AEROSPACE
MATERIAL SPECIFICATIONS
SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 3734

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Revised

POTTING COMPOUND, EPOXY, UNFILLED
General Purpose
Room Temperature Cure

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

2. TYPE: A clear, amber-colored, semi-transparent epoxy resin formulation consisting of two components, an unfilled epoxy resin and a miscible hardener.

3. APPLICATION: Primarily for embedment and encapsulation of electrical and electronic parts and component assemblies where low exotherm and good physical and electrical insulation properties are required.

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Curing: When mixed and cured at room temperature in accordance with manufacturer's recommendations, formulation shall polymerize to a uniform, rigid material within 24 hr at 75 F ± 5, or within 2 hr at a temperature not higher than 140 F to produce optimum properties.

4.1.2 Pot Life: Material in 100 g batches shall have a useful pot life of not less than 45 min. when maintained at 75 F ± 5.

4.1.3 Shelf Life: Material shall have a shelf life of 1 yr from date of delivery, when stored at 50 - 90 F.

4.1.4 Corrosion: The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. Discoloration of metal shall not be considered objectionable.

4.2 Exotherm: The maximum peak exotherm for a 99 ml batch shall be 375 F determined as follows:

4.2.1 Prepare a sample by mixing the components in accordance with the manufacturer's recommendations. After mixing, pour immediately without evacuation into a paper cup of 3 fl oz (99 ml) capacity, filling the cup level full. Insert a thermocouple into the geometric center of the cup. Using a suitable device, record the temperature rise and maximum temperature during polymerization. Conduct the test in a draft-free area with the temperature at 75 F ± 5.

4.3 Properties: The product shall conform to the following requirements. Except for the test of 4.3.2 (See Note 1), tests shall be performed on specimens cast, after mixing as recommended by the manufacturer, in suitable bar and slab molds and cured to obtain optimum properties. Tests shall be performed, insofar as practicable, in accordance with listed ASTM methods or as noted.

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4.3.1	Specific Gravity	1.28 ± 0.03	ASTM D792-60T
4.3.2	Viscosity, centipoises, max	2,500	See Note 1
4.3.3	Volumetric Cure Shrinkage, %, max	3.5	See Note 2
4.3.4	Flexural Strength, psi, min	10,000	ASTM D790-59T
4.3.5	Impact Strength, Izod, ft-lb per in. of notch, min	0.25	ASTM D256-56, Method C
4.3.6	Heat Distortion Temperature (264 psi fiber stress), deg Fahr, min	100	ASTM D648-56
4.3.7	Dielectric Constant, 1 megacycle, max	4.5	ASTM D150-59T
4.3.8	Dissipation Factor, 1 megacycle, max	0.04	ASTM D150-59T
4.3.9	Insulation Resistance, megohms, min at 75 F at 212 F	 1.0×10^6 1.0×10^4	ASTM D257-58
4.3.10	Dielectric Strength, v per mil, min	425	ASTM D149-59 (0.125 ± 0.010 in. thick specimen)
4.3.11	Coefficient of Thermal Expansion from 85 - 122 F, 10^{-5} in. per in. per deg Fahr	5.0 - 7.0	ASTM D696-44

Note 1. Approximately 200 ml of a bubble free sample of catalyzed resin shall be prepared according to manufacturer's recommendations and maintained at 75 F ± 2, in a 250 ml glass beaker. The viscosity of this material shall be determined using a Model LVF Brookfield viscometer with a No. 4 spindle at 12 rpm within 15 min. after the addition of the curing agent. Three determinations shall be made and the results shall be recorded as the average of these 3 readings.

Note 2. Three samples shall be prepared by filling 3 tared 25 x 200 mm test tubes, treated with a suitable mold release agent, half full of void free compound. The initial level of the compound shall be accurately marked on each test tube, the material cured according to the manufacturer's recommendations, and the cured systems weighed after cooling to room temperature. Approximately 20 ml of distilled water shall be added to each tube and all void spaces between tube and compound filled by vacuum impregnation. The water level shall be adjusted to the original compound level and the entire system weighed. The volume of added water shall be calculated. The original volume of the uncured compound in each case shall be determined by measuring the amount of water needed to fill an identical test tube to the same level. All weights shall be determined to the nearest 0.001 gram. The results shall be recorded as the average change in volume of the 3 samples expressed in percent.