

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard



AMS 3906/3B

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Superseding AMS 3906/3A

Glass Non-Woven Fiber Tape and Flat Sheet Epoxy Resin Impregnated, For Hand and Machine Layup GL-I-26 - 150 (302)

1. SCOPE:

1.1 Form:

This specification covers one type of epoxy-resin-impregnated, non-woven, glass fiber in the form of tape for hand or machine layup and of flat sheet.

1.2 Application:

These products have been used typically in structural composites requiring moderate strength up to 150 °C (302 °F), but usage is not limited to such applications.

1.3 Classification:

GL-I-26 - 150 (302), non-woven "E" glass fiber impregnated with epoxy resin for service from -55 to +150 °C (-67 to +302 °F).

2. APPLICABLE DOCUMENTS:

See AMS 3906.

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 basic specification, AMS 3906.

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3.2 Product:

Shall be a non-woven, general purpose, "E" glass fiber meeting the requirements of MIL-R-60346, Type I, impregnated with epoxy resin formulated to meet the requirements specified herein.

3.3 Properties of Uncured Product:

Shall be as shown in Table 1, 3.3.6, and 3.3.7. Tests shall be performed on the product as-received, after warming to above the dew point prior to sampling.

TABLE 1 - Properties

| Paragraph | Property | Requirement | Test Method |
|-----------|-------------------------------------|--------------------------------------|--|
| 3.3.1 | Volatile Content by weight, maximum | 2% | ASTM D 3530 165 °C ± 5 (329 °F ± 9) 15 minutes ± 1 |
| 3.3.2 | Total Nonfiber Content by weight | 26% ± 3 | ASTM D 3529 |
| 3.3.3 | Resin Flow by weight | 9% ± 6 | ASTM D 3531 165 °C ± 5 (329 °F ± 9) |
| 3.3.4 | Gel Time | 3 minutes ± 2 | ASTM D 3532 165 °C ± 5 (329 °F ± 9) |
| 3.3.5 | Tack | Shall adhere for 30 minutes, minimum | 4.5.2 of AMS 3906 |

3.3.6 Total weight per unit area, determined in accordance with 4.5.3 of AMS 3906, shall be 336 grams per square yard ± 21 (402 g/m² ± 25).

3.3.7 Ply thickness, uncured, determined in accordance with 4.5.4 of AMS 3906, shall be 0.009 inch ± 0.002 (0.23 mm ± 0.05).

3.4 Properties of Cured Laminate:

Shall be as follows, determined on specimens cut from a test panel prepared and tested as specified in the basic specification.

3.4.1 Mechanical Properties: Shall be as shown in Table 2.

- 3.4.2 Density: Shall be determined in accordance with ASTM D 792 on the test laminate used to determine mechanical properties; values for each test laminate shall be reported. Cured resin density shall also be reported.
- 3.4.3 Void Content: Shall be not greater than 4%, determined in accordance with ASTM D 2734.
- 3.4.4 Fiber Volume: Shall be determined in accordance with 4.5.5 of AMS 3906 on the test laminate used to determine mechanical properties; values for each laminate shall be reported. The fiber density to be used shall be 2.54 g/cm³.
4. QUALITY ASSURANCE PROVISIONS:
See AMS 3906.
5. PREPARATION FOR DELIVERY:
See AMS 3906.
6. ACKNOWLEDGMENT:
See AMS 3906.
7. REJECTIONS:
See AMS 3906.
8. NOTES:
See AMS 3906.

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TABLE 2A - Minimum Average Mechanical Properties^(A), Inch-Pound Units

| Property | Value, Tested at -67 °F ± 9 ksi | Value, Tested at 68 to 86 °F ksi | Value, Tested at 302 °F ± 9 ksi | Test Method |
|-------------------------------------|---------------------------------------|--|---------------------------------------|----------------|
| Tensile Strength ^(B) | | | | ASTM D 3039 |
| Longitudinal | 140 | 120 | 90.0 | |
| Transverse | TBR | TBR | TBR | |
| Tensile Modulus ^(B) | | | | ASTM D 3039 |
| Longitudinal | 5.8 x 10 ³ | 5.8 x 10 ³ | 4.5 x 10 ³ | |
| Transverse | TBR | TBR | TBR | |
| Compressive Strength ^(B) | | | | ASTM D 695 |
| Longitudinal | 90.0 | 80.0 | 50.0 | |
| Transverse | NA | TBR | NA | |
| Compressive Modulus ^(B) | | | | ASTM D 695 |
| Longitudinal | TBR | 5.6 x 10 ³ | TBR | |
| Transverse | NA | TBR | NA | |
| Flexural Strength ^(B) | | | | ASTM D 790 |
| Longitudinal | 185 | 170 | 80.0 | |
| Flexural Modulus ^(B) | | | | ASTM D 790 |
| Longitudinal | 6.0 x 10 ³ | 5.8 x 10 ³ | 5.0 x 10 ³ | |
| Short Beam Shear Strength | TBR | 7.0 | TBR | ASTM D 2344 |