SAE The Engineering Society For Advancing Mobility Land Sea Air and Space
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AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 3731/1A

Issued 10-1-81
Revised 10-1-87

Superseding AMS 3731/1

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

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).

12/91 REAFFIRMED

Printed in U.S.A.

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	$1\text{x}10^{6}$ megohms
3.3.2.4.2	After hydrolytic stability conditioning, min	$1\text{x}10^{4}$ 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)	$50\text{x}10^{-6}$ mm/mm per deg C ($28\text{x}10^{-6}$ in./in. per deg F)
3.3.2.8.2	From 23°C to 74°C (73°F to 165°F)	$70\text{x}10^{-6}$ mm/mm per deg C ($40\text{x}10^{-6}$ 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)