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AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

SAE AMS 3906/4A

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Superseding AMS 3906/4

GLASS NON-WOVEN FIBER TAPE AND FLAT SHEET
Epoxy Resin Impregnated, For Hand and Machine Layup
GL-III-26 - 150 (300)

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: Primarily for use in structural composites requiring high strength at temperatures up to 150°