoxylite Corp
1428 N. Tyler Av
South Elmonte Ca 91733
213-444-9514
FSCM 11147
18. FMC Corp
Organic Chemicals Div
633 Third Av
New York City NY 10017
212-687-7400
FSCM 85974
- 18a. Formica Corp
Subs of Amer. Cyanamid
461 Spring Grove Av
Cincinnati Oh 45232
513-541-3670
FSCM 80251
19. Furane Plastics Inc
4516 Brazil St
Los Angeles Ca 90030
213-245-1151
FSCM 99384
20. General Electric Co
Silicone Products Div
Waterford NY 12188
518-237-3330
FSCM 01139
21. General Electric Co
Wire & Cable Dept
1285 Boston Av
Bridgeport Ct 06602
FSCM 24457
- 21a. General Electric
Laminated Products Dept
Coshocton Oh 43812
614-622-5310
FSCM 08801
- 21b. General Latex & Chemical
668 Main St
Cambridge Ma 02139
617-864-7750
FSCM 72701

- | | |
|---|--|
| <p>22. General Tire & Rubber Co
Industrial Products Div
1700 Factory Av
Marion In
FSCM 20030</p> | <p>28. Independent Ink Co
14705 S. Avalon Blvd
Gardena Ca 90247
213-321-0181
FSCM 12744</p> |
| <p>23. Gore & Associates, W.L. Co
555 Paper Mill Rd
Newark De 19711
302-368-9183
FSCM 17217</p> | <p>29. Isocyanate Products Inc.
900 Wilmington Rd
Newcastle De 19720
302-328-5661
FSCM 07719</p> |
| <p>23a. Hadbar Div
Purolator Products Inc
733 S. Fremont Av
Alhambra Ca 91803
FSCM 07096</p> | <p>30. Johns-Manville
Aerospace Products
22 E 40th St
New York City NY 10016
212-532-7600
FSCM 75165</p> |
| <p>24. Haveg Industries Inc
Super Temp Wire Div
Winooski Vt 05404
802-862-9636
FSCM 05973</p> | <p>31. Locktite Corp
705 N Mountain Rd
Newington Ct 06111
203-278-1280
FSCM 05972</p> |
| <p>25. Hitemp Wires
Simplex Cable Corp
1200 Shames Dr
Westbury L.I. NY 11590
FSCM 99114</p> | <p>32. Lubeco, Inc
1322 S Alameda St
Compton Ca
213-636-1808
FSCM-None</p> |
| <p>25a. Humiseal Div
Columbia Technical Corp
Woodside N.Y. 11377
212-932-0800
FSCM 99109</p> | <p>33. Magna Chemical & Coatings Co
1785 North Eastern Ave
Los Angeles Ca 90032
213-261-7111
FSCM 98795</p> |
| <p>26. Illinois Institute of Technology
Research Institute
Technology Center
Chicago Ill 60616
FSCM 30921</p> | <p>34. Marblette Corp
37-31 30th St
Long Island City NY 11101
212-784-8100
FSCM 08777</p> |
| <p>27. ITT/Wire & Cable Dept
172 Sterling St
Clinton Ma 01510
FSCM 90484</p> | <p>35. Mesa Plastics Div
Allied Chemical
12270A Nebraska Av
Los Angeles Ca 90025
213-272-4471
FSCM 15731</p> |

