GENERAL SPECIFICATION

VACUUM STABILITY REQUIREMENTS OF POLYMERIC MATERIAL FOR SPACECRAFT APPLICATION
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VACUUM STABILITY REQUIREMENTS OF POLYMERIC
MATERIAL FOR SPACECRAFT APPLICATION
FEBRUARY 24, 1984

The purpose of this addendum is to delete Revision "0" of "The
Preferred Materials for Vacuum Stability" from this document. This
data has been replaced by JSC 08962, "Compilation of VCM
Data of Non-Metallic Materials".

M. W. Steinfeld 2/24/84

H. W. Steinfeld
THE PURPOSE OF THIS ADDENDUM IS TO ALLOW ADDITIONAL METHODS OF APPROVING HARDWARE FOR FLIGHT, AND TO CORRECT A DOCUMENT REFERENCE.

PAGE 1, PARAGRAPH 4.0. IN THE LAST SENTENCE OF THE FIRST PARAGRAPH, DELETE, "(JSC 08962A)" AND ADD (JSC 08962) IN LIEU THEREOF.

PAGE 2, PARAGRAPH 4.0. ADD A NEW SUBPARAGRAPH "G" AS FOLLOWS:

G. A HARDWARE ITEM (I.E., COMPONENT, ASSEMBLY, ETC.) CONTAINING MATERIALS THAT FAIL THE VCM REQUIREMENT AND/OR HAVING UNIDENTIFIED MATERIALS, MAY BE VACUUM BAKED UNTIL IT HAS AN ACCEPTABLE OUTGASSING LEVEL. THE THERMAL VACUUM CHAMBER USED FOR VACUUM BAKING MUST HAVE INSTRUMENTATION SUCH AS QCM OR MASS SPECTROMETERS, TO DETERMINE WHEN THE HARDWARE ITEM IS ACCEPTABLE. THE THERMAL VACUUM CHAMBER CAPABILITY, BAKING PROCEDURE AND ACCEPTANCE CRITERIA MUST BE APPROVED BY JSC MATERIALS BRANCH (ESS). THE JSC WHITE SANDS TEST FACILITY (WSTF) HAS THE FACILITIES AND THE CAPABILITY TO PERFORM SUCH VACUUM BAKING.
GENERAL SPECIFICATION
VACUUM STABILITY REQUIREMENTS OF POLYMERIC MATERIAL FOR SPACECRAFT APPLICATION
SPECIFICATION

VACUUM STABILITY REQUIREMENTS OF POLYIMIDE MATERIAL FOR SPACECRAFT APPLICATION

Prepared by

Approved by

Approved by

This specification has been approved by the Johnson Spacecraft Center and is available for use by JSC and associated contractors.
# TABLE OF CONTENTS

**PARAGRAPH**

1. Purpose
2. Requirements
3. Scope
4. Selection and Verification
5. Implementation
6. Test Procedures
   6.1 Purpose
   6.2 Test Conditions
   6.3 Criteria of Acceptability
   6.4 Test Equipment
   6.5 Sample Preparation
      6.5.1 Specimen Size
      6.5.2 Solid Materials
      6.5.3 Coatings
      6.5.4 Solvent Containing Materials
      6.5.5 Tapes
      6.5.6 Liquids
      6.5.7 Cure Procedures
   6.6 TML and VCM Measurement
      6.6.1 Initial Mass Determination
      6.6.2 Specimen Insertion
      6.6.3 Pressure
      6.6.4 Application of Heat
      6.6.5 Specimen Removal
      6.6.6 Final Mass Determination
1.0 PURPOSE

The purpose of this document is to establish outgassing requirements and test guidelines for polymeric materials used in the space thermal/vacuum environment around sensitive optical or thermal control surfaces.

2.0 REQUIREMENTS

The control and verification of material outgassing to the guidelines of this document are based on the following requirements:

a. The polymeric materials used in the thermal/vacuum environment shall not contaminate the sensitive surfaces within an assembly.

b. The polymeric materials used in any application shall not affect the sensitive surfaces of any adjacent equipment.

The material shall have a maximum total mass loss (TML) of 1.0 percent of the original specimen mass and a maximum volatile condensable material (VCM) content of 0.1 percent of the original specimen mass when tested in accordance with the test procedure in paragraph 6.

3.0 SCOPE

The scope of this document covers the control of polymeric materials used near or adjacent to optical or thermal control surfaces that are exposed to the thermal/vacuum environment of space. This document establishes the requirements and defines the test method to evaluate polymeric materials used in the vicinity of these surfaces in space applications.

4.0 SELECTION AND VERIFICATION REQUIREMENTS

Use of polymeric material near optical or thermal control surfaces shall be restricted to those materials which have a maximum volatile condensable material content of 0.1 percent and a total mass loss of 1.0 percent or less when tested in accordance with the test method described in paragraph 6. NASA JSC will provide to the contractor(s) a list of approved materials for use in the thermal/vacuum environment upon request. NASA JSC also maintains a complete file (JSC 08962A) of all materials tested.

The use of materials that have been tested but failed the requirements of this specification may be allowed if the contractor can provide rationale for their use that is approved
by NASA JSC. The following are examples of some considerations for use as rationale for a material that has failed the VCM or mass loss requirements:

a. The material may be brought within vacuum stability limits by vacuum baking for a specified period of time (usually 48 hours at maximum use temperature at a pressure of less than 10⁻⁶ torr).

b. If material cannot be vacuum baked and its exposed area is 13 cm² or less, and the material is out of line-of-sight of payload surfaces and other contamination critical surfaces, total mass loss may be up to 3.0% and volatile condensable material up to 1.0%.

c. If total mass loss is greater than 1.0% and VCM ≤ 0.1% and it can be shown that contributions to TNL greater than 1.0% are due to sorbed water vapor, the material may be used.

d. The material is the only satisfactory choice from a functionality viewpoint for the particular application.

e. The total mass of materials selected under a and d above and used in any given compartment will be monitored and reviewed periodically to insure that compartmental peculiar problems do not evolve.

f. Materials previously tested and found acceptable per MSFC 50H02452 may be used.

5.0 IMPLEMENTATION

The contractor shall provide for NASA JSC approval, a list of all polymeric materials selected for use around sensitive surfaces or in the same defined compartment as optical or thermal control surfaces. The following information is required.

a. Manufacturer's trade name

b. Manufacturer of the material

c. Thermal vacuum stability (VCM and TNL) data

d. Rationale for use of material that failed the requirements of paragraph 4.0 and a report of the weight and surface area used.

e. Materials that have not been tested should be submitted to JSC/255 for testing utilizing JSC form 20358.
6.0 TEST PROCEDURES

6.1 PURPOSE. The purpose of this test is to measure total mass loss and volatile condensable material content of polymeric materials under controlled laboratory conditions. The following test procedure outlined below was extracted from NASA White Sands Test Facility Operational Checkout Procedure 200-013 entitled "Determination of Weight Loss and Volatile Condensable Components of Polymeric Material", June 1974. The use of any other test equipment and/or procedure must be approved by NASA-JSC.

6.2 TEST CONDITIONS. The test on polymeric materials shall be conducted under the following conditions:

- **Pressure**: 10⁻⁶ torr or less
- **Temperature of specimen**: 125°C ± 10°C
- **Temperature of condensable plates**: 25°C ± 10°C
- **Vacuum exposure time**: 24 hours

6.3 CRITERIA OF ACCEPTABILITY. The material shall have a volatile condensable material content of less than 0.1 percent of the original mass of the specimen. The total mass loss of the material shall not exceed 1.0 percent of the original mass of the specimen.

6.4 TEST EQUIPMENT. All laboratory test instrumentation shall be in current calibration and shall reflect appropriate documentation from the applicable calibration laboratory. The test equipment shall consist of the following:

- **a.** A vacuum system capable of maintaining 10⁻⁶ torr for a period of 24 hours.
- **b.** Specimen holder made of stainless steel or aluminum. The specimen holder shall be nominally 3.8 cm long and 1.25 cm in diameter.
- **c.** Collector plate shall be made of a highly polished stable metal surface. The collector plate shall be 3.8 cm in diameter.
- **d.** The test apparatus shall be made of copper. The apparatus shall be such that multiple specimen holders and collector plates can be accommodated at one time. The sample section shall be capable of maintaining the samples at 125 ± 10°C and maintaining the collector plates at 25 ± 10°C.
6.5 SAMPLE PREPARATION.

6.5.1 Specimen Size. Materials to be tested shall be prepared in 100 to 300 milligram specimen sizes and placed in stainless steel or aluminum holders after preparation as specified below.

6.5.2 Solid Materials. Specimens shall be cut into small pieces having 0.15 cm maximum dimension. Samples shall be placed in a desiccator after preparation and remain there until the samples are placed in the test chamber.

6.5.3 Coatings. Materials that are normally used as coatings shall be applied to aluminum foil or Teflon sheet and prepared as noted in paragraph 6.5.2.

