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

AMS 3750
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Revised

POTTING COMPOUND, EPOXY, FLEXIBLE
Durometer 75 - 85 SUPERSEDED

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

2. TYPE: A flexibilized epoxy resin formulation, consisting of either two or three components, including a flexibilizer, an epoxy resin, and a hardener.

3. APPLICATION: Primarily for encapsulating, coating, and potting delicate pressure sensitive electrical and electronic components. This mixture exhibits good adhesion, flexibility, and electrical properties over a temperature range of -65 to +300 F.

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Curing: When mixed and cured in accordance with the manufacturer's recommendations, formulation shall polymerize to a uniform, flexible material. The material shall attain good adhesion to metals and thermosetting plastics when surfaces to be bonded have been prepared in accordance with the manufacturer's instructions.

4.1.2 Pot Life: Material in 100 g batches shall have a useful pot life of not less than 1 hr when maintained at the pouring temperature specified by the manufacturer.

4.1.3 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 Properties: The product, when cured to obtain optimum properties, shall conform to the following requirements. Tests shall be performed on specimens cast, after mixing as recommended by the manufacturer, in suitable bar and slab molds and, insofar as practicable, in accordance with listed ASTM methods.

4.2.1 Volume Resistivity at 75 F ± 5, ohm-cm, min		ASTM D257-57T
As cured	1.0×10^{12}	
After 24 hr water immersion at 75 F ± 5	1.0×10^{9}	
After 24 hr water immersion at 75 F ± 5 followed by 24 hr 95% RH at 165 F ± 10	2.5×10^{8}	
4.2.2 Dielectric Strength, v per mil, min	350	ASTM D149-55T
4.2.3 Tensile Strength at 75 F ± 5, psi, min		ASTM D638-56T
As cured	700	
After 168 hr at 200 F ± 10	2750	

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4.2.4	Elongation at 75 F ± 5, %, min		ASTM D638-56T
	As cured	500	
	After 168 hr at 200 F ± 10	110	
4.2.5	Weight loss due to thermal aging, %, max		See Note 1
	After 500 hr at 200 F ± 10	0.7	
	After 168 hr at 300 F ± 10	1.5	

Note 1. Weight change shall be determined on 1 x 2 x 1/8 in. samples. The samples shall be suspended in a suitable forced air oven. Control samples shall be maintained at room temperature. Before weighing, all samples shall be allowed to cool to room temperature in a desiccator.

4.2.6	Hardness, Durometer A or equiv.		ASTM D676-55T
	As cured	85 max	
	After 48 hr water immersion at 75 F ± 5	70 min	
	After 250 hr at 300 F ± 10	95 max	
4.2.7	Low Temperature Flexibility (0.125 in. thick specimen)		ASTM D746-57T
	After 5 hr at -65 F ± 5	Pass	
	After 100 hr at -65 F ± 5	Pass	
4.2.8	Adhesive Strength, psi, min		ASTM D1002-53T (See Note 2)
	At 75 F ± 5	900	
	At 75 F ± 5 after 168 hr at 200 F ± 10	1000	
	At 200 F ± 10	150	
	At 200 F ± 10 after 168 hr at 200 F ± 10	600	
	At 250 F ± 10	100	
	At 250 F ± 10 after 168 hr at 200 F ± 10	500	

Note 2. The material shall exhibit minimum tensile shear values as shown above when tested in accordance with ASTM D1002-53T with the following modifications. Individual metal test pieces 1 x 6 x 1/8 in. may be used in sample preparation. The metal shall be AMS 4037 sheet or equivalent. The tensile holding fixture shall allow sufficient offset to account for the metal thickness, and through pin holding arrangement shall be allowable when 1/8 in. thick test pieces are used. The sample width shall be 1 in. and the overlap area 1 sq inch. Bonding fixtures used shall give identical pressure on the adhesive joint from batch to batch. Bonding surface shall be freshly sandblasted to obtain a uniformly roughened surface and shall be thoroughly washed with a suitable solvent.

5. QUALITY: The product shall be uniform in quality and condition, clean, sound, and free from foreign materials and from imperfections detrimental to fabrication, appearance, or performance of parts.

6. REPORTS: Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product meets the requirements of this specification. This report shall include the purchase order number, material specification number, form or part number, and quantity.

7. PACKAGING: Unless otherwise specified, material shall be supplied in kit form with resin and hardening agent in separate containers. Each can or container shall bear a label giving this specification number and title, manufacturer's name, formula number, batch number, date of manufacture, net quantity, shelf life, and directions for mixing.

8. APPROVAL:

8.1 To assure adequate performance characteristics, compounds shall be approved by purchaser before material for production use is supplied, unless such approval be waived. Results of tests on production material shall be essentially equivalent to those on the approved sample.

8.2 Vendor shall use the same compounds and manufacturing processes for production material as for approved sample material. If necessary to make any change, vendor shall obtain written permission from purchaser prior to incorporating such change.

9. REJECTIONS: Material not conforming to this specification or to authorized modifications will be subject to rejection.