- | | |
|---|--|
| <p>36. Metal Cal Div
Avery Products Corp
422 E. Warren Lane
Inglewood Ca 90309
Now Div of W.H. Brady
FSCM 00544</p> | <p>44. Penntube Plastics Co Div
Pennsylvania Fluorocarbon Co Inc
Madison & Holley Sts
Clifton Heights Pa 19018
215-622-2300
FSCM 09795</p> |
| <p>37. Microseal Products Corp
3216 Raintree Av
S. Torrance CA 90505
FSCM 11664</p> | <p>45. Permacel Div
Johnson & Johnson Inc
U.S. Highway #1
New Brunswick NJ 08903
201-524-0400
FSCM 99742</p> |
| <p>38. Mystik Tape Div
Borden Chemical Co
1700 Winnetka Av
Northfield IL 60094
312-446-4000
FSCM 88301</p> | <p>46. Phelps Dodge Magnet Wire Corp
P.O. Box 600
Ft Wayne In 46801
219-743-0511
FSCM 09040</p> |
| <p>39. Narmco Materials Div
Whittaker Corp
600 Victoria St
Costa Mesa CA 92627
714-548-1144
FSCM 04622</p> | <p>47. Phoenix Trimming Co
2000 N. Racine Av
Chicago Il 60614
FSCM 86514</p> |
| <p>40. NVF Co
1000 Maryland Av
Wilmington De 19803
302-655-6371
FSCM 43021</p> | <p>48. Polymer Corp
2120 Fairmont Av
Reading Pa 19603
215-929-5858
FSCM 83616</p> |
| <p>41. Nopco Chemical Co
Plastics Div
175 Schuyler Av
North Arlington NJ 07032
FSCM 07812</p> | <p>49. Polytron Co
664 S Tenth St
Richmond Ca 94804
415-235-8330
FSCM None</p> |
| <p>42. Parker Seal Co
10567 Jefferson Blvd
Culver City Ca 90230
213-839-1161
FSCM 83259</p> | <p>50. Products Research & Chemical Co
2919 Empire Av
Burbank Ca 91504
213-849-3992
FSCM 83574</p> |
| <p>43. Pennsalt Chemicals Corp
3 Penn Center Plaza
Philadelphia Pa 19102
215-564-4700
FSCM 86460</p> | <p>51. Rogers Corp
Rogers Ct 06203
203-774-9605
FSCM 04394</p> |

52. Rohm & Haas
Independence Mall West
Philadelphia Pa 19105
215-592-3000
FSCM 77902
53. Rustoleum Corp
2445 Oakton St
Evanston Il 60204
FSCM 08882
54. G. T. Schjeldahl
Highway #3
Northfield Mn 55057
507-645-5635
FSCM 07955
55. Scott Paper
Foam Div
Chester Pa
FSCM 78112
56. Shell Chemical Co
Adhesives Dept
P. O. Box 831
Pittsburg Ca 94565
415-685-2310
FSCM 22893
57. Shell Chemical Co.
Plastics & Resins Div
113 W 52nd St
New York City NY 10019
212-262-2140
FSCM 86961
58. Stillman Rubber Div
Electrada Corp
5811 Marilyn Av
Culver City Ca 90230
213-398-5735
FSCM 95272
59. Swedlow Inc
12242 Western Av
Garden Grove Ca 92641
714-893-7531
FSCM 86175
- 59a. Synthane Corp
Subs Alco Standard Corp
14 River Rd
Oaks Pa 19456
215-666-5011
FSCM 78397
60. Tempil Corp
132 W 22nd St
New York City NY 10011
212-675-6610
FSCM 82682
61. Tensolite Insulated Wire Corp
Subs of Carlisle Corp
West Main St
Tarrytown NY 10591
FSCM 92607
62. Thiokol Chemical Co
Chemical Div
780 N Clinton Av
Trenton NJ 08607
FSCM None
63. Transport Dynamics Div
Lear Siegler Inc
3131 W Segerstrom Av
Santa Ana Ca 92702
714-546-3131
FSCM 09455
64. U. S. Polymeric Inc
Ludlow & Canal St
Stanford Ct 06904
203-324-7545
FSCM 05876
65. Uniroyal Inc
Royalite Plastic Products
2638 N Pulaski Rd
Chicago Il 60639
312-342-1800
FSCM 89616

- 66. Velcro Corp
681 Fifth Av
New York City NY 10022
212-751-2144
FSCM 11153
- 67. Vita-Var Co
46 Albert Av
Newark NJ 07105
FSCM 79103
- 68. Wakefield Engineering
139 Foundry St
Wakefield Ma 01880
617-245-5900
FSCM 05820
- 69. Western Filament Corp
4680 San Fernando Rd
Glendale Ca 91204
213-245-7701
FSCM 00768
- 70. Wornow Process Paint Co
1218 Long Beach Av
Los Angeles Ca 90021
213-627-3773
FSCM 79436
- 71. 3M Adhesives, Coatings &
Sealers Div
2501 3M Center
St Paul Mn 55101
612-733-1110
FSCM 04963
- 72. 3M Reflective Products Div
2501 Hudson Rd
St Paul Mn 55101
612-733-1110
FSCM 94960

SECTION III Materials Used in ALSEP Equipment

1.0 General

The initial issue of ATM-242 was prepared, approved and issued as a design guideline to control the use of materials in the design of ALSEP equipment. It was imposed on subcontractors furnishing experiments and portions of the central station, with a requirement that if materials were used which were not listed in ATM-242 (or were not equivalent in composition and properties) the subcontractor would report and request approval for the usage of such materials.