6.5.4 Solvent Containing Materials. Prior to testing solvent containing materials, such as inks and paints or room temperature cured materials, the sample shall be preconditioned for 24 hours at 65 ± 1°C in an air circulating oven to simulate the material exposure up to the time of launch.

6.5.5 Tapes. Tapes shall be tested in the as-applied configuration using aluminum foil or Teflon sheet as an application substrate and prepared in accordance with paragraph 6.5.2.

6.5.6 Liquids. Liquids shall be tested in the as-received state.

6.5.7 Cure Procedures. All material shall be cured or applied in accordance with the manufacturer's procedures or the applicable contractor process specification prior to test.

6.6 TML AND VCM MEASUREMENT.

6.6.1 Initial Mass Determination. The VCM collector plate and specimen holder mass shall be measured. Specimens shall be tested and their mass measured after being desiccated for 24 hours.

6.6.2 Specimen Insertion. The weighed samples shall be placed in the compartments of the heating block and the VCM collector plates shall be fastened to the cooling block of the apparatus.

6.6.3 Pressure. The system shall be evacuated and held at a maximum pressure of 10^-6 torr.
6.6.4 Application of Heat. When the unit has reached $10^{-5}$ torr, the specimens shall be heated to $125^\circ C \pm 1^\circ C$, and maintained for 24 hours. The VCM collector plates shall be maintained at $25^\circ C \pm 1^\circ C$ during the test.

6.6.5 Specimen Removal. The specimens in their holders and the VCM collector plates shall be removed from the apparatus and immediately placed in a desiccator.

6.6.6 Final Mass Determination. Measure the mass of the specimens and the collector plates as soon as possible after removal from the VCM apparatus, and record.
GENERAL SPECIFICATION
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MAY 16, 1983

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# TABLE OF CONTENTS

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1. Purpose
2. Requirements
3. Scope
4. Selection and Verification
5. Implementation
6. Test Procedures
   6.1 Purpose
   6.2 Test Conditions
   6.3 Criteria of Acceptability
   6.4 Test Equipment
   6.5 Sample Preparation
      6.5.1 Specimen Size
      6.5.2 Solid Materials
      6.5.3 Coatings
      6.5.4 Solvent Containing Materials
      6.5.5 Tapes
      6.5.6 Liquids
      6.5.7 Cure Procedures
   6.6 TML and VCM Measurement
      6.6.1 Initial Mass Determination
      6.6.2 Specimen Insertion
      6.6.3 Pressure
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d. The material is the only satisfactory choice from a functionality viewpoint for the particular application.

e. The total mass of materials selected under 4b and 4d above and used in any given compartment will be monitored and reviewed periodically to insure that compartmental peculiar problems do not evolve.

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The contractor shall provide for NASA JSC approval, a list of all polymeric materials selected for use around sensitive surfaces or in the same defined compartment as optical or thermal control surfaces. The following information is required.

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6.6.6 **Final Mass Determination.** Measure the mass of the specimens and the collector plates as soon as possible after removal from the VCM apparatus, and record.
PREFERRED MATERIALS FOR VACUUM STABILITY

REQUIREMENTS FOR APOLLO SPACECRAFT APPLICATIONS

APPROVED BY: J. V. Cramer
Systems Engineering Division
NASA/MSC
INDEX LISTING OF PREFERRED MATERIALS

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesives, Structural</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Adhesives, Non-structural</td>
<td>4</td>
</tr>
<tr>
<td>Laminates</td>
<td>5 - 6</td>
</tr>
<tr>
<td>Circuit Boards</td>
<td>7</td>
</tr>
<tr>
<td>Conformal Coatings</td>
<td>8</td>
</tr>
<tr>
<td>Lubricants, Grease</td>
<td>9</td>
</tr>
<tr>
<td>Marking Materials</td>
<td>10</td>
</tr>
<tr>
<td>Microwave Materials</td>
<td>11</td>
</tr>
<tr>
<td>Encapsulants, Foam</td>
<td>12</td>
</tr>
<tr>
<td>Encapsulants, Solid</td>
<td>13 - 15</td>
</tr>
<tr>
<td>Fabrics</td>
<td>16</td>
</tr>
<tr>
<td>Fabrics, Coated</td>
<td>17</td>
</tr>
<tr>
<td>Films and Sheets</td>
<td>18 - 20</td>
</tr>
<tr>
<td>Fluids</td>
<td>21</td>
</tr>
<tr>
<td>Foams</td>
<td>22</td>
</tr>
<tr>
<td>Honeycomb Core</td>
<td>23</td>
</tr>
</tbody>
</table>

*These materials meet the intent of the Specification SP-R-0022, "Vacuum Stability Requirements of Polymeric Materials for Spacecraft Applications."
# INDEX LISTING OF PREFERRED MATERIALS

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.0 Elastomers</td>
<td>24 - 26</td>
</tr>
<tr>
<td>18.0 Lubricants, Solid Film</td>
<td>27</td>
</tr>
<tr>
<td>19.0 Molding Compounds and Molded Products</td>
<td>28 - 30</td>
</tr>
<tr>
<td>20.0 Sleeving</td>
<td>31</td>
</tr>
<tr>
<td>21.0 Shrinkable Materials</td>
<td>32</td>
</tr>
<tr>
<td>22.0 Tapes</td>
<td>33</td>
</tr>
<tr>
<td>23.0 Temperature Control Coatings</td>
<td>34</td>
</tr>
<tr>
<td>24.0 Tie Cord (Lacing Tape)</td>
<td>35</td>
</tr>
<tr>
<td>25.0 Wire Enamels</td>
<td>36</td>
</tr>
<tr>
<td>26.0 Miscellaneous</td>
<td>37</td>
</tr>
</tbody>
</table>
## 1.0 ADHESIVES, STRUCTURAL

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (Hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epibond</td>
<td>FPL</td>
<td></td>
<td>0.46</td>
<td>0.02</td>
<td>1.5 at 150</td>
</tr>
<tr>
<td>Metlbond 328</td>
<td>WCN</td>
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<td>0.12</td>
<td>0.10</td>
<td>90 min. at 329</td>
</tr>
<tr>
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<td>WCN</td>
<td></td>
<td>0.26</td>
<td>0.08</td>
<td>90 min. at 329</td>
</tr>
<tr>
<td>Ram Requirement (4%) in Epon (96%)</td>
<td>RAM</td>
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</tr>
<tr>
<td>PLV-101</td>
<td>PEL</td>
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<tr>
<td>PLV1006-A</td>
<td>PEL</td>
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<tr>
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<td>PEL</td>
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<tr>
<td>PLV30001</td>
<td>PEL</td>
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<td>No further cure necessary</td>
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<tr>
<td>PLV3016-B</td>
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<tr>
<td>PLV5010-B</td>
<td>PEL</td>
<td></td>
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</tr>
<tr>
<td>Eccobond Solder 56C/9</td>
<td>EMC</td>
<td></td>
<td>0.30</td>
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<td>10 hrs. at 122</td>
</tr>
<tr>
<td>Eccobond Solder 57C/9</td>
<td>EMC</td>
<td></td>
<td>0.67</td>
<td>0.06</td>
<td>16 hrs. at 122</td>
</tr>
<tr>
<td>Eccobond 104 A/B</td>
<td>EMC</td>
<td></td>
<td>0.30</td>
<td>0.24</td>
<td>3 hrs. at 302</td>
</tr>
</tbody>
</table>

**ARFM** - As received from manufacturer

*See Index of Manufacturers
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy bond 59/9</td>
<td>EMC</td>
<td>BS502501</td>
<td>0.17</td>
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</tr>
<tr>
<td>Epon 828/A</td>
<td>SCA</td>
<td>BS502620</td>
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<td>0.06</td>
<td>3 at 200</td>
<td>8 PHR curing agent A Resin Matrix</td>
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<tr>
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<td>SCP</td>
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<td>0.02</td>
<td>2 at 200</td>
<td>25 PHR curing agent II</td>
</tr>
<tr>
<td>Epon 900 B-1</td>
<td>SCA</td>
<td>BS502545</td>
<td>1.28</td>
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<td>16 at 125</td>
<td>23 PHR curing agent B-1</td>
</tr>
<tr>
<td>Epon 900 B-3</td>
<td>SCA</td>
<td>24CF-4013-0017</td>
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<td>0.5 at 240 + 1.5 at 350</td>
<td>11 PHR curing agent B-3</td>
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<td>Epon 913 A/B</td>
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<td>BS502530</td>
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<td>0.05</td>
<td>3 at 180</td>
<td>100 parts A to 12 parts B Catalyzed as received</td>
</tr>
<tr>
<td>Epon 917</td>
<td>SCA</td>
<td>BS504189</td>
<td>0.17</td>
<td>0.03</td>
<td>0.25 at 350</td>
<td>100 parts A to part B</td>
</tr>
<tr>
<td>Epon 931 A/B</td>
<td>SCA</td>
<td>BS50397</td>
<td>0.13</td>
<td>0.01</td>
<td>1 at 125</td>
<td>100 parts A to part B</td>
</tr>
<tr>
<td>Epon 93h A/B</td>
<td>SCA</td>
<td>BS502364</td>
<td>0.17</td>
<td>0.01</td>
<td>16 at 125</td>
<td>100 parts A to 33 parts 24MM:2</td>
</tr>
<tr>
<td>Epon 950 A/B</td>
<td>SCA</td>
<td>BS502596</td>
<td>0.38</td>
<td>0.00</td>
<td>1 at 150</td>
<td>100 parts A to 98 parts 5</td>
</tr>
<tr>
<td>Epon 950 B</td>
<td>MCP</td>
<td>BS502532</td>
<td>0.15</td>
<td>0.01</td>
<td>1 at 350</td>
<td>Modified epoxy unsupported film</td>
</tr>
<tr>
<td>Epon 950 D-1</td>
<td>SCP</td>
<td>BS502534</td>
<td>0.28</td>
<td>0.02</td>
<td>1 at 150</td>
<td>On boron filaments 2% of weight</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BS502536</td>
<td></td>
<td></td>
<td>50-50 1 at 180</td>
<td>Resin Matrix</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BS502538</td>
<td></td>
<td></td>
<td>90 MNA-180MA 4 at 350</td>
<td></td>
</tr>
</tbody>
</table>

