SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS 3892/8A

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Superseding AMS 3892/8

Tow or Yarn, Carbon Fibers For Structural Composites GF (0X) 400 (2758) Tensile Strength, 40 (276) Tensile Modulus

1. SCOPE:

1.1 Form:

This specification covers one type of continuous multifilament carbon fibers in the form of a tow or yarn (when twisted). The weight per unit length of the tow or yarn is governed by the filament count which is identified by the supplier's grade or material designation.

1.2 Classification:

Carbon tow or yarn, derived from a polyacrylonitrile precursor, with typical 400 ksi (2758 MPa) tensile strength and 40 Msi (276 GPa) tensile modulus for use in polyimide matrix structural composites or others which may be exposed to 315 °C (599 °F) thermal conditions in air and which require high tensile strength and moderate modulus of elasticity in tension.

2. APPLICABLE DOCUMENTS:

See AMS 3892.

3. TECHNICAL REQUIREMENTS:

3.1 Basic Specification:

The complete requirements for procuring the carbon tow or yarn described herein shall consist of this document and the latest issue of the basic specification.

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3.2 Storage Life:

The product shall be readily strippable from the spool and the filaments spreadable when tested at any time up to six months from date of receipt by purchaser provided it has been stored at room temperature in the original closed container.

3.3 Oxidation Resistance:

The fibers shall not undergo a weight loss exceeding 2.5% when exposed to 375 °C ± 3 (707 °F ± 5) for 24 hours ± 0.1 or 5% when exposed to 315 °C ± 3 (599 °F ± 5) for not less than 500 hours.

3.4 Properties:

Shall conform to the requirements shown in Table 1. The requirements of 3.4.1 and 3.4.2 apply to the average of the number of determinations indicated in the basic specification but no individual value shall be less than 90% of the specified minimum average unless due to an obvious testing problem, in which case a substitute specimen may be tested.

TABLE 1 - Properties

Paragraph	Property	Requirement
3.4.1	Tensile Strength, minimum	375 ksi (2586 MPa)
3.4.2	Tensile Modulus,	
	minimum	38 Msi (262 GPa)
	maximum	46 Msi (317 GPa)
3.4.3	Mass per unit length	Preproduction Value ±5%
3.4.4	Finish Content, maximum	2% by weight
3.4.5	Density	0.060 to 0.063 pound per cubic inch (1.66 to 1.74 g/cm^3)
3.4.6	Yarn Twist (when applicable),	
	nominal	0.4 turn per inch (15 turns/m)
	maximum	0.8 turn per inch (30 turns/m)