

AEROSPACE MATERIAL SPECIFICATION



AMS 3670/5C

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Reaffirmed DEC 2000

Superseding AMS 3670/5B

Polyamide-Imide Bar, Rod, and Shapes 30% Carbon Fiber

1. SCOPE:

1.1 Form:

This specification covers polyamide-imide plastic filled with carbon fiber in the form of molded or extruded bar, rod, and shapes.

1.2 Application:

These products have been used typically for parts requiring high strength, high modulus, thermal resistance, and toughness up to 230 °C (446 °F), but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS:

See AMS 3670.

3. TECHNICAL REQUIREMENTS:

3.1 Basic Specification:

The complete requirements for procuring the product described herein shall consist of this document and the latest issue of the basic specification, AMS 3670.

3.2 Material:

Shall be a molded, polyamide-imide polymer filled with 30% ± 3 by weight carbon fiber.

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3.3 Properties:

The product shall conform to the requirements shown in Table 1, determined on injection-molded, post-cured test specimens and in accordance with specified test methods. Specimens for elevated temperature tests shall be held at the test temperature for not less than 30 minutes prior to testing. Values for tensile strength, elongation, flexural strength, and compressive strength shall be reported as the average of three determinations for each test; no individual value shall be less than 90% of the minimum average value specified.

TABLE 1 - Properties

Property	Requirement	Test Method
3.3.1 Color	Black, as approved on preproduction sample	
3.3.2 Tensile Strength, min average At 23 °C ± 1 (73 °F ± 2) At 230 °C ± 5 (446 °F ± 9)	24.0 ksi (165 MPa) 13.0 ksi (89.6 MPa)	ASTM D 1708
3.3.3 Elongation, min average At 23 °C ± 1 (73 °F ± 2)	4%	ASTM D 1708
3.3.4 Tensile Modulus, min At 23 °C ± 1 (73 °F ± 2)	2.8 Msi (19,3 GPa)	ASTM D 1708
3.3.5 Flexural Strength, min average At 23 °C ± 1 (73 °F ± 2) At 230 °C ± 5 (446 °F ± 9)	43.0 ksi (296 MPa) 21.0 ksi (145 MPa)	ASTM D 790 or ASTM D 790M
3.3.6 Compressive Strength, min average At 23 °C ± 1 (73 °F ± 2)	25.0 ksi (172 MPa)	ASTM D 695 or ASTM D 695M
3.3.7 Specific Gravity at 23/23 °C ± 1 (73/73 °F ± 2)	1.46 to 1.51	ASTM D 792 Method A
3.3.8 Water Absorption, max 24.0 to 24.5 hours at 23 °C ± 1 (73 °F ± 2)	0.3%	ASTM D 570
3.3.9 Heat Deflection Temperature, min 1/8 inch (3.2 mm) specimen 264 psi (1820 kPa) fiber stress	260 °C (500 °F)	ASTM D 648