For equipment designed and fabricated at Bendix the same requirement for conformance to ATM-242 was imposed and use of non-conforming material was controlled by the reliability sign-off of drawings and bills of material.

2.0 Criteria for Approval

In the design and fabrication of parts and subassemblies, there were requirements for items which, in the category of "off-the-shelf" hardware, contained non-metallic materials with a proven performance history for the item. To have imposed the use of ATM 242 material would require a special design and fabrication cycle and negate the prior product history. Approval was given for the use of such materials when the total quantity per system was small, when evaluation tests established adequate stability, and the use of approved material would result in degraded performance, or no approved material could meet the performance required.

TABLE III-A ADHESIVES

File No.

Aerobond 422	Adhesive Engrng	114
BR-22	W. T. Bean	-
BR-610	W. T. Bean	-
Corfil 615	Bloomingtondale	103
Deltabond 152	Wakefield	113
EC 1357	3M-ACSD	118
Eccobond 45	Emerson & Cuming	123
Eccobond 56C/9	Emerson & Cuming	120
Epiphen 825B (PSE)	Borden	-
EPON VIII	Shell Adhesives	112
EPON 901/B-1	Shell Adhesives	116
EPON 901/B-3	Shell Adhesives	118
EPON 923	Shell Adhesives	107
EPON 934	Shell Adhesives	108
EPON 1001 (PSE)	Shell Resins	-
FM-123-2	Bloomingtondale	-
FM-37	Bloomingtondale	-
Gage-Kote #4	W. T. Bean	-
HT-424	Bloomingtondale	101
Metlbond 329	Narmco	105
Silastic 140	Dow Corning	122
#2209 (CPLEE)	Electro Science Labs	-
3135/7111	Narmco	109
7343/7139	Narmco	110
X-81	Armstrong	119

TABLE III-B ELASTOMERS

B-318-7 Butyl (PSE)

Parker Seal

File No.

-

TABLE III-C ELECTRICAL INSULATION & WIRING

Wire, insulated, hookup

M16878/E-XX

MIL-W-16878/4

302

(E-30, E-28, E-24, E-20 Used)

M16878/ET-XX

MIL-W-16878/6

307

(ET-28, ET-26, ET-24, ET-22 Used)

Wire, insulated, magnet

M583/M

MIL-W-583C Type M

308

(34 AWG, 30 AWG, 22 AWG, 20 AWG Used)

Cable, flat conductor

C1710C2025H0023

MSFC-SPEC-220

-

C20115C2025H0023

"

-

C2715C2025H0023

"

-

C3720C2025H0023

"

-

C40215C2025H0023

"

-

Wire, bare, copper

M3861/S

MIL-W-3861

-

(22 AWG, 24 AWG Used)

QQ-W-343

Wire Type S Copper

Cloth, coated TFE

TB-10

3M - Irvington

TABLE III-C (continued)

		<u>File No.</u>
<u>Tubing insulation</u>		
TUY-XX (TUY-30, -26, -24, -20, -19 Used)	Hitemp Wires	301
TUZ-26	Hitemp Wires	301
TFT-200/XX (TFT-200/24, 22, 20, 19 Used)	Alpha Wire	
TFT-250/18	Alpha Wire	
FIT-350/1/4 (1/4, 1/8, 3/32 Used)	Alpha Wire	
Penntube II-SMT/XX (18, 14, 12, 9, 8, 4, 2, 1, 3/8, 1/2, 3/4, 7/8, Used)	Penntube	321
Thermofit .063	Kynar	
Thermofit .093	"	
<u>Tape, insulating, self-adhesive</u>		
EE-6600	Permacel	1109
Scotchbrand 61	3M DM&S	319
Scotchbrand 62	3M DM&S	320
Scotchbrand 74 (CPLEE)	3M DM&S	-
Temp-R-Tape	Conn Hard Rub	310
Mystik 7305	Mystik Div. Borden	
Mystik 7366	Mystik Div. Borden	318
Mystik 7503	Mystik Div. Borden	312
Mystik 7322 (CPLEE)	Mystik Div. Borden	-

TABLE III-D FINISHES, COATINGS, MARKING MATERIALS

ATM
File No.