*See Index of Manufacturers
### 1.0 ADHESIVES, STRUCTURAL

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armstrong A-2-A</td>
<td>APC</td>
<td></td>
<td>0.44</td>
<td>0.75 hrs. at 165</td>
<td>Resin 100% Catalyst 4%</td>
</tr>
<tr>
<td>Armstrong A-2/E</td>
<td>APC</td>
<td></td>
<td>0.26</td>
<td>45 min. at 200</td>
<td>100 parts A-2 6 parts E</td>
</tr>
<tr>
<td>Armstrong A-12A</td>
<td>APC</td>
<td></td>
<td>0.85</td>
<td>2 hrs. at 185 plus 48 hrs. at 260 and 10^-5 TORR</td>
<td>JPL Sample</td>
</tr>
<tr>
<td>HT-424</td>
<td>ACB</td>
<td></td>
<td>0.18</td>
<td>30 hrs. at 330°F</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Epon 828/2</td>
<td>SCA</td>
<td>BS502621</td>
<td>0.42</td>
<td>2 at 200 + 2 at 275</td>
<td>20 PHR curing agent 2</td>
</tr>
</tbody>
</table>

**ARFM - As received from manufacturer
*See Index of Manufacturers
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC-2320</td>
<td>MMA</td>
<td>B8506555</td>
<td>Total Weight Loss (%)</td>
<td>VCM(%)</td>
<td>Air dry: 0.5 at 100 Force dry: 0.5 at 150 Structural adhesive primer</td>
</tr>
<tr>
<td>Eccobond 56 C/9</td>
<td>EMC</td>
<td>B8502539</td>
<td>0.30</td>
<td>0.03</td>
<td>3.5 at 125 or 16 at 75 2.5 Hr catalyst #9. Total cure of 16 hours at a minimum of 125°F is required before flight</td>
</tr>
<tr>
<td>Eccobond 57C A/B</td>
<td>EMC</td>
<td>B8502572</td>
<td>0.67</td>
<td>0.06</td>
<td>16 at 125 1 part A to 1 part B</td>
</tr>
<tr>
<td>Epoxy 828/ Versamid 125</td>
<td>SCP/GMC</td>
<td>B8502506/B8502507</td>
<td>1.5 at 75 + 3.0 at 130 1 to 1 mixing ratio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecosorb HF500F116</td>
<td>EMC</td>
<td></td>
<td>0.30</td>
<td>0.04</td>
<td>No further cure necessary ARFM**</td>
</tr>
<tr>
<td>Ecosorb MF116</td>
<td>EMC</td>
<td></td>
<td>0.20</td>
<td>0.02</td>
<td>No further cure necessary ARFM**</td>
</tr>
<tr>
<td>Epiphen ER-825A</td>
<td>EMC</td>
<td></td>
<td>0.84</td>
<td>0.01</td>
<td>100R25A/12P MOD T/40P filler/16P 825A converted 48 hr./170</td>
</tr>
<tr>
<td>BC-2216 B/A</td>
<td>MMA</td>
<td></td>
<td>0.82</td>
<td>0.06</td>
<td>140P A/100PB 2 hr/189 ARFM**</td>
</tr>
<tr>
<td>BR-907</td>
<td>ACB</td>
<td></td>
<td>0.84</td>
<td>0.02</td>
<td>1 hr. at 350°F</td>
</tr>
</tbody>
</table>

**ARFM - As received from manufacturer
*See Index of Manufacturers
<table>
<thead>
<tr>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Total Weight Loss %</th>
<th>Cure Cycle (hours at 181°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daryl H-17511</td>
<td>B502668</td>
<td>0.04</td>
<td>No further cure necessary</td>
<td></td>
</tr>
<tr>
<td>Micarta H-0417</td>
<td>B502502</td>
<td>0.00</td>
<td>No further cure necessary</td>
<td></td>
</tr>
<tr>
<td>Micarta H-5834</td>
<td>B502502</td>
<td>0.03</td>
<td>No further cure necessary</td>
<td></td>
</tr>
<tr>
<td>Micarta H-0417</td>
<td>B502598</td>
<td>0.12</td>
<td>No further cure necessary</td>
<td></td>
</tr>
<tr>
<td>Micarta H-0417</td>
<td>B502598</td>
<td>0.04</td>
<td>No further cure necessary</td>
<td></td>
</tr>
<tr>
<td>Micarta H-0417</td>
<td>B502500</td>
<td>0.16</td>
<td>No further cure necessary</td>
<td></td>
</tr>
<tr>
<td>Micarta 2001-01-2</td>
<td>B502500</td>
<td>0.06</td>
<td>No further cure necessary</td>
<td></td>
</tr>
<tr>
<td>Nylon 1106L</td>
<td>ACH</td>
<td>0.39</td>
<td>No further cure necessary</td>
<td></td>
</tr>
<tr>
<td>Brial 1914</td>
<td>ACM</td>
<td>0.55</td>
<td>No further cure necessary</td>
<td></td>
</tr>
<tr>
<td>Micarta H-17690</td>
<td>ACM</td>
<td>0.07</td>
<td>No further cure necessary</td>
<td></td>
</tr>
<tr>
<td>Micoplyy 281</td>
<td>ACM</td>
<td>0.06</td>
<td>0.5 hr. at 300°F</td>
<td></td>
</tr>
<tr>
<td>Scotchply XP-218</td>
<td>MME</td>
<td>0.01</td>
<td>Unidirectional fiber glass/ epoxy laminate</td>
<td></td>
</tr>
</tbody>
</table>
## 3.0 - LAMINATES

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotchply 279</td>
<td>MMA</td>
<td></td>
<td>0.96</td>
<td>0.06</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Phenolic Glass Fiber</td>
<td>GBC</td>
<td></td>
<td>0.53</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>HY-E-1001</td>
<td>FIB</td>
<td></td>
<td>0.53</td>
<td>0.04</td>
<td>1 hr. at 270°</td>
<td>Graphite Pregreg. 42.17% rosin by Wt.</td>
</tr>
<tr>
<td>HY-E-1002</td>
<td>FIB</td>
<td></td>
<td>0.32</td>
<td>0.04</td>
<td>1 hr. at 180°</td>
<td>Graphite Pregreg. 38.05% by Wt.</td>
</tr>
</tbody>
</table>

**ARFM - As received from manufacturer**

*See Index of Manufacturers*
## 4.0 - CIRCUIT BOARDS***

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at 6°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF-95</td>
<td>ACF</td>
<td>BS502672</td>
<td>0.48</td>
<td>0.05</td>
<td>No further cure necessary</td>
<td>NEMA FR-5 - Procure to MIL-P-13949C, Type GH</td>
</tr>
<tr>
<td><strong>Micaplay</strong></td>
<td>TMC</td>
<td>BS592597 (ST 10034)</td>
<td>0.48</td>
<td>0.05</td>
<td>No further cure necessary</td>
<td>MIL-P-13949D, Type GE Epoxy-Glass Fabric Laminate, Copper-Clad</td>
</tr>
<tr>
<td>EG-2752-T</td>
<td>TMC</td>
<td>BS502672</td>
<td>0.48</td>
<td>0.05</td>
<td>No further cure necessary</td>
<td>NEMA FR-1-5 - Procure to MIL-P-13949-C, Type GH</td>
</tr>
<tr>
<td>Micaplay EG-824-T</td>
<td>TMC</td>
<td>BS502672</td>
<td>0.40</td>
<td>0.05</td>
<td>No further cure necessary</td>
<td>NEMA FR-4 - Procure to MIL-P-13949C, Type GF</td>
</tr>
<tr>
<td>Micarta 65425</td>
<td>WBM</td>
<td>BS502672</td>
<td>0.43</td>
<td>0.00</td>
<td>No further cure necessary</td>
<td>Stripped of copper - ARFM*</td>
</tr>
<tr>
<td>EG-2028</td>
<td>FLC</td>
<td>BS502672</td>
<td>0.44</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>Stripped of copper - ARFM*</td>
</tr>
<tr>
<td>Type FL-GE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EG-2826FR</td>
<td>FLC</td>
<td>BS502672</td>
<td>0.33</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM****</td>
</tr>
<tr>
<td>Type FL-GF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circuit Board</td>
<td>MCP</td>
<td>BS502672</td>
<td>0.50</td>
<td>0.00</td>
<td>No further cure necessary</td>
<td>ARFM****</td>
</tr>
<tr>
<td>Micaply EG-899T</td>
<td>TMC</td>
<td>BS502672</td>
<td>0.29</td>
<td>0.05</td>
<td>No further cure necessary</td>
<td>ARFM****</td>
</tr>
<tr>
<td>West Howe 65428</td>
<td>WEI</td>
<td>BS502672</td>
<td>0.26</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM****</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers

**Material used in electronic packaging applications

***See laminates for unclad products

****ARFM - As received from manufacturer
### 5.0 - CONFORMAL COATINGS

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doryl B-109-4</td>
<td>WEM</td>
<td>BS502623</td>
<td>0.30</td>
<td>0.15</td>
<td>2 at 300 + 2 at 480</td>
<td>No catalyst required</td>
</tr>
<tr>
<td>Solithane 113/300</td>
<td>TCC</td>
<td>ZME-1061-0004 Type I</td>
<td>1.22</td>
<td>0.03</td>
<td>2 at 75 + either 3 at 150 or 5 at 130</td>
<td>Contains Fluorescent dye 100 parts 113 - 74 parts 300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2ME-1061-0004 Type II</td>
<td>0.78</td>
<td>0.03</td>
<td>2 at 75 + either 3 at 150 or 5 at 130</td>
<td>100 parts 113 74 parts 300</td>
</tr>
<tr>
<td>Styca 1217/9</td>
<td>EMC</td>
<td>BS502627</td>
<td>1.74</td>
<td>0.14</td>
<td>15 at 125</td>
<td>13 PHR catalyst #9</td>
</tr>
<tr>
<td>Solithane (113/300 with 3% Cabosil)</td>
<td>TCC</td>
<td>BS502627</td>
<td>0.69</td>
<td>0.10</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>V377-9</td>
<td>PSC</td>
<td>BS502627</td>
<td>0.33</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers
**ARFM = As received from manufacturer
### 6.0 - LUBRICANTS, GREASE

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at 70°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apiezon L/ Molykote Microsize Powder (JPL formulation)</td>
<td>SOC/ DCC</td>
<td>BS502561</td>
<td></td>
<td></td>
<td>No further cure necessary</td>
<td>Thread lubricant, Apiezon L Grease and MoS₂ Powder</td>
</tr>
<tr>
<td>Apiezon L</td>
<td>SOS</td>
<td>BS502618</td>
<td>0.06</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>G 683</td>
<td>GES</td>
<td>BS504191</td>
<td>0.62</td>
<td>0.07</td>
<td>No further cure necessary</td>
<td>Vacuum grease</td>
</tr>
<tr>
<td>DC 20-057</td>
<td>DCC</td>
<td></td>
<td>0.31</td>
<td>0.07</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers, page

**ARFM - As received from manufacturer
# 7.0 - MARKING MATERIALS

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 73X Black</td>
<td>IND</td>
<td>BS50E643</td>
<td>62.2</td>
<td>1 at 75</td>
<td>Opaque black</td>
</tr>
<tr>
<td><strong>Cat-I-Ink</strong></td>
<td>WPP</td>
<td>BS50E674</td>
<td>26.2%</td>
<td>1 at 150 or 3 at 75</td>
<td></td>
</tr>
</tbody>
</table>

*See Index of Manufacturers

**Material used in electronic packaging applications**
## 8.0 - MICROWAVE MATERIALS

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at 60°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rexolite 1422</td>
<td>ABC</td>
<td>RS502535</td>
<td>0.18</td>
<td>0.01</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>Rexolite 2200</td>
<td>ABC</td>
<td>RS502536</td>
<td>1.37</td>
<td>0.05</td>
<td>No further cure necessary</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers.*
### 9.0 - ENCAPSULANTS, FOAM

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stycast 1090/9</td>
<td>EMC</td>
<td>BS502565</td>
<td>0.31 0.07</td>
<td>16 at 125</td>
<td>9 MHR catalyst #9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cellular filled foam</td>
</tr>
<tr>
<td>Stycast 1095/11</td>
<td>EMC</td>
<td>BS502629</td>
<td>0.01 0.01</td>
<td>24 hrs. at 260</td>
<td>25 MHR catalyst #17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cellular filled foam</td>
</tr>
<tr>
<td>Stycast 1090/11</td>
<td>EMC</td>
<td>BS502526</td>
<td>0.63 0.11</td>
<td>12 at 140 + 3 at 180</td>
<td>12 MHR catalyst #11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cellular filled foam</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers

**Material used in electronic packaging applications
### 10.0 - ENCAPSULANTS, SOLID

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM (%)</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxylite 295-1 A/B</td>
<td>EPC</td>
<td></td>
<td>1.27</td>
<td>0.17</td>
<td>8 at 235</td>
<td>1 part A to 1 part B</td>
</tr>
<tr>
<td>Hyson C7-4248</td>
<td>HYS</td>
<td>BS502669</td>
<td>0.66</td>
<td>0.23</td>
<td>2 at 250 + 16 at 300</td>
<td>Catalyzed as received</td>
</tr>
<tr>
<td>Warase 655/553</td>
<td>MRC</td>
<td>BS504195</td>
<td>0.59</td>
<td>0.00</td>
<td>16 at 180</td>
<td>20 PHR hardener 553</td>
</tr>
<tr>
<td>Scotchcast 260</td>
<td>MME</td>
<td>BS502683</td>
<td>0.52</td>
<td>0.03</td>
<td>0.5 at 300</td>
<td>Catalyzed as received</td>
</tr>
<tr>
<td>**Scotchcast 281 A/B</td>
<td>MME</td>
<td>BS502547</td>
<td>0.36</td>
<td>0.05</td>
<td>20 at 167</td>
<td>100 parts A to 150 parts B</td>
</tr>
<tr>
<td>Stycast 2762/17</td>
<td>EMC</td>
<td>BS502661</td>
<td></td>
<td></td>
<td>3 at 200 + 3 at 300</td>
<td>10 PHR catalyst #17</td>
</tr>
<tr>
<td>Stycast 2850 FT/9</td>
<td>EMC</td>
<td>BS502660</td>
<td>0.34</td>
<td>0.04</td>
<td>16 at 125</td>
<td>3 PHR catalyst #9</td>
</tr>
<tr>
<td>Stycast 2862 A/B</td>
<td>EMC</td>
<td>BS502659</td>
<td>0.32</td>
<td>0.04</td>
<td>3 at 300</td>
<td>100 parts A to 100 parts B</td>
</tr>
<tr>
<td>Stycast 3050/11</td>
<td>EMC</td>
<td>BS502658</td>
<td>0.68</td>
<td>0.06</td>
<td>16 at 170</td>
<td>9.5 PHR catalyst #11</td>
</tr>
<tr>
<td>DC-77-002</td>
<td>DOC</td>
<td>BS502652</td>
<td>0.39</td>
<td>0.06</td>
<td>4 hrs. at 149</td>
<td>10 parts Resin, 1 part Catalyst</td>
</tr>
<tr>
<td>DC-93-500</td>
<td>DCC</td>
<td></td>
<td>0.22</td>
<td>0.02</td>
<td>172 hrs. RT</td>
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<tr>
<td>Stycast TRM-4</td>
<td>EMC</td>
<td>BS502664</td>
<td>0.23</td>
<td>0.06</td>
<td>16 hrs. at 225</td>
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</tr>
<tr>
<td>Sylgard 184</td>
<td>DCC</td>
<td>BS502665</td>
<td>0.24</td>
<td>0.09</td>
<td>16 hrs. at RT</td>
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</tr>
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*See Index of Manufacturers

