

**AEROSPACE
MATERIAL
SPECIFICATION**

AMS 3137B
Superseding AMS 3137A

Issued 11-1-70
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RESIN, CONFORMAL COATING, URETHANE ELASTOMER

1. SCOPE:

1.1 Form: This specification covers a two-component system composed of a non-polyester urethane resin and a hardener, supplied in kit form.

1.2 Application: Primarily for conformally coating printed-circuit-board assemblies where thin coatings, good moisture resistance, thermal-vacuum stability, mechanical damping characteristics, and elastomeric properties are required for use from -55° to +95°C (-65° to +205°F).

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

AMS 2825 - Material Safety Data Sheets

AMS 3601 - Plastic Sheet, Copper Faced, Glass Fabric Reinforced
Epoxy Resin

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- 2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D150 - A-C Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulating Materials
ASTM D257 - D-C Resistance or Conductance of Insulating Materials
ASTM D618 - Conditioning Plastics and Electrical Insulating Materials for Testing
ASTM D792 - Specific Gravity and Density of Plastics by Displacement
ASTM D2240 - Rubber Property - Durometer Hardness
ASTM F74 - Determining Hydrolytic Stability of Plastic Encapsulants for Electronic Devices

- 2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

- 3.1 Material: Shall be a thermosetting elastomeric non-polyester urethane system. The product shall contain no 4,4' -methylene-bis-2-chloroaniline.
- 3.2 Properties: The product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with specified test methods, insofar as practicable:
- 3.2.1 Working Life: The viscosity at $23^{\circ}\text{C} \pm 2$ ($73^{\circ}\text{F} \pm 4$) of the product one hour after mixing shall not exceed twice the original viscosity at that temperature.
- 3.2.2 Storage Life: The product shall meet the requirements of 3.3 at any time up to six months from date of receipt by purchaser when stored in the original unopened containers at not higher than 30°C (85°F).
- 3.3 Cured Resin: Shall have the following properties:
- | | | |
|--|-----------------------------|------------|
| 3.3.1 Hardness, Durometer A | 40 - 80 | ASTM D2240 |
| 3.3.2 Moisture Absorption, max | 0.38% | 4.5.1 |
| 3.3.3 Surface Adhesion | Pass | 4.5.2 |
| 3.3.4 Thermal-Vacuum Stability, weight loss, max | 0.55% | 4.5.3 |
| 3.3.5 Volume Resistivity, min | 1.0×10^{13} ohm-cm | ASTM D257 |

3.3.6 Dielectric Constant at 1 MHz, max 3.5 ASTM D150

3.3.7 Hydrolytic Stability at 85°C (185°F) and 95% RH Maximum decrease in 50 days of 20% change in Durometer hardness with no evidence of exudate, tackiness, or embrittlement ASTM F74

3.3.8 Specific Gravity 0.95 to 1.1 ASTM D792

3.4 Quality: The product, as received by purchaser, shall be uniform in quality and condition, homogeneous, and free from foreign materials and from imperfections detrimental to usage of the product.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.6. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for working life (3.2.1), and for hardness (3.3.1) and specific gravity (3.3.8) of the cured product are classified as acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of the product to a purchaser, when a change in material or processing, or both, requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.2.2.1 For direct U.S. Military procurement, substantiating test data and, when requested, preproduction test material shall be submitted to the cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Shall be as follows:

4.3.1 For Acceptance Tests: Sufficient product shall be taken at random from each lot to perform all required tests. The number of determinations for each requirement shall be as specified in the applicable test procedure, or if not specified therein, not less than three.