C-113 Marker		-
CAT-L-INK 50-710/20	Wornow	415
CAT-L-INK 50-209/20	Wornow	415
73X	Independent	403
EMRALON 320	Acheson	408
S-13 G	IITRI	414
HYSOL PC 12-007 (CPLEE)	Hysol Corp.	
HYSOL PC22 Std (CPLEE)	Hysol Corp.	
NEXTEL 401-A10 Wht	3M RPD	401
NEXTEL 401-C10 Blk	3M RPD	401
K-36	Kingsley	
K-40	Kingsley	
KT-20	Kingsley	
LAMINAR X-500/7C-23	Magna	413
HUMISEAL 1B12	Columbia	-
5591	Nazdar	-
TT-E-516 Wht Paint		-
VMBC-18 Undercoat		-
SPRINT 630	3M	-
Z-93	IITRI	
PR-420 Primer	Prod. Res.	
SS-4044 Primer	GE	
A-4094 Primer (CPLEE)	Dow-Corning	
MIL-P-8585 Primer	ZnChromate	

TABLE III-E FOAMS

		<u>File No.</u>
ECCOFOAM S	Emerson & Cuming	513
ECCOFOAM SH (2#, 4#, 6# Used)	Emerson & Cuming	514
COHRLASTIC R-10470 (Firm .094, Med. .094, Med. 12, Used)	Conn Hard Rub	508
3-172-1	AGC Inc.	509
CPR9800-5	CPR/Upjohn	512
CPR9700 (PSE)	CPR/Upjohn	-
SCOTTFOAM 60PP1 (.25 & .375" thk used)	Scott Paper	507

TABLE III-F GREASES AND LUBRICANTS

MOLYKOTE Z	Dow Corning	601
MOLYKOTE M8800	Dow Corning	-
MOLYKOTE 321	Dow Corning	610
ELECTROFILM 2306	Electrofilm	609
DC-340	Dow Corning	602

TABLE III-G MOLDING PLASTICS

File No.

Nylon (Zytel 101)

706

L-P-410 Nylon 6/6
Rod .312D, .280D, .250D,
Sheet .031 thk

TABLE III-H PLASTIC LAMINATES

Sheet Stock

M18177 GEB .093	MIL-P-18177 Grade GEB
(.031, .062, .032, .010, .125, .187, .020, .175, .375, .046, .312, .500, 1.00 thk used)	
TEXTOLITE 11546B	GE LPD (NEMA G-10)

Sheet stock copper clad

FLGB062C2/0A1A	MIL-P-13949
FLGB062C2/2A1A	MIL-P-13949
FLGE062C1/0A1A	MIL-P-13949
FLGE093C2/2A1A	MIL-P-13949

Rod & Tube Stock

M18177 GEB	MIL-P-18177 Grade CEB
(.312D, .375D, .500D, .625D, .750D, .250D)	

TABLE III-I POTTING & SEALING COMPOUNDS

		<u>File No.</u>
CASTALL #301 (CPLEE)	Castall Research	
DC 92-024	Dow-Corning	922
ECCOFOAM FP/12-2	Emerson & Cuming	510
ECCOFOAM FPH	Emerson & Cuming	511
EPOXYLITE 6203	EpoxyLite	917
FRITZ-150	Fritz	-
LOCKTITE GR A	Locktite	918
LOCKTITE GR B	Locktite	918
LOCKTITE GR E	Locktite	918
LOCKTITE GR H	Locktite	918
LOCKTITE GR N Primer	Locktite	-
PR-1535	Products Res.	-
PR-1538	Products Res.	908
RTV-560	GE-SPD	902
SILASTIC 731	Dow Corning	914
EPOCAST 8179 (CPLEE)	Furane	-
EPOCAST 221 (CPLEE)	Furane	-
STYCAST 1250	Emerson & Cuming	
STYCAST 2850 FT	Emerson & Cuming	911
TRUCAST 111/901	Emerson & Cuming	
STYCAST 2850 GT (PSE)	Emerson & Cuming	-

TABLE III-J THERMOPLASTICS

<u>Film and Sheet</u>	
TEFLON SH TY2 GRA (.010, .020 used)	MIL-P-22241
TEFLON SH TY1 GRB	MIL-P-22241
TY1 .062, 1.125 TK	MIL-P-22241
KAPTON 200XH667	Dupont
KAPTON 500XH667	Dupont
KAPTON .001 AL-IS	NRC
KAPTON .0005	Dupont
KAPTON .0005 AL-IS	NRC
FLUOROFILM DF 1700	Dilectrix Corp