**Material used in electronic packaging applications
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at 80°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furine Type 403</td>
<td>FPI</td>
<td></td>
<td>0.43</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Hysol C-94188</td>
<td>HYS</td>
<td></td>
<td>0.96</td>
<td>0.03</td>
<td>1 at RT</td>
<td>Dye potting compound</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 at 120</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 at 340</td>
<td></td>
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<tr>
<td>RTV11/Silver T-12</td>
<td>GES</td>
<td></td>
<td>0.08</td>
<td>0.01</td>
<td>24 hrs. at RT</td>
<td>100 parts Resin 2 parts Catalyst</td>
</tr>
<tr>
<td>RTV11/T-12</td>
<td>GES</td>
<td></td>
<td>0.33</td>
<td>0.10</td>
<td>24 hrs. at RT</td>
<td>100 parts Resin 2 parts Catalyst</td>
</tr>
<tr>
<td>RTV60</td>
<td>GES</td>
<td></td>
<td>0.17</td>
<td>0.05</td>
<td>24 hrs. at RT</td>
<td>100 parts Resin 2 parts Catalyst</td>
</tr>
<tr>
<td>RTV566 A/B</td>
<td>GES</td>
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<td>0.07</td>
<td>0.04</td>
<td>168 hrs. at RT</td>
<td>Phenyl-Methyl</td>
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<tr>
<td>RTV566 A/B</td>
<td>GES</td>
<td></td>
<td>0.23</td>
<td>0.03</td>
<td>168 hrs. at RT</td>
<td>Dimethyl</td>
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<tr>
<td>Marasett 655/555</td>
<td>MRC</td>
<td></td>
<td>0.41</td>
<td>0.00</td>
<td>16 hrs. at 82°C</td>
<td>100 parts 655 20 parts 553</td>
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<tr>
<td>Rigidite 5505</td>
<td>WCM</td>
<td></td>
<td>0.46</td>
<td>0.01</td>
<td>0.5 hr. at 200</td>
<td>Boron/Epoxy</td>
</tr>
<tr>
<td>Stycast 1263/31</td>
<td>EMC</td>
<td></td>
<td>0.12</td>
<td>0.01</td>
<td>16 hrs. at 225 + 24 hrs. at 300</td>
<td>100 parts 1263 3 parts 31</td>
</tr>
<tr>
<td>Stycast 2850/90</td>
<td>EMC</td>
<td></td>
<td>0.34</td>
<td>0.04</td>
<td>16 hrs. at 77</td>
<td>100 parts 2850 3.5 parts 9</td>
</tr>
<tr>
<td>Stycast 2862 A/B</td>
<td>EMC</td>
<td></td>
<td>0.32</td>
<td>0.04</td>
<td>16 hrs. at 260</td>
<td>100 parts A 100 parts B</td>
</tr>
</tbody>
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*See Index of Manufacturers
**A: receive from manufacturer
### 10.0 - ENCAPSULANTS, SOLID

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at 167°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stycast 3050/11</td>
<td>EMC</td>
<td></td>
<td>0.68</td>
<td>0.06</td>
<td>16 hrs. at 167°F</td>
<td>100 parts 3050</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.5 parts 11</td>
</tr>
<tr>
<td>Stycast 2850 GT/11</td>
<td>EMC</td>
<td></td>
<td>0.85</td>
<td>0.03</td>
<td>16 hrs. at 167°F</td>
<td>4 to 5% Catalyst by Weight</td>
</tr>
<tr>
<td>Scotchcast 260</td>
<td>MME</td>
<td></td>
<td>0.52</td>
<td>0.03</td>
<td>0.5 hr. at 300</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Scotchcast 281 A/B</td>
<td>MME</td>
<td></td>
<td>0.36</td>
<td>0.05</td>
<td>20 hrs. at 150</td>
<td>100 parts A</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>150 parts B</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers

**ARFM - As received from manufacturer**
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at 0°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass Fabric (Volan &quot;A&quot; finish)</td>
<td>**</td>
<td>MIL-G-9084</td>
<td></td>
<td></td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>Style 108 Glass Fabric (Volan &quot;A&quot; finish)</td>
<td>THO</td>
<td>BS50255(</td>
<td></td>
<td></td>
<td>No further cure necessary</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers
**As qualified by MIL-C-9084
## 12.0 - FABRICS, COATED

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armalon 98-101</td>
<td>DUF</td>
<td>BS502581</td>
<td>0.48</td>
<td>0.02</td>
<td>No further cure necessary</td>
<td>Teflon TFE on Nomex Fabric</td>
</tr>
<tr>
<td>PYRE-M.L. coated glass fabric</td>
<td>DUF</td>
<td>BS502567</td>
<td>0.50</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>Polyimide Resin</td>
</tr>
<tr>
<td>TB5 PTFE</td>
<td>MKI</td>
<td>BS502583</td>
<td>0.05</td>
<td>0.05</td>
<td>No further cure necessary</td>
<td>Teflon TFE on glass fabric</td>
</tr>
<tr>
<td>Fairprene 80-070</td>
<td>DUF</td>
<td></td>
<td>0.30</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Fairprene 80-080</td>
<td>DUF</td>
<td></td>
<td>0.30</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers

**ARFM - As received from manufacturer
### 13.0 - FILMS AND SHEETS

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (Hours at 69°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teflon FEP 500A</td>
<td>DJP</td>
<td></td>
<td>0.05</td>
<td>0.05</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Teflon FEP 500C</td>
<td>DJP</td>
<td></td>
<td>0.02</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Tedlar A-130MN</td>
<td>DUM</td>
<td></td>
<td>0.47</td>
<td>0.00</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Tedlar 100 BG 30TR</td>
<td>DUM</td>
<td></td>
<td>0.23</td>
<td>0.10</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Tedlar 100BG30TL</td>
<td>DUM</td>
<td></td>
<td>0.09</td>
<td>0.09</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>FEP Shrink Tubing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>FCC</td>
<td></td>
<td>0.03</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Yellow</td>
<td>FCC</td>
<td></td>
<td>0.03</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Clear</td>
<td>FCC</td>
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<td>0.03</td>
<td>0.01</td>
<td>No further cure necessary</td>
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</tr>
<tr>
<td>Kapton 200</td>
<td>DUM</td>
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<td>0.14</td>
<td>0.09</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>XII667</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kapton 300</td>
<td>DUM</td>
<td></td>
<td>0.54</td>
<td>0.05</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Mylar Type 500A</td>
<td>DUM</td>
<td></td>
<td>0.24</td>
<td>0.06</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Mylar H-S</td>
<td>DUM</td>
<td></td>
<td>0.50</td>
<td>0.06</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>RT/Duroid 5870</td>
<td>RIG</td>
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<td>0.12</td>
<td>0.02</td>
<td>No further cure necessary</td>
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</tr>
<tr>
<td>Teflon FEP 100A</td>
<td>DJP</td>
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<td>0.06</td>
<td>0.06</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
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</table>

*See Index of Manufacturers

**ARFM - As received from manufacturer
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronar Ortho S Litho</td>
<td>DUM</td>
<td>BS502685</td>
<td></td>
<td></td>
<td>Polyester Photographic Film</td>
</tr>
<tr>
<td>P-2300</td>
<td>UCP</td>
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<td>0.03</td>
<td>0.01</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>P-7395-121-2</td>
<td>UCP</td>
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<td>0.09</td>
<td>0.02</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>PPO 531-Q61</td>
<td>GEC</td>
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<td>0.02</td>
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<tr>
<td>PPO 681-111</td>
<td>GEC</td>
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<td>0.07</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>Parylene C</td>
<td>UCP</td>
<td></td>
<td>0.12</td>
<td>0.01</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>Parylene N</td>
<td>UCP</td>
<td></td>
<td>0.30</td>
<td>0.01</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>RT/Duroid 5813</td>
<td>ROG</td>
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<td>0.22</td>
<td>0.02</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>RT/Duroid 5600</td>
<td>ROG</td>
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<td>0.22</td>
<td>0.03</td>
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</tr>
<tr>
<td>RT/Duroid 5650</td>
<td>ROG</td>
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<td>0.28</td>
<td>0.01</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>Kapton XH667</td>
<td>DUM</td>
<td>BS502578</td>
<td>0.14</td>
<td>0.09</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>Kapton XHF</td>
<td>DUM</td>
<td>BS502678</td>
<td>0.54</td>
<td>0.05</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>Mylar, Type A</td>
<td>DUM</td>
<td>BS592504</td>
<td>0.24</td>
<td>0.06</td>
<td>No further cure necessary</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers

**Material used in electronic packaging applications

***ARFM - As received from manufacturer
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mylar, Type A, DUM</td>
<td></td>
<td>BS502505</td>
<td>Total Weight Loss (%)</td>
<td>No further cure necessary</td>
<td>Metallized by Standard Packaging Corporation</td>
</tr>
<tr>
<td>Tedlar, Type 30, Modification B, High Gloss, white</td>
<td>DUM</td>
<td>BS502550</td>
<td>0.47</td>
<td>0.000</td>
<td>Polyvinyl fluoride</td>
</tr>
<tr>
<td>**Tedlar, Type 30, Modification B, High Gloss, White, Aluminized</td>
<td>DUM</td>
<td>BS502551</td>
<td>No further cure necessary</td>
<td>Metallized by Standard Packaging Corporation</td>
<td></td>
</tr>
<tr>
<td>**Teflon FEP, Type A</td>
<td>DUP</td>
<td>BS502542 (ST 10025)</td>
<td>0.06</td>
<td>0.06</td>
<td>Fluorinated ethylene propylene</td>
</tr>
<tr>
<td>Teflon FEP, Type A, Aluminized</td>
<td>DUP</td>
<td>BS502543</td>
<td>No further cure necessary</td>
<td>Metallized by Standard Packaging Corporation</td>
<td></td>
</tr>
<tr>
<td>**Cronoflex CPM, PPM, DPM</td>
<td>DUM</td>
<td>BS502614</td>
<td>No further cure necessary</td>
<td>Photosensitized Mylar sheet</td>
<td></td>
</tr>
<tr>
<td>Teflon, FEP</td>
<td>DUP</td>
<td></td>
<td>0.07</td>
<td>0.01</td>
<td>ARFM***</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers
**Material used in electronic packaging applications
***ShRM - As received from manufacturer
<table>
<thead>
<tr>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Total Weight Loss (%)</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-210</td>
<td>DCC</td>
<td>BS502562</td>
<td>No further care necessary</td>
<td>Silicone fluid for dumpers</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers*
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eccofoam SH</td>
<td>BMC</td>
<td>B3502640</td>
<td>1.03</td>
<td>0.01</td>
<td>No further care necessary</td>
</tr>
<tr>
<td>Polystyrene</td>
<td></td>
<td></td>
<td>0.26</td>
<td>0.01</td>
<td>Closed cell, rigid</td>
</tr>
</tbody>
</table>

