



AEROSPACE MATERIAL SPECIFICATION

AMS3827™

REV. C

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Superseding AMS3827B

Cloth, Type "E" Glass, "B" Stage Polyester-Resin-Impregnated
7781 Style Fabric, Flame Resistant

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 a style 7781 glass cloth impregnated with a heat-curable polyester resin system, the resin being processed to a "B" stage condition, and furnished in the form of continuous rolls.

1.2 Application: Primarily for vacuum-bag molded, flame resistant laminates used up to 80°C (176°F).

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.

2.1.1 Aerospace Material Specifications:

AMS 2825 - Material Safety Data Sheets

AMS 3824 - Cloth, Type "E" Glass, Finished for Resin Laminates

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

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 2344 - Apparent Interlaminar Shear Strength of Parallel Fiber Composites by Short Beam Method
ASTM F 501 - Aerospace Materials Response to Flame, with Vertical Test Specimen (for Aerospace Vehicles Standard Conditions)

2.3 U.S. Government Publications: Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

2.3.1 Military Standards:

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

3. TECHNICAL REQUIREMENTS:

3.1 Material:

3.1.1 Reinforcement: Shall conform to AMS 3824, Style 181, 1581, or 7781.

3.1.2 Resin: Shall be a low-pressure-laminating polyester resin modified as necessary to meet the requirements of 3.2, 3.3, and 3.4.

3.2 Shelf Life: The impregnated cloth shall have a shelf life of not less than three months from date of receipt by purchaser when stored below 7°C (45°F) or six months when stored at 18°C (0°F) or below in moisture-proof, sealed containers.

3.3 Working Life: The impregnated cloth shall meet the requirements of 3.4 when tested after continuous exposure up to 20 days within the relative humidity and temperature limits shown in Figure 1.

3.4 Properties: Impregnated cloth shall conform to the following requirements:

3.4.1 Uncured Impregnated Cloth: Shall conform to the following requirements; tests shall be performed on the cloth after warming to above the dew point in its sealed moisture-proof container prior to sampling and in accordance with specified test methods:

Volatiles, % by weight	To be reported in preproduction report	4.5.2
Resin Solids Content (Volatile Free), % by weight	40 ± 4	4.5.2
Gel Time, minutes	Preproduction Value ±20%	4.5.3
Resin Flow	Preproduction Value ±20%	4.5.4

3.4.2 Cured Laminate: Shall conform to the following requirements; tests shall be performed at 25°C ± 3 (77°F ± 5) in accordance with specified test methods on specimens cut from test laminates prepared as in 4.5.1. Reported average values shall be based on four determinations for each requirement.

3.4.2.1 Tensile Strength: ASTM D 638 or
ASTM D 638M

Minimum Average	38.2 ksi (263 MPa)
Individual Minimum	32.2 ksi (222 MPa)

3.4.2.2 Compressive Strength (Edgewise): 4.5.5

Minimum Average	25.0 ksi (172 MPa)
Individual Minimum	22.5 ksi (155 MPa)

3.4.2.3 Flexural Strength: ASTM D 790 or
ASTM D 790M

Minimum Average	46.0 ksi (317 MPa)
Individual Minimum	41.4 ksi (285 MPa)

3.4.2.4 Flexural Modulus: ASTM D 790 or
ASTM D 790M

Minimum Average	2,100.0 ksi (145 GPa)
Individual Minimum	2,000.0 ksi (140 GPa)

3.4.2.5 Flame Resistance: (See 8.3)

3.4.2.5.1 Vertical Test, 60 Second Ignition: ASTM F 501

3.4.2.5.1.1 Time to Extinguish after Flame
Removal, maximum

Maximum Average	5.0 seconds
Individual maximum	6.0 seconds