AEROSPACE
MATERIAL SPECIFICATIONS

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AMS 3087D
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COMPOUND, INSULATING AND SEALING

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

2. APPLICATION: Primarily for sealing joints in aircraft engine ignition systems, where gas- and fluid-tight joints are required.

3. TECHNICAL REQUIREMENTS: When ASTM methods are specified for determining conformance to the ø following requirements, tests shall be conducted in accordance with the issue of the ASTM method listed in the latest issue of AMS 2350.

3.1 General:

3.1.1 Compound shall be translucent and light gray in color and shall have the consistency of a medium heavy grease.

3.1.2 Compound shall be a smooth, homogeneous mixture free from lumps, cakes, abrasives, and other foreign materials.

3.1.3 Compound shall wet and adhere to both metallic and nonmetallic surfaces.

3.1.4 Compound shall be highly resistant to the action of 95% ethyl alcohol, ethylene glycol, and glycerine.

3.2 Physical Properties: Compound shall conform to the following requirements:

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Consistency, Unworked	180 - 220	ASTM D217
Consistency, Worked, max	260	ASTM D217
Specific Gravity, 77/77 F (25/25 C)	0.98 - 1.05	See 3.2.1
Reaction on Litmus	Neutral	

3.2.1 Use the procedure of ASTM D70, Procedure for Asphalt Cements and Pitches, except that pycnometer and compound shall be heated to approximately 230 F (110 C) in a vacuum oven, and the oven evacuated several times to remove entrained air, before filling pycnometer with water, and, after filling with water, pycnometer and contents shall be immersed in boiling water for 1 hr to remove air bubbles adhering to surface of compound.

3.3 Electrical Properties: Unless otherwise specified, compound shall conform to the following requirements at room temperature:

Dielectric Constant, 1000 cycles, max	2.9	ASTM D150
Power Factor, 1000 cycles, %, max	0.25	ASTM D150
Dielectric Strength,		ASTM D149
Short Time Test at 0.010 in. with 1/2 in. hemispherical metal		
ø electrodes, per mil, min	500	
Volume Resistivity at 70 F ± 2 (21.1 C ± 1.1) and 350 F ± 5 (176.7 C ± 2.8), ohm-cm, min	1.0×10^{12}	
Arc Resistance, sec, min	80	ASTM D495 See Note 1

Note 1. Except use 1/8 in. layer of compound spread on a glass plate and electrodes just touching the surface of the compound.

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3.4 Temperature Stability:

3.4.1 Compound shall retain its appearance and shall not crack or harden noticeably, a slight increase in stiffness being permitted, when a sample is placed in a clean open container, cooled to -65 F ± 2 (-53.9 C ± 1.1) and maintained at that temperature for 24 hours.

3.4.2 Compound shall not completely liquify or melt at any temperature up to 400 F (204 C) but may show loss by evaporation of not more than 2% and flow of not more than 10% by weight when tested as follows:

3.4.2.1 Loss by Evaporation: Approximately 10 g of the compound shall be weighed into a 60 mesh screen cone approximately 2-3/32 in. in diameter at the open end by 1-3/16 in. high, soldered along the seam, and having a 0.040 in. diameter hole drilled through the tip. The cone shall be suspended in a clean, weighed 100 ml beaker; the assembly shall be weighed, placed in an air oven, and maintained at 392 F ± 10 (200 C ± 5.6) for 24 hours. The assembly shall then be removed, cooled in a desiccator, and reweighed. The weight loss as a percentage of the weight of compound originally placed in the cone is the percentage loss by evaporation.

3.4.2.2 Flow: The cone and contents shall then be removed from the beaker and the beaker weighed to determine the weight of compound which flowed through the cone. The weight of compound in the beaker as a percentage of the initial weight of compound placed in the cone is the percentage flow.

3.4.2.3 Visual Examination: After the weights have been determined, the residual compound in the cone shall be examined for surface hardening and cracking. The compound shall have retained its appearance and shall not have cracked or hardened on the surface. A slight increase in stiffness of the compound retained in the cone will be permitted.

3.5 Solubility: Compound shall show no decrease in weight and an increase in weight of not more than 0.10% when tested as follows:

3.5.1 A weighed 25 ml beaker shall be filled with compound and the surface of the compound scraped off level with the top of the beaker. The beaker and contents shall be weighed, immersed in distilled water at 77 F ± 2 (25 C ± 1.1) for 24 hr, dried in a desiccator for 1 hr, and reweighed.

3.6 Effect on Metals: Compound shall not cause corrosion of metals when tested as follows:

3.6.1 Panels of aluminum, magnesium, copper alloys, steel, and cadmium plated steel, or couples thereof coated with compound shall show no evidence of corrosion, as indicated by rusting or pitting, after suspending vertically in a convection current air oven at 212 F ± 2 (100 C ± 1.1) for 70 hours. Slight darkening on comparison with freshly polished panels of the same materials will be permitted.

3.7 Effect on Nonmetals: Compound shall not react destructively with nonmetallic materials such as phenol-formaldehyde resins, urea-formaldehyde resins, rubber, synthetic rubber, and ignition cable insulation when tested as follows:

3.7.1 Samples of the nonmetallic materials listed above shall be coated with the compound. These samples, together with duplicate samples not so coated, shall be suspended vertically in a convection current air oven at 212 F ± 2 (100 C ± 1.1) for 70 hours. Coated samples shall show no greater change in physical condition than uncoated samples.

4. REPORTS: Unless otherwise specified, the vendor of compound 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, batch number, and quantity.

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