*See Index of Manufacturer.
### 10.0 HONEYCOMB CORE

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at 6°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexcel HDMH</td>
<td>HEX</td>
<td>B504207</td>
<td>0.18</td>
<td>0.17</td>
<td>No further care necessary</td>
</tr>
<tr>
<td>HRP Composite (facing)</td>
<td></td>
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<td>0.81</td>
<td>0.01</td>
<td>No further cure necessary</td>
</tr>
</tbody>
</table>

**ARFM - As received from manufacturer**

*See Index of Manufacturers*
# 17.0 ELASTOMERS

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM (%)</th>
<th>Cure Cycle (hours at 600°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elco Fluoro Silicone Connectors</td>
<td>EWC</td>
<td></td>
<td>0.26</td>
<td>0.03</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Boron Nitride</td>
<td>4CC</td>
<td></td>
<td>0.09</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>SE-3813 (24480)</td>
<td>GES</td>
<td></td>
<td>0.27</td>
<td>0.04</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>SE-4511 (24480)</td>
<td>GES</td>
<td></td>
<td>0.19</td>
<td>0.10</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Silastic S-9711</td>
<td>DCC</td>
<td></td>
<td>0.27</td>
<td>0.10</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Viton AH411A-776</td>
<td>DUE</td>
<td></td>
<td>0.29</td>
<td>0.05</td>
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<td>ARFM**</td>
</tr>
<tr>
<td>Viton AH411A-777</td>
<td>DUE</td>
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<td>0.27</td>
<td>0.03</td>
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<tr>
<td>Viton AH411A-778</td>
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<td>ARFM**</td>
</tr>
<tr>
<td>Viton AH411A-990</td>
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<td>0.56</td>
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<td>ARFM**</td>
</tr>
<tr>
<td>Viton B</td>
<td>DUE</td>
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<td>0.46</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Flex-Viton</td>
<td>RCC</td>
<td></td>
<td>0.85</td>
<td>0.15</td>
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<td>ARFM**</td>
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</table>

* = Tier of Manufacturers
**A = As received from manufacturer
## 17.0 ELASTOMERS

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at 0°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>G.E. 615 A/B</td>
<td>GES</td>
<td></td>
<td>0.58</td>
<td>0.29</td>
<td>4 Hrs. @ 150°F</td>
<td>+23 PBW SIC powder filler silicone elastomer</td>
</tr>
<tr>
<td>High K707 K-15</td>
<td>GES</td>
<td></td>
<td>0.70</td>
<td>0.08</td>
<td></td>
<td>ARFM**</td>
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<tr>
<td>High K707 K-12</td>
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<td>0.41</td>
<td>0.01</td>
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<td>ARFM**</td>
</tr>
<tr>
<td>L-449-6</td>
<td>PSC</td>
<td></td>
<td>0.53</td>
<td>0.07</td>
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<td>ARFM**</td>
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<tr>
<td>L-608-6</td>
<td>PSC</td>
<td></td>
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<td>0.03</td>
<td></td>
<td>ARFM**</td>
</tr>
<tr>
<td>Parce 1050-70</td>
<td>PRP</td>
<td>BS 502666</td>
<td>0.50</td>
<td>0.03</td>
<td></td>
<td>Fluorosilicone</td>
</tr>
<tr>
<td>SE-3604 (24480)</td>
<td>GES</td>
<td></td>
<td>0.51</td>
<td>0.12</td>
<td></td>
<td>ARFM**</td>
</tr>
<tr>
<td>SE-3713 (24480)</td>
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<td>0.20</td>
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<td>ARFM**</td>
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*See Index of Manufacturers

**ARFM - As received from manufacturer
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<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (Hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hadbar 4000-80/Varox</td>
<td>PPH</td>
<td>BS502675</td>
<td>0.24</td>
<td>0.14</td>
<td>No further cure necessary</td>
<td>Silicone, Procure to ZZ-R-765 Class 11A, Grade 80</td>
</tr>
<tr>
<td>Hadbar 5000-50/Varox</td>
<td>PPH</td>
<td>BS502676</td>
<td>0.51</td>
<td>0.12</td>
<td>Postcured 24 at 480</td>
<td>Silicone Rubber, ZZ-R-765 Class 11B, Grade 60</td>
</tr>
<tr>
<td>SE-3604/Varox</td>
<td>GES</td>
<td>BS502538</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Parco 1050-70</td>
<td>PRP</td>
<td>BS502666</td>
<td>0.50</td>
<td>0.03</td>
<td>No further cure necessary</td>
<td>Fluorosilicone</td>
</tr>
<tr>
<td>JPL No. 10</td>
<td>DUE</td>
<td>BS502523</td>
<td>0.32</td>
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<td>Fluorelastomer</td>
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<tr>
<td>L609-6</td>
<td>PSC</td>
<td>BS502678</td>
<td>0.55</td>
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<td>No further cure necessary</td>
<td>Fluorosilicone</td>
</tr>
<tr>
<td>Parker 77-545</td>
<td>PSC</td>
<td>BS504186</td>
<td>0.34</td>
<td>0.03</td>
<td>No further cure necessary</td>
<td>Fluoroelastomer 70 shore</td>
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<tr>
<td>Parker V377-9</td>
<td>PSC</td>
<td>BS504187</td>
<td>0.33</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>Fluoroelastomer 90 shore</td>
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*See Index of Manufacturers*
### LUBRICANTS, SOLID FILM

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lube-Lok No. 2396</td>
<td>EFI</td>
<td>BS502557</td>
<td>0.21</td>
<td>0.16</td>
<td>2 at 180 + 16 at 400</td>
<td>Sodium Silicate/MoS₂</td>
</tr>
<tr>
<td>Lube-Lok No. 4306</td>
<td>EFI</td>
<td>BS502546</td>
<td>0.67</td>
<td>0.09</td>
<td>16 at 375</td>
<td>Phenolic/MoS₂</td>
</tr>
<tr>
<td>Molykote Microsize Powder</td>
<td>DCC</td>
<td>BS502619</td>
<td>0.55</td>
<td>0.01</td>
<td>As recommended by manufacturer</td>
<td>MoS₂</td>
</tr>
<tr>
<td>Electrofilm 4306</td>
<td>EFI</td>
<td></td>
<td>0.67</td>
<td>0.09</td>
<td>16 hrs. at 374</td>
<td></td>
</tr>
</tbody>
</table>

*See Index of Manufacturers*
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diallyl 52-40-40</strong></td>
<td>ACM</td>
<td>B8502518</td>
<td>0.70</td>
<td>0.06</td>
<td>As recommended by Manufacturer</td>
</tr>
<tr>
<td><strong>Delrin 100 NC-10</strong></td>
<td>DUP</td>
<td>B8502518</td>
<td>0.58</td>
<td>0.06</td>
<td>As recommended by Manufacturer</td>
</tr>
<tr>
<td>Epi-Is1 1961 (formerly 1906I)</td>
<td>ACM</td>
<td>B8502519</td>
<td>0.39</td>
<td>0.06</td>
<td>As recommended by Manufacturer</td>
</tr>
<tr>
<td>Epi-Is1 1914</td>
<td>ACM</td>
<td>B8502642</td>
<td>0.03</td>
<td>0.01</td>
<td>As recommended by Manufacturer</td>
</tr>
<tr>
<td><strong>KEL-F 81</strong></td>
<td>MMA</td>
<td>B8502560</td>
<td>0.21</td>
<td>0.15</td>
<td>As recommended by Manufacturer</td>
</tr>
<tr>
<td><strong>Kynar 200, 400</strong></td>
<td>PCC</td>
<td>B8504194</td>
<td>0.08</td>
<td>0.01</td>
<td>As recommended by Manufacturer</td>
</tr>
<tr>
<td>Lexan</td>
<td>GBC</td>
<td>B8502582</td>
<td>0.07</td>
<td>0.01</td>
<td>As recommended by Manufacturer</td>
</tr>
<tr>
<td>Polysulfone P-1700</td>
<td>UCP</td>
<td>B8504203</td>
<td>0.09</td>
<td>0.02</td>
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<tr>
<td>PPI 531-801</td>
<td>GBC</td>
<td>B8504198</td>
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<tr>
<td>Vespol SP-1</td>
<td>DUP</td>
<td>B8502655</td>
<td>1.24</td>
<td>0.01</td>
<td>As recommended by Manufacturer</td>
</tr>
</tbody>
</table>

