



AEROSPACE MATERIAL SPECIFICATION

AMS3897™**REV. A**

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Superseding AMS3897

Cloth, Carbon Fiber,
Resin Impregnated

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

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1. SCOPE:

1.1 Form: This specification and its supplementary detail specifications cover continuous multifilament carbon tow woven into fabric and impregnated with uncured resin.

1.2 Application: Primarily for fabricating composite parts where the characteristics of woven fabric are desired.

1.3 Classification: The requirements specified herein and in the applicable detail specifications define each cloth by fiber, resin, style, and type of weave.

1.4 Safety - Hazardous Materials: While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350	- Standards and Test Methods
AMS 2825	- Material Safety Data Sheets
AMS 3892	- Fibers, Carbon (Graphite) Tow and Yarn, for Structural Composites

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D123	- Terminology Relating to Textile Materials
ASTM D790	- Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D792	- Specific Gravity (Relative Density) and Density of Plastics by Displacement
ASTM D1505	- Density of Plastics by the Density-Gradient Method
ASTM D1682	- Breaking Load and Elongation of Textile Fabrics
ASTM D2344	- Apparent Interlaminar Shear Strength of Parallel Fiber Composites by Short Beam Method
ASTM D2734	- Void Content of Reinforced Plastics
ASTM D3039	- Tensile Properties of Fiber-Resin Composites
ASTM D3171	- Fiber Content of Resin-Matrix Composites by Matrix Digestion
ASTM D3410	- Compressive Properties of Unidirectional or Crossply Fiber-Resin Composites
ASTM D3529	- Resin Solids Content of Carbon Fiber-Epoxy Prepreg
ASTM D3530	- Volatiles Content of Carbon Fiber-Epoxy Prepreg
ASTM D3531	- Resin Flow of Carbon Fiber-Epoxy Prepreg
ASTM D3532	- Gel Time of Carbon Fiber-Epoxy Prepreg
ASTM D3775	- Fabric Count of Woven Fabric
ASTM D3776	- Mass per Unit Area (Weight) of Woven Fabric

2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-794 Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

3.1 Detail Specifications: The requirements for a specific cloth shall consist of all the requirements specified herein in addition to the requirements specified in the applicable detail specification. In case of conflict between requirements of this basic specification and an applicable detail specification, requirements of the detail specification shall govern.

3.2 Material:

3.2.1 Construction: The product shall consist of parallel continuous carbon fibers, woven into the specified fabric style, impregnated with uncured resin, and arranged in a single in-plane layer.

- 3.2.2 Fiber:** The cloth shall be woven from AMS 3892/___ carbon fiber tows or as otherwise specified by purchaser. The carbon fiber tow shall be an untwisted strand for both the warp and fill. A resin compatible finish or treatment may be applied to promote weaving, impregnation, or fiber-matrix interaction.
- 3.2.3 Resin Matrix:** The woven fabric shall be impregnated with a matrix resin yielding a product meeting the requirements of the detail specification. Impregnation shall be either by the solvent or hot melt method.
- 3.2.4 Alignment:** The alignment of the warp and fill yarns shall be perpendicular to each other and shall be parallel to the warp and fill direction of the impregnated cloth within three degrees (four degrees for the first and last 10 yards (9 m) on a roll).
- 3.2.5 Selvage:** Shall not exceed 1.5 inches (38 mm) on each side.
- 3.2.6 Tracer Yarns:** Tracer yarns shall be placed in the woven cloth. Tracer yarns shall be aramid or other material specified by purchaser. No carbon fiber warp or fill yarns may be deleted to incorporate the tracer yarn. Tracer yarns shall be as follows:

	Tracer	Spacing
Warp	195 Denier	1.75 - 2.25 inches (44.4 - 57.2 mm)
Fill	380 Denier	5 - 7 inches (127 - 178 mm)

- 3.2.7 Storage Life:** The product, when packaged in waterproof, heat-sealed bags, shall meet the requirements of the applicable detail specification after storage as specified therein.
- 3.2.8 Working Life:** The product shall meet the requirements of the applicable detail specification after exposure for a continuous period at the relative humidity and temperature specified in Figure 1.