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AEROSPACE MATERIAL SPECIFICATION



AMS 3731/1B

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Superseding AMS 3731/1A

Submitted for recognition as an American National Standard

POTTING COMPOUND, EPOXY
Bisphenol A-Type
Unfilled, Room Temperature Cure

This specification has been declared "NONCURRENT" by the Aerospace Materials Division, SAE, as of July, 1992. It is recommended, therefore, that this specification not be specified for new designs.

This cover sheet should be attached to revision "A" of the subject specification.

"NONCURRENT" refers to those materials which have previously been widely used and which may be required on some existing designs in the future. The Aerospace Materials Division, however, does not recommend these as standard materials for future use in new designs. Each of these "NONCURRENT" specifications is available from SAE upon request.

PREPARED UNDER THE JURISDICTION OF AMS COMMITTEE "CP".

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1. SCOPE:

- 1.1 Form: This specification covers an unfilled, room-temperature-polymerizing epoxy resin formulation, supplied as a two-component system.
- 1.2 Application: Primarily for use as a casting or sealing material where fairly high thermal expansion can be tolerated and where flammability resistance is not required.

2. APPLICABLE DOCUMENTS: See AMS 3731.3. TECHNICAL REQUIREMENTS:

- 3.1 Basic Specification: The complete requirements for procuring the product described herein shall consist of this document and the latest issue of the basic specification, AMS 3731.
- 3.2 Material: Shall be an epoxy-based polymer with a curing agent.
- 3.3 Properties: The compound shall conform to the following requirements:
- 3.3.1 Mixed Uncured Compound: The compound, mixed in accordance with manufacturer's instructions, shall exhibit the following properties:
- 3.3.1.1 Viscosity: Shall be not greater than 1500 centipoise (1.5 Pa•s) at 23°C (73°F), determined within 5 min. after mixing, using a Brookfield Model LVF viscometer and No. 2 spindle at 12 revolutions per minute.
- 3.3.1.2 Pot Life: Usable life of the compound, defined as the time to attain double the initial viscosity determined in 3.3.1.1, shall be not less than 30 min. at 23°C (73°F).

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3.3.1.3 Curing Time: The time required to develop the cured product properties specified in 3.3.2 shall be not more than 5 days at 23°C (73°F) or not more than 2 hr at 93°C (200°F).

3.3.1.4 Demold Time: The time required before the part can be removed from the mold and retain its integrity shall be not more than 24 hr at 23°C (73°F).

3.3.2 Cured Product: The compound, mixed and cured in accordance with manufacturer's instructions, shall exhibit the following properties, determined in accordance with test methods listed in AMS 3731:

| | | |
|-----------|---|---|
| 3.3.2.1 | Flexural Strength, min | 13,500 psi (95 MPa) |
| 3.3.2.2 | Izod Impact Strength, per unit of notch, min | 0.23 ft-lb per in. (12.3 J/m) |
| 3.3.2.3 | Compressive Strength, min | 12,500 psi (85 MPa) |
| 3.3.2.4 | Insulation Resistance | |
| 3.3.2.4.1 | At 23°C (73°F), min | 1×10^6 megohms |
| 3.3.2.4.2 | After hydrolytic stability conditioning, min | 1×10^4 megohms |
| 3.3.2.5 | Dielectric Constant at 1 KHz, max | 5.5 |
| 3.3.2.6 | Dissipation Factor at 1 KHz, max | 0.04 |
| 3.3.2.7 | Heat Deflection Temperature at 264 psi (1.8 MPa), min | 70°C (160°F) |
| 3.3.2.8 | Coefficient of Linear Thermal Expansion, max | |
| 3.3.2.8.1 | From -54°C to +23°C (-65°F to +73°F) | 50×10^{-6} mm/mm per deg C (28×10^{-6} in./in. per deg F) |
| 3.3.2.8.2 | From 23°C to 74°C (73°F to 165°F) | 70×10^{-6} mm/mm per deg C (40×10^{-6} in./in. per deg F) |
| 3.3.2.9 | Water Absorption after 24 hr immersion, max | 0.25% |
| 3.3.2.10 | Hardness, Shore D, max | 80 ± 5 |
| 3.3.2.11 | Specific Gravity, max | 1.2 |
| 3.3.2.12 | Bond Strength to Aluminum, min | 1000 psi (7 MPa) |
| 3.3.2.13 | Peak Exotherm Temperature, max | 245°C (475°F) |