*Diallyl phthalate-glass MIL-M-19833A, Type GDI-30 or GDI-30F Acetal Epoxy-mineral glass Epoxy-glass Fluorocarbon. All grades approved Polycarbonate. All grades approved Polyphenylene oxide Aromatic polyimide. DuPont supplies basic shapes and machined items under the tradename "Vespol"
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teflon FEP</strong></td>
<td>DUP</td>
<td>B8502592</td>
<td>0.06/0.06</td>
<td>24 hrs. at 302</td>
<td>ARFM***</td>
</tr>
<tr>
<td>Delrin (FA)</td>
<td>ACM</td>
<td>B8502641</td>
<td>0.47/0.05</td>
<td>No further cure necessary</td>
<td>ARFM***</td>
</tr>
<tr>
<td>Dial FA-40</td>
<td>ACM</td>
<td>B8502641</td>
<td>1.0/0.02</td>
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<td>DIAMYL phthalate MIL-M-14F Type SDG</td>
</tr>
<tr>
<td>Delrin 150 NC-10</td>
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<td>0.56/0.06</td>
<td>No further cure necessary</td>
<td>ARFM***</td>
</tr>
<tr>
<td>Delrin 500 NC-10</td>
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</tr>
<tr>
<td>Delrin 900 NC-10</td>
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</tr>
<tr>
<td>Dial FS-10</td>
<td>ACM</td>
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<td>0.58/0.02</td>
<td>24 hrs. at 302</td>
<td>ARFM***</td>
</tr>
<tr>
<td>Dial FS-10</td>
<td>ACM</td>
<td></td>
<td>0.70/0.03</td>
<td>24 hrs. at 302</td>
<td>ARFM***</td>
</tr>
<tr>
<td>Dial 52-40-40</td>
<td>ACM</td>
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<td>0.70/0.06</td>
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<tr>
<td>Doryl K-17511</td>
<td>WBM</td>
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<td>ARFM***</td>
</tr>
<tr>
<td>Lexan 100-111</td>
<td>GEC</td>
<td></td>
<td>0.03/0.02</td>
<td>No further cure necessary</td>
<td>ARFM***</td>
</tr>
<tr>
<td>Lexan 101-111</td>
<td>GEC</td>
<td></td>
<td>0.08/0.01</td>
<td>No further cure necessary</td>
<td>ARFM***</td>
</tr>
<tr>
<td>Lexan 101-112</td>
<td>GEC</td>
<td></td>
<td>0.09/0.04</td>
<td>No further cure necessary</td>
<td>ARFM***</td>
</tr>
<tr>
<td>Lexan 103-112</td>
<td>GEC</td>
<td></td>
<td>0.17/0.01</td>
<td>No further cure necessary</td>
<td>ARFM***</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers
**Material used in electronic packaging applications
***ARFM - As received from manufacturer
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (Hours at 38°F)</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Lexan 131-111</td>
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<td>ARFM**</td>
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<tr>
<td>Lexan 131-112</td>
<td>GEC</td>
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<td>0.17</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Lexan 133-112</td>
<td>GEC</td>
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<td>No further cure necessary</td>
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<tr>
<td>Lexan 140-111</td>
<td>GEC</td>
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<td>0.17</td>
<td>0.03</td>
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<td>ARFM**</td>
</tr>
<tr>
<td>Lexan 141-111</td>
<td>GEC</td>
<td></td>
<td>0.17</td>
<td>0.04</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Lexan 141-112</td>
<td>GEC</td>
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<td>0.02</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Lexan 243-112</td>
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<td>ARFM**</td>
</tr>
<tr>
<td>Lexicon M170</td>
<td>BOC</td>
<td></td>
<td>0.31</td>
<td>0.06</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Teflon FEP</td>
<td>DUP</td>
<td>BS502592</td>
<td>0.06</td>
<td>0.06</td>
<td>No further cure necessary</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>

*See Index of Manufacturers
**ARFM - As received from manufacturer
## 20.0 - SLEEVING

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at 65°F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ben-Har Acryl A</td>
<td>BHM</td>
<td>BS502645</td>
<td>0.49</td>
<td>0.05</td>
<td>No further cure necessary</td>
<td>Acrylic resin coated on glass. MIL-I-3190B</td>
</tr>
<tr>
<td>Ben-Har Acryl A-FAI</td>
<td>BHM</td>
<td></td>
<td>0.33</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Ben-Har Acryl C2</td>
<td>BHM</td>
<td></td>
<td>0.33</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Ben-Har Lecton B</td>
<td>BHM</td>
<td></td>
<td>0.09</td>
<td>0.09</td>
<td>24 hrs. at 302</td>
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</tr>
</tbody>
</table>

*See Index of Manufacturers

**ARFM - As received from manufacturer
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Penntube II -SMF</strong></td>
<td>PFC</td>
<td>BS502556</td>
<td>0.00</td>
<td>0.00***</td>
<td>No further cure necessary</td>
<td>Shrink 10 minutes at 350°F</td>
</tr>
<tr>
<td><strong>Thermofit Kynar</strong></td>
<td>RAY</td>
<td>BS502579 (ST 10017)</td>
<td>0.27</td>
<td>0.09***</td>
<td>No further cure necessary</td>
<td>Shrink 10 minutes at 630°F</td>
</tr>
<tr>
<td><strong>Thermofit TFE</strong></td>
<td>RAY</td>
<td>BS502553</td>
<td>0.01</td>
<td>0.00***</td>
<td>No further cure necessary</td>
<td>Shrink 10 minutes at 230°F</td>
</tr>
<tr>
<td><strong>Shrinkable Mylar</strong></td>
<td>STP</td>
<td>BS502644</td>
<td>0.68</td>
<td>0.05</td>
<td>No further cure necessary</td>
<td>Shrink 10 minutes at 230°F</td>
</tr>
<tr>
<td>Mylar 0.004 Wall</td>
<td>STP</td>
<td></td>
<td>0.62</td>
<td>0.03</td>
<td>10 min. at 230</td>
<td></td>
</tr>
<tr>
<td>Mylar 0.012 Wall</td>
<td>STP</td>
<td></td>
<td>0.68</td>
<td>0.05</td>
<td>10 min. at 230</td>
<td></td>
</tr>
<tr>
<td>Thermofit TFE-R</td>
<td>RAY</td>
<td></td>
<td>0.01</td>
<td>0.00</td>
<td>1 hr. at 302</td>
<td></td>
</tr>
</tbody>
</table>

*See Index of Manufacturers
**Material used in electronic packaging applications
***Cured 1 hour at 300°F

Shrink 10 minutes at 350°F
Shrink 10 minutes at 630°F
Shrink 10 minutes at 230°F
Shrink 10 minutes at 302°F
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (Hours at °F)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mylar Type T</td>
<td>DUP</td>
<td>BS502577</td>
<td></td>
<td>No further cure necessary</td>
<td>Not pressure-sensitive, polyethylene terephthalate</td>
</tr>
<tr>
<td>Mystik 7452</td>
<td>BCM</td>
<td>BS502649</td>
<td>0.37</td>
<td>0.04</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td><strong>Fibremat-1</strong></td>
<td>MNE</td>
<td>BS502588</td>
<td>0.19</td>
<td>0.02</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td><strong>Scotch Brand No. 850</strong></td>
<td>MNE</td>
<td>BS502609</td>
<td>1.34</td>
<td>.11</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>Electrical Tapes X-1170</td>
<td>MNA</td>
<td></td>
<td>0.96</td>
<td>0.47</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>Electrical Tapes X-1181</td>
<td>MNA</td>
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<td>0.52</td>
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</tr>
<tr>
<td>Mystic 830</td>
<td>BCM</td>
<td></td>
<td>0.77</td>
<td>0.07</td>
<td>16 hrs. at 302</td>
</tr>
<tr>
<td>Mystic 4043</td>
<td>BCM</td>
<td></td>
<td>0.68</td>
<td>0.02</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>Mystic 7341</td>
<td>BCM</td>
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<td>0.01</td>
<td>No further cure necessary</td>
</tr>
<tr>
<td>Mystic 7452</td>
<td>BCM</td>
<td></td>
<td>0.15</td>
<td>0.06</td>
<td>No further cure necessary</td>
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<tr>
<td>Mystik 7420</td>
<td>BCM</td>
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<td>0.84</td>
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<td>Mystik 7453</td>
<td>BCM</td>
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<td>0.64</td>
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<td>Mystik 4052</td>
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<td>0.50</td>
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*See Index of Manufacturers

