

AEROSPACE MATERIAL SPECIFICATION

Carbon Fiber Cloth 8HS Style Fabric Epoxy Resin Impregnated

1. SCOPE:

1.1 Form: This specification covers one type of epoxy-resin-impregnated carbon fibers in the form of eight harness satin fabric woven from continuous fiber tow.

1.2 Application: Primarily for use in structural composites requiring strength up to 120°C (248°F).

2. APPLICABLE DOCUMENTS: Shall be in accordance with AMS 3897 and the following:

2.1 Aerospace Recommended Practices:

ARP 1610 - Physical-Chemical Characterization Techniques, Epoxy Adhesive and Pregreg Resin Systems

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

3.2 Material: The product shall be cloth, woven from continuous carbon fiber tows and impregnated with uncured epoxy resin formulated to meet the requirements specified herein.

3.2.1 Fiber: Shall be 3000 end AMS 3892 carbon fiber twisted strand for both warp and fill.

basic specification, AMS 3897.

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- 3.2.2 Epoxy Resin: Shall be a thermosetting formulation meeting the requirements of AMS 3727 and capable of impregnating carbon cloth.
- 3.2.2.1 Epoxy Resin DSC: Resin in the uncured pregreg shall give an exotherm peak temperature at 5°C/minute (9°F/minute) of 202° - 222°C (396° - 432°F) when tested in accordance with ARP1610.
- 3.2.3 Weave: The weave shall be an eight-harness, satin weave in which each warp and fill goes under one, and over seven, then under one, and repeat. The interweaving of the warp and fill shall be staggered, i.e., the No. 1 warp shall go over the No. 1, No. 9, No. 17, and subsequent fill, and the No. 2 warp shall go over the No. 4, No. 12, No. 20, and subsequent fill.
- 3.3 Properties: Cloth shall conform to the following properties:
- 3.3.1 Area1 Weight: 10.4 - 11.2 ounces/square yard ASTM D3776
(352 - 388 g/m²)
- 3.3.2 Fabric Count:
- | | | | |
|------|---------|---------------|-----------|
| Warp | 23 - 25 | tows per inch | (25.4 mm) |
| Fill | 22 - 24 | tows per inch | (25.4 mm) |
- 3.3.3 Storage Life: The product shall meet the requirements of this specification when tested at any time up to six months from date of receipt by purchaser provided it has been stored in the original unopened (0°F)
- 3.3.4 Working Life: The product shall meet the requirements of this specification when tested after continuous exposure for up to 20 days within the relative humidity and temperature limits shown in the basic specification, AMS 3897.
- 3.3.5 Drapability: No fiber breakage shall be visible when the cloth is bent 180 degrees around a mandrel having a diameter of 1/4 inch (6.4mm).
- 3.4 Properties of Uncured Impregnated Product: Shall be as follows: tests shall be performed on the product after warming to above the dew point prior to sampling and in accordance with test methods listed in the basic specification.
- 3.4.1 Volatile Content, maximum 3% of resin weight
- | | |
|------------------|-----------------------|
| Test temperature | 150°C ± 5 (302°F ± 9) |
| Test time | 15 - 60 minutes |
- 3.4.2 Resin Solids Content 42% by weight ± 3
- 3.4.3 Resin Flow 5 - 25% by weight

