

# AEROSPACE

## MATERIAL SPECIFICATIONS

# AMS 3643

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Revised

### PLASTIC MOLDINGS, THERMOSETTING Glass Roving Filled Silicone, Heat Resistant

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. **FORM:** Compression or transfer moldings.
3. **APPLICATION:** Primarily for parts requiring good mechanical and electrical properties and thermal stability when in continuous service at temperatures up to 600 F (315 C) or intermittent service up to 700 F (370 C).
4. **TECHNICAL REQUIREMENTS:**
  - 4.1 **General:**
    - 4.1.1 **Color and Condition:** Unless otherwise specified, a brown-red opaque product shall be furnished.
    - 4.1.2 **Glass Filler:** The glass roving, prior to being chopped, shall be heat cleaned to a No. 112 Finish followed by washing to a neutral pH or shall be subjected to an equivalent procedure which will promote good adhesion to the silicone resin. The length of the chopped glass shall be 1/2 - 5/8 inch.
    - 4.1.3 **Weathering:** When specified, the product shall have weather resistance acceptable to the purchaser as determined by a procedure agreed upon by purchaser and vendor.
    - 4.1.4 **Corrosion:** The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. Discoloration of metals shall not be considered objectionable.
  - 4.2 **Properties:** The product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with the issue of the listed ASTM method specified in the latest issue of AMS 2350, insofar as practicable.
    - 4.2.1 **Tensile Strength, psi, min** ASTM D651  
After 72 hr at 700 F (371.1 C) and tested at  
700 F (371.1 C) (Note 1) 1,800
    - 4.2.2 **Flexural Strength, psi, min** ASTM D790  
After 2 hr at 500 F (260 C) and tested at  
77 F (25 C) (Note 1) 15,000  
After 72 hr at 700 F (371.1 C) and tested at  
700 F (371.1 C) (Note 1) 8,000

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4.2.3	Compressive Strength, psi, min		ASTM D695
	After 2 hr at 500 F (260 C) and tested at 77 F (25 C)	12,000	
	After 72 hr at 700 F (371.1 C) and tested at 700 F (371.1 C) (Note 1)	4,000	
4.2.4	Impact Resistance, ft-lb per in. of notch, min		ASTM D256 Method A
	After 2 hr at 500 F (260 C) and tested at 77 F (25 C)	10	
	After 72 hr at 700 F (371.1 C) and tested at 700 F (371.1 C) (Note 1)	4	
4.2.5	Deflection Temperature		ASTM D648
	264 psi fiber stress, min (Note 1)	700 F (372 C)	Heating rate: 3.6 F (2 C per min.)
4.2.6	Water Absorption (24 hr immersion), % gain, max	0.30	ASTM D570
4.2.7	Dielectric Constant at $10^6$ cycles, max (Note 1)		ASTM D150
	As Molded		
	Dry	4.7	
	Wet (Note 2)	4.8	
	After 72 hr at 700 F (371.1 C)		
	Dry	4.3	
	Wet (Note 2)	4.6	
4.2.8	Dissipation Factor at $10^6$ cycles, max (Note 1)		ASTM D150
	As Molded		
	Dry	0.005	
	Wet (Note 2)	0.01	
	After 72 hr at 700 F (371.1 C)		
	Dry	0.005	
	Wet	0.03	
4.2.9	Dielectric Strength, v per mil, min (Note 1)		ASTM D149
	As Molded	250	Short time test
	After 72 hr at 700 F (371.1 C)	180	0.125 in. thick specimen
4.2.10	Insulation Resistance, ohms, min (Note 1)		ASTM D257
	As Molded		
	Dry	$1 \times 10^{13}$	
	After humidity exposure (Note 3)	$1 \times 10^{13}$	
	After 72 hr at 700 F (371.1 C)		
	Dry	$1 \times 10^{12}$	
	After humidity exposure (Note 3)	$1 \times 10^{10}$	

4.2.11 Flammability Self-extinguishing ASTM D635

Note 1. These tests are not required for routine acceptance.

Note 2. Immerse 24 hr in water at 73.4 F (23 C).

Note 3. Expose 96 hr to 73.4 F (23 C) and 96% relative humidity.

5. QUALITY: The product shall be uniform in quality and condition, clean, smooth, and free from foreign materials and from 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 of the results of tests to determine conformance to 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, 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:

- SIZE OR PART NUMBER \_\_\_\_\_
- COLOR \_\_\_\_\_
- QUANTITY \_\_\_\_\_
- MATERIAL SPECIFICATION AMS 3643
- PURCHASE ORDER NUMBER \_\_\_\_\_
- MANUFACTURER'S IDENTIFICATION \_\_\_\_\_