**ARFM - As received from manufacturer
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<th>Product Designation</th>
<th>Mig*</th>
<th>Material Specification</th>
<th>Outgassing</th>
<th>Cure Cycle (hours at °F)</th>
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<tr>
<td>Scotch Tape No. 850 Transparent</td>
<td>MMA</td>
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<td>Scotch Pak No. 8</td>
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<td>0.19</td>
<td>0.06</td>
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*See Index of Manufacturers
**ARFM - As received from manufacturer
<table>
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<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at 8°F)</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Cat-A-Lac Flat Black</td>
<td>FPC</td>
<td>BS501403</td>
<td>13.00</td>
<td>1.52</td>
<td>16 at 75</td>
<td>1 hour dry time between coats</td>
</tr>
<tr>
<td><strong>Laminar X-500 Gloss Black</strong></td>
<td>MCC</td>
<td>BS502653</td>
<td>18.45</td>
<td>0.05</td>
<td>16 at 75</td>
<td>1 hour dry time between coats</td>
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<tr>
<td><strong>Laminar X-500 Clear</strong></td>
<td>MCC</td>
<td>BS501405</td>
<td>20.44</td>
<td>0.10</td>
<td>16 at 75</td>
<td>1 hour dry time between coats</td>
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<tr>
<td>Laminar X-500 Flat Green</td>
<td>MCC</td>
<td>BS501406</td>
<td></td>
<td></td>
<td>16 at 75</td>
<td>1 hour dry time between coats</td>
</tr>
<tr>
<td><strong>PV-100 Gloss White</strong></td>
<td>VVP</td>
<td>BS501404</td>
<td>2.48</td>
<td>0.30</td>
<td>16 at 75</td>
<td>1 hour dry time between coats</td>
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<tr>
<td>S-13, S-13G</td>
<td>***</td>
<td>BS502617</td>
<td></td>
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*See Index of Manufacturers
**Material used in electronic packaging applications
***Recommended Supplier: ITR
<table>
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<tr>
<th>Product Designation</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at 60°F)</th>
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<tr>
<td>Pre-shrunk Temp-Lace 256</td>
<td>B8502651</td>
<td>0.60</td>
<td>0.05</td>
<td>No further cure necessary</td>
<td>Fluorocarbon fabric</td>
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<tr>
<td>Astro-Tex Temp-Lace H256H</td>
<td>GBE</td>
<td>0.58</td>
<td>0.07</td>
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<tr>
<td>Temp-Lace 256</td>
<td>GBE</td>
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<td>Temp-Lace 256H</td>
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<td>0.10</td>
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*See Index of Manufacturers
**ARFM - As received from manufacturer
### 25.0 - Wire Enamels

<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCM(%)</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>Formex</td>
<td>GEN</td>
<td></td>
<td>0.06</td>
<td>0.03</td>
<td>No further cure necessary</td>
<td>Acetal, procured, already applied to conductor</td>
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<tr>
<td><strong>PYRE-M.L.</strong></td>
<td>DUP</td>
<td>BS504211</td>
<td>1.12</td>
<td>0.00</td>
<td>As recommended by Mfg.</td>
<td>Polymide</td>
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<tr>
<td>Copper Wire</td>
<td>PHD</td>
<td></td>
<td>0.16</td>
<td>0.02</td>
<td>No further cure necessary</td>
<td>ARFM***</td>
</tr>
<tr>
<td>38 AWG with Gripeze #2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnet Wire</td>
<td>GEW</td>
<td></td>
<td>0.06</td>
<td>0.03</td>
<td>No further cure necessary</td>
<td>ARFM***</td>
</tr>
<tr>
<td>(Format)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Magnet Wire</td>
<td>GEW</td>
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<td>0.22</td>
<td>0.09</td>
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<tr>
<td>(Urethane)</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>PYRE-M.L. Varnish</td>
<td>DUP</td>
<td></td>
<td>0.07</td>
<td>0.02</td>
<td>No further cure necessary</td>
<td>ARFM***</td>
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</table>

*See Index of Manufacturers

**Material used in electronic packaging applications

***ARFM - As received from manufacturer
<table>
<thead>
<tr>
<th>Product Designation</th>
<th>Mfg*</th>
<th>Material Specification</th>
<th>Total Weight Loss (%)</th>
<th>VCMC(%)</th>
<th>Cure Cycle (hours at °F)</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>CT 505 Extruded</td>
<td>CPC</td>
<td></td>
<td>0.01</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
</tr>
<tr>
<td>Glass filled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teflon rod</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gylon Gasket</td>
<td>CLI</td>
<td></td>
<td>0.04</td>
<td>0.04</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
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<tr>
<td>Hycar 520-67-108-5</td>
<td>HPG</td>
<td></td>
<td>0.95</td>
<td>0.03</td>
<td>No further cure necessary</td>
<td>ARFM**</td>
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<tr>
<td>Rexolite 1422</td>
<td>ABC</td>
<td>BS502535</td>
<td>0.18</td>
<td>0.01</td>
<td>No further cure necessary</td>
<td>Thermoset, cross-linked Styrene Copolymer</td>
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<tr>
<td>Trucast</td>
<td></td>
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<tr>
<td>1050-70</td>
<td>PRP</td>
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<td>0.50</td>
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<td>No further cure necessary</td>
<td>ARFM**</td>
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*See Index of Manufacturers

**ARFM - As received from manufacturer
Index of Manufacturers (sheet 1 of 3)

<table>
<thead>
<tr>
<th>Code</th>
<th>Manufacturer</th>
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<tbody>
<tr>
<td>AAC</td>
<td>Ablestik Adhesive Company</td>
</tr>
<tr>
<td>ACB</td>
<td>American Cyanamid Company, Bloomingdale Department</td>
</tr>
<tr>
<td>ACF</td>
<td>American Cyanamid Company, Formica Corp.</td>
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<tr>
<td>ACM</td>
<td>Allied Chemical Corporation, Mesa Products, Plastics Division</td>
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<tr>
<td>AEC</td>
<td>American Enka Corp.</td>
</tr>
<tr>
<td>APC</td>
<td>Armstrong Products Company</td>
</tr>
<tr>
<td>ARP</td>
<td>American Reinforced Plastics Company</td>
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<tr>
<td>BCC</td>
<td>BASF Colors and Chemicals, Inc.</td>
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<td>BCM</td>
<td>The Borden Company, Mystik Tape, Inc.</td>
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<tr>
<td>BFG</td>
<td>B. F. Goodrich Chemical Company</td>
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<tr>
<td>BIW</td>
<td>Boston Insulated Wire</td>
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<tr>
<td>CAR</td>
<td>Carter's Ink Company</td>
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<tr>
<td>CHR</td>
<td>Connecticut Hard Rubber Co.</td>
</tr>
<tr>
<td>CVC</td>
<td>Consolidated Vacuum Corporation</td>
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<tr>
<td>DCC</td>
<td>Dow-Corning Company</td>
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<tr>
<td>DUE</td>
<td>E. I. DuPont de Nemours and Company, Elastomer Chemicals Department</td>
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<tr>
<td>DUF</td>
<td>E. I. DuPont de Nemours and Company, Fabrics and Finishes Department</td>
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<tr>
<td>DUM</td>
<td>E. I. DuPont de Nemours and Company, Film Department</td>
</tr>
<tr>
<td>DUP</td>
<td>E. I. DuPont de Nemours and Company, Plastics Department</td>
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<td>Electrofilm, Inc.</td>
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<td>Eastman Kodak Company</td>
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<td>EMC</td>
<td>Emerson and Cuming, Inc.</td>
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<td>ENJ</td>
<td>Enjay Chemical Company</td>
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<td>EPC</td>
<td>Epoxylite Corporation</td>
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<td>FLC</td>
<td>Fortin Laminating Corporation</td>
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<td>FPC</td>
<td>Finch Paint and Chemical Company</td>
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<tr>
<td>FPI</td>
<td>Furane Plastics, Inc.</td>
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<tr>
<td>FRC</td>
<td>Fargo Rubber Corporation</td>
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<td>GBE</td>
<td>Gudebrod Brothers Silk Company, Inc., Electronics Division</td>
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<td>GEW</td>
<td>General Electric Company, Wire and Cable Department</td>
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<td>Hysol Corporation</td>
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<td>IBM</td>
<td>IBM Corporation</td>
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<td>IND</td>
<td>Independent Ink Company</td>
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<td>ITR</td>
<td>Illinois Institute of Technology Research Institute</td>
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<td>MCC</td>
<td>Magna Coatings and Chemical Corporation</td>
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<td>MMA</td>
<td>3M Company, Adhesives, Coatings, and Sealers Division</td>
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<td>MMI</td>
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<td>Permacel</td>
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<td>Pennsylvania Fluorocarbon Company</td>
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<td>Park Avenue</td>
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<td>Purolator Products, Inc., Hadbar Division</td>
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<td>Products Research and Chemical Corporation</td>
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<td>Shell Oil Company</td>
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<tr>
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<td>Thalco</td>
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<td>The Mica Corporation</td>
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<td>Union Carbide Chemicals Company</td>
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<td>Vita Var Paint Company</td>
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<tr>
<td>WEM</td>
<td>Westinghouse Electric Corporation, Micarta Division</td>
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<tr>
<td>WPP</td>
<td>Wornow Process Paint Company</td>
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