TABLE III-J THERMOPLASTICS (continued)

		<u>File No.</u>
MYLAR TYA	Dupont	1012
MYLAR TYA .007		1012
MYLAR TYA AL-2S		1012
MYLAR TYD .010	Dupont	1012
MYLAR TY S 25GA AL-2S	Crink	1012
MYLAR TY S AL-2S		1012
MYLAR TY S		1012
MYLAR TY S .00025		1012
<u>Rods & Forms</u>		
TEFLON TFE	AMS 3651	1001
(1.75D, 1.12)		
TEFLON TFE	MIL-P-19468 GRA	1001
(.25D, .31D, .375D, .50D, 1.25D, 1.375D, 1.5D)		
REXOLITE 1422	L-P-516 TY E-2	1009
(.055D, 312D, .38D rod)		
VESPEL SP-1	Dupont	1015
VESPEL SP-3	Dupont	1015
EPON 826	Shell	-

TABLE III-K MISCELLANEOUS

		<u>File No.</u>
<u>Ceramic</u>		
THERMALOX 995	MIL-I-10	-
<u>Chemicals</u>		
MEK	TT-M-261	-
TOLUENE	TT-T-548	-
TETRA-ETCH	W. L. Gore	-
302 Cleaner	?	-
<u>Cord, braided, dacron</u>		
180DOR16	Western Fil	-
50 DOR16	Western Fil	-
<u>Cord, braided, nylon</u>		
200 DNR1B	Western Fil	-
<u>Fabric, dacron</u>		
5517 Veil	Jordon Marsh	-
<u>Fastener, hook and pile tape</u>		
SA0145 Pile	Velcro	1101
SA0145 Hook #65	Velcro	1101
SA0145 Hook #80	Velcro	1101
Widths used: 1/2", 1", 2"		
Colors #765 Sunset Orange		
#12 White		
MIL-F-21840C types:		
TYI 6.5 Mil hook (#65)		
TYII 8.0 Mil hook (#80)		

TABLE III-K MISCELLANEOUS

		<u>File No.</u>
<u>Fabric, glass cloth</u>		
MIL-P-25421 TY II C1 1		-
MIL-P-25421		
<u>Fabric, silk habutae</u>		
2.75 MM	A. J. Majors	-
<u>Glass</u>		
9010 (Beads) (PSE)	Corning Glass	-
<u>Shim Stock</u>		
.016/.002	Laminated Shim	-
<u>Tape, adhesive</u>		
465	3M	324
<u>Tape lacing</u>		
60L0F9A	Western Fil	1107
90L0F13A	Western Fil	1107
721H	Guidebrod	1111
50DOF17VF	Western Fil	-
<u>Tape, thermal control</u>		
G102700	Schjeldahl	1110
G103500	Schjeldahl	1110
<u>Thread, dacron</u>		
V-69	Premier	-
<u>Thread, anti-slip</u>		
Scotch tred MED	3M	-

TABLE III-L METALS USED IN ALSEP EQUIPMENT

Aluminum Alloys

<u>Designation</u>	<u>Sizes Used</u>	<u>Spec</u>
<u>Foil</u>		
Type 2	.0007" thk	MIL-A-148
<u>Sheet & Plate</u>		
2024-T3	.032, .125, .187, .50, 1.0	QQ-A-250/4
2024-T4	.062, .125, .187, 1.0	QQ-A-250/4
6061-T4	.032, .040, .050, .063	QQ-A-250/11
6061-T6	.016, .020, .025, .032, .040, .050, .063, .125, .190	QQ-A-250/11
6061-T651	.25, .375, .5, .75, 1.0, 1.5, 2.0	QQ-A-250/11
7075-0	.071	QQ-A-250/12
7075-T6	.012, .040, .093, .187	QQ-A-250/12
7075-7651	.25, .5, .75, 1.5, 1.63, 2.0, 2.25, 2.5, 3.0, 3.5	QQ-A-250/12
<u>Rod & Bar, Extruded</u>		
2024-T3		QQ-A-200/3
2024-T351	.062, .187, .312, .375D	"
2024-T3511		"
2024-T4		"
6061-T6		QQ-A-200/8
<u>Rod & Bar, Rolled & Drawn</u>		
2017-T4	.187D	QQ-A-225/5
2024-T3	.312, .375, .5, .875	QQ-A-225/6
2024-T351	1.0, 1.5SQ, 1.75, 2.0	
6061-T6	.125, .187, .25, .312, .375	QQ-A-225/8
6061-T651	.050, .625, .75, .875, 1.0 1.25, 1.5, 1.8	
7075-T6	.312	QQ-A-225/9
7075-T651	.5, 1.0, 1.25, 2.0, 2.5SQ, 4.0	

