AEROSPACE
MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York, N.Y. 10017

AMS 3642A

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PLASTIC MOLDINGS, LAMINATED, THERMOSETTING RESIN
Glass Fabric Reinforced
Heat Resistant, 500 F (260 C)

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

2. FORM: Pressure bag or matched die laminated moldings.

3. APPLICATION: Primarily for parts requiring thermal stability when in continuous service at temperatures up to 500 F (260 C) or intermittent service up to 1000 F (538 C) consistent with good mechanical properties.

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Appearance: Unless otherwise specified, the product shall be furnished in its natural color and condition.

4.1.2 Glass Fabric Reinforcement: The continuous-filament glass fabric, prior to being resin impregnated, shall have been heat cleaned followed by chemical treatment with a suitable glass fabric finish such as hydrolyzed aminotriethoxysilane. Mat or unidirectional fabrics suitably treated may be used in non-critical areas, as required, for bosses, fill-ins, and corner reinforcements, or as thickening agents.

4.1.3 Impregnating Resin: The resin used for impregnating the glass reinforcement shall be a heat resistant thermosetting resin formulated to meet the requirements of this specification.

4.1.4 Gel Coat: Integrally molded resin gel coats, overlays, or any other surfacing materials shall not be used.

4.1.5 Gaps: There shall be no gaps between pieces of glass fabric. Lap widths shall be not less than 1/2 inch.

4.1.6 Weathering: When specified, the product shall have weather resistance acceptable to the purchaser as determined by a procedure agreed upon by purchaser and vendor.

4.1.7 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 in areas having a parallel layup shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with the issue of specified ASTM methods listed in the latest issue of AMS 2350, insofar as practicable. When the product supplied is a molding having a layup of such configuration that suitable test specimens cannot be cut from the product, ø a separate flat laminated test sample shall be supplied upon request. This laminated test sample shall be 0.125 in. ± 0.010 thick, having parallel layup and using the same materials and processes as used for the moldings represented. If a test panel is supplied to represent the material, specific gravity shall be determined on both the test panel and the product represented, and the value on the test panel shall be within ± 0.05 of that on the product. Only the tests of 4.2.1.1, 4.2.1.2, 4.2.1.5, 4.2.1.10, and 4.2.2.2 will be required for routine control.

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4.2.1 As Received:

4.2.1.1	Specific Gravity, 73.4/73.4 F (23/23 C), min	1.9	ASTM D792, Method A
4.2.1.2	Water Absorption (24 hr immersion), % Gain, max	0.3	ASTM D570
Ø 4.2.1.3	Tensile Strength, psi, min	40,000	ASTM D638
4.2.1.4	Compressive Strength (edgewise), psi, min	35,000	ASTM D695
4.2.1.5	Flexural Strength, psi, min	35,000	ASTM D790
4.2.1.6	Impact Resistance, ft-lb per in. of notch, min	10	ASTM D256, Method A
4.2.1.7	Flammability	Self extinguishing	ASTM D635
Ø 4.2.1.8	Dielectric Constant, Dry, at 10^6 cycles, max	6.0	ASTM D150
Ø 4.2.1.9	Dissipation Factor, Dry, at 10^6 cycles, max	0.03	ASTM D150
4.2.1.10	Dielectric Strength, parallel (Short-Time) kv, min	40	ASTM D149

4.2.2 Dry Heat Resistance:

4.2.2.1	Compressive Strength (edgewise) at 500 F (260 C) after 1000 hr at 500 F (260 C), psi, min	10,000	ASTM D695
4.2.2.2	Flexural Strength at 500 F (260 C) after 30 min. at 500 F (260 C), % retained, min	75	ASTM D790
4.2.2.3	Impact Resistance at 500 F (260 C) after 1000 hr at 500 F (260 C), ft-lb per in. of notch, min	5	ASTM D256, Method A

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

6. REPORTS:

6.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report showing the results of tests to determine conformance to the routine control requirements specified and stating that the product is representative of material which has been qualified to all requirements of this specification. This report shall include the purchase order number, material specification number, vendor's material designation, form or part number, and quantity.