

MATERIAL SPECIFICATIONS

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

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RevisedPLASTIC MOLDINGS, LAMINATED, THERMOSETTING RESIN,
Glass Fabric Reinforced
Heat Resistant (500 F)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number 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 or intermittent service up to 1000 F 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 amino-triethoxysilane. Mat or unidirectional fabrics suitably treated may be used in non-critical areas, as required, for bosses, fill-ins, 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 shall conform to the requirements of 4.2.1 and shall be capable of meeting the requirements of 4.2.2 in areas having a parallel layup; tests shall be performed on the product supplied and in accordance with listed ASTM methods, 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, a separate flat laminated test sample shall be supplied upon request. This laminated test sample shall be 0.125 + 0.010 in. thick, parallel layup, using the same materials and processes as utilized for production moldings.

4.2.1 **As Received:**

4.2.1.1	Specific Gravity, 73.4/73.4 F, min	1.9	ASTM D792-60T, Method A
4.2.1.2	Water Absorption (24 hr immersion), % Gain, max	0.3	ASTM D570-59aT
4.2.1.3	Tensile Strength, psi, min	40,000	ASTM D651-48
4.2.1.4	Compressive Strength (edgewise), psi, min	35,000	ASTM D695-54
4.2.1.5	Flexural Strength, psi, min	35,000	ASTM D790-59T
4.2.1.6	Impact Resistance, ft-lb per in. of notch, min	10	ASTM D256-56, Method A
4.2.1.7	Flammability	Self-extinguishing	ASTM D635-56T
4.2.1.8	Dielectric Constant at 10^6 cycles, max		ASTM D150-59T
	Dry	6.0	
	Wet	6.5	
4.2.1.9	Dissipation Factor at 10^6 cycles, max		ASTM D150-59T
	Dry	0.03	
	Wet	0.04	
4.2.1.10	Dielectric Strength, parallel, (Short-Time) kv, min	40	ASTM D149-59

4.2.2 **Dry Heat Resistance:**

4.2.2.1	Tensile Strength at 500 F after 1000 hr at 500 F, psi, min	10,000	ASTM D651-48
4.2.2.2	Compressive Strength (edgewise) at 500 F after 1000 hr at 500 F, psi, min	10,000	ASTM D695-54
4.2.2.3	Flexural Strength at 500 F after 30 min. at 500 F, % retained, min	75	ASTM D790-59T
4.2.2.4	Flexural Strength at 500 F after 1000 hr at 500 F, % retained, min	50	ASTM D790-59T
4.2.2.5	Impact Resistance at 500 F after 1000 hr at 500 F, ft-lb per in. of notch, min	5	ASTM D256-56, 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 stating that the product conforms to the 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.

6.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of material, supplier's material designation, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

7. IDENTIFICATION: Unless otherwise specified by the purchaser, all parts of suitable size shall have the part number molded or permanently impressed thereon.

8. PACKAGING:

8.1 Packaging shall be accomplished in such a manner as to ensure that the product, during shipment and storage, will not be permanently distorted, and will be protected against damage from exposure to weather or any normal hazard.

8.2 Each package shall be permanently and legibly marked to give the following information:

PART NUMBER _____
COLOR _____
QUANTITY _____
PURCHASE ORDER NUMBER _____
MATERIAL SPECIFICATION AMS 3642
MANUFACTURER'S IDENTIFICATION _____

9. APPROVAL:

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

9.2 Vendor shall use the compound and manufacturing processes for production material as for approved sample material. If necessary to make any change in compound or processing which could unfavorably affect any characteristics of the material, vendor shall obtain written permission from purchaser prior to incorporating such change.

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