TABLE III-L (continued)

Aluminum Alloys (continued)

<u>Designation</u>	<u>Sizes Used</u>	<u>Spec</u>
<u>Tubing</u>		
2024-T3	.340D	WW-T-700/3
6061-T6	.250, .620, .625	WW-T-700/6
<u>Copper Alloys</u>		
<u>Brass Rod</u>		
CDA360	.25 Dia.	QQ-B-626 Comp 22 (360)
<u>Copper Rod</u>		
CDA110 Hard	.063, .25, .5 dia.	QQ-C-502
<u>Wire, copper, annealed, tinned</u>		
ASTM-B-33	AWG 16, 18, 22, 24, 26	QQ-W-343 Type S

Magnesium Alloys

<u>Rod & Bar</u>		
AZ31B-F	.375, .5, 1.25, 1.38 1.5, 2.25, 2.50D, 2.0 x 5.75	QQ-M-31
<u>Sheet & Plate</u>		
AZ31B-H24	.020, .040, .1, .31, .5, .62 1.12, 2.0	QQ-M-44
HM21A-T8	.30, .312, .375, .625, .70, .75, 1.0, 1.75	MIL-M-8917
HM21A-T81	-	MIL-M-8917
HK31A-H24	1.25	MIL-M-26075
<u>Solder</u>		
Type SN60 WRAP2		QQ-S-571
Type SN60 WRAP3		QQ-S-571
Type AG1.5 WRAP3		QQ-S-971

TABLE III-L (continued)

Steel, CRES, Sheet & Plate

<u>Designation</u>	<u>Sizes Used</u>	<u>Spec</u>
A1S1 301 .25H	.015 TK .010	MIL-S-5059 or QQ-S-766
A1S1 301 .5H	.012, .5 TK	MIL-S-5059 or QQ-S-766
A1S1 301 .75H	.048 TK	MIL-S-5059 or QQ-S-766
A1S1 301 FH	.016, .063 TK	MIL-S-5059 or QQ-S-766
A1S1 302 A		MIL-S-5059
A1S1 302 .25H		QQ-S-766
A1S1 302 .5H		QQ-S-766
A1S1 302 .75H		MIL-S-5059
A1S1 302 FH		MIL-S-5059

Steel, CRES, Rod & Bar

A1S1 303A RD	.125, .187, .25, .31 DIA	QQ-S-764
A1S1 303A HX	.375	QQ-S-764
A1S1 303B RD	.312, .5, .75 DIA	QQ-S-764
	.066	
A1S1 303B HX	.187, .438	QQ-S-764
A1S1 303 SE B		QQ-S-764
A1S1 302 ARD	.064, .080, .312, .5 DIA	QQ-S-763
A1S1 302 A	.375D	MIL-S-7720
A1S1 302 B		QQ-S-763
A1S1 302 B		MIL-S-7720
A1S1 304LA		QQ-S-763
A1S1 416 A		QQ-S-764
A1S1 440C RH 55-60		QQ-S-763

TABLE III-L (continued)

Steel, CRES, WireDesignationSizes UsedSpec

A1S1 302 A

28 GA

QQ-W-423

A1S1 302 FS

.016, .020, .038

QQ-W-423

A1S1 302 A

QQ-W-423

A1S1 302 B

QQ-W-423

A1S1 304 A

QQ-W-423

Titanium AlloysSheet & Plate

6AL4V

MIL-T-9046 Type III
Comp CRod & Bar

6AL4V

MIL-T-9047 Type III
Comp A

TABLE III-1 (continued)

Date	Year	Total Area
1944-45	45	1,000,000
1945-46	46	1,000,000
1946-47	47	1,000,000
1947-48	48	1,000,000
1948-49	49	1,000,000
1949-50	50	1,000,000
1950-51	51	1,000,000
1951-52	52	1,000,000
1952-53	53	1,000,000
1953-54	54	1,000,000
1954-55	55	1,000,000