



AEROSPACE MATERIAL SPECIFICATION

AMS3847™**REV. D**

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Superseding AMS3847C

Cloth, Quartz, "B" Stage Polyimide Resin Impregnated
Style 581 Fabric, 315 °C (599 °F)

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 covers one type of quartz cloth impregnated with a heat-reactive, thermosetting, polyimide resin system, the resin being processed to a "B" stage condition, and furnished in continuous rolls of full width material.

1.2 Application:

This cloth has been used typically for structural laminates requiring high strength and long-term heat resistance up to 315 °C (599 °F), but usage is not limited to such applications.

1.3 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 SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2825 Material Safety Data Sheets

AMS 3619 Resin, Polyimide, Laminating, High Temperature Resistant, 315 °C
(599 °F)

AMS 3846 Cloth, Quartz, Finished for Resin Laminates

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM D 618 Conditioning Plastics and Electrical Insulating Materials for Testing

ASTM D 638 Tensile Properties of Plastics

ASTM D 638M Tensile Properties of Plastics (Metric)

ASTM D 695 Compressive Properties of Rigid Plastics

ASTM D 695M Compressive Properties of Rigid Plastics (Metric)

ASTM D 790 Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

ASTM D 790M Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials (Metric)

ASTM D 792 Specific Gravity (Relative Density) and Density of Plastics by Displacement

ASTM D 2344 Apparent Interlaminar Shear Strength of Parallel Fiber Composites by Short Beam Method

ASTM D 2584 Ignition Loss of Cured Reinforced Resins

ASTM D 2734 Void Content of Reinforced Plastics

2.3 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-STD-2073-1 DOD Materiel, Procedures for Development and Application of Packaging Requirements

3. TECHNICAL REQUIREMENTS:

3.1 Material:

3.1.1 Reinforcement: Shall be Style 581 quartz cloth conforming to AMS 3846, treated with a suitable finish to produce the required performance characteristics with the resin system specified herein.

3.1.2 Resin: Shall conform to AMS 3619.

3.2 Storage Life:

The impregnated cloth shall have a storage life of not less than six months from date of impregnation when stored at a temperature not higher than 4 °C (39 °F) in moisture-proof, heat-sealed containers.

3.3 Properties:

Impregnated cloth shall conform to the following requirements:

- 3.3.1 Uncured Impregnated Cloth: Cloth, as supplied, shall have the properties shown in Table 1; tests shall be performed on the cloth supplied, sampled in accordance with 4.3.1 after warming to above the dew point in its sealed, moisture-proof container, and tested in accordance with specified test methods.

TABLE 1 - Uncured Cloth Properties

Property	Requirement	Test Method
Volatile Content	13.5% by weight $\pm$ 2.0	4.5.2
Resin Content	34% by weight $\pm$ 3	4.5.3
Resin Flow	14% $\pm$ 2	4.5.4
Tack	To be reported	4.5.5

- 3.3.2 Cured Laminates: Shall have the following properties. Test specimens shall be cut from laminates produced as in 4.5.1 and tested in accordance with specified test procedures. Specimens to be tested at room temperature shall be conditioned and tested at standard conditions in accordance with ASTM D 618. Specimens to be tested at 315 °C (599 °F) shall be conditioned at the test temperature for at least 30 minutes prior to testing.

- 3.3.2.1 Tensile Strength and Modulus: Shall be as shown in Table 2, determined in accordance with ASTM D 638 or ASTM D 638M, except that the specimen shown in Figure 1 shall be used.

TABLE 2 - Tensile Strength and Modulus Properties

Test Temperature	Tensile Strength min	Tensile Strength min	Tensile Strength min	Tensile Strength min	Tensile Modulus min	Tensile Modulus min
	Individual ksi	Individual MPa	Average ksi	Average MPa	Average Msi	Average MPa
25 °C $\pm$ 3 (77 °F $\pm$ 5)	45.0	310	50.0	345	2.50	17,237
315 °C $\pm$ 3 (599 °F $\pm$ 5)	36.0	248	40.0	276	2.00	13,790