



AEROSPACE MATERIAL SPECIFICATION

AMS3845™

REV. C

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Superseding AMS3845B

Cloth, Type "E" Glass
"B" Stage Addition Cure Polyimide-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 cover glass cloth impregnated with a heat-reactive, thermosetting, addition-cure polyimide resin system, the resin to be supplied in a "B" stage condition.

1.2 Application:

Primarily for laminated structural parts requiring high strength and long-term heat resistance up to 230 °C (446 °F) and short-term exposure up to 290 °C (555 °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.

1.4 Classification:

Shall be as follows:

Class 1 - Low-Flow Addition-Cure Resin

Class 2 - High-Flow Addition-Cure Resin

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 (600 °F)
AMS 3824 Cloth, Type "E" Glass, Finished for Resin Laminates

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 638 Tensile Properties of Plastics
ASTM D 638M Tensile Properties of 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 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 conform to AMS 3824, Style 181, 1581, or 7781.

3.1.2 Resin: Shall conform to AMS 3619.

3.1.3 Storage Life: The impregnated cloth shall have a shelf life of not less than three months from date of shipment when stored or shipped in a barrier container and maintained at 4 to 15 °C (39 to 59 °F).

3.2 Properties:

3.2.1 Uncured Impregnated Cloth: Cloth, as supplied shall conform to the following requirements; tests shall be performed in accordance with specified ASTM methods, insofar as practicable. In addition, when specified, tack and drape shall be as agreed upon by purchaser and vendor.

3.2.1.1 Volatile Content and Resin Solids: Volatile content shall be not greater than 10%. Devolatilized resin content shall be as specified by purchaser.

3.2.1.2 Gel Time: Shall be either 50 minutes ± 5 or $\pm 20\%$ of the preproduction value, as agreed upon by purchaser and vendor, determined using a platen temperature of 290 °C ± 5 (554 °F ± 9).

3.2.1.3 Wet Resin Flow: Shall be as agreed upon by purchaser and vendor, with a tolerance of $\pm 20\%$, determined using a platen temperature of 290 °C ± 5 (554 °F ± 9).

3.2.2 Cured Product: Shall be as follows, determined on laminates prepared as in 4.5.1. Properties of laminates of constructions other than as specified in 4.5.1 shall be as agreed upon by purchaser and vendor. The resin content, molding pressure, and cure cycle for each panel shall be reported. Test specimens shall be held at the specified test temperature for not less than 30 minutes before testing.

3.2.2.1 Tensile Strength Minimum Average:

TABLE 1 - Tensile Strength

Test Temperature	ksi	MPa
25 °C ± 3 (77 °F ± 5)	45.0	310
230 °C ± 5 (446 °F ± 9)	40.0	276
290 °C ± 5 (554 °F ± 9)	34.0	234

3.2.2.2 Short Beam Shear Strength, Minimum Average:

TABLE 2 - Short Beam Shear

Test Temperature	Class 1 psi	Class 1 MPa	Class 2 psi	Class 2 MPa
25 °C ± 3 (77 °F ± 5)	5000	34.5	3300	22.8
230 °C ± 5 (446 °F ± 9)	3500	24.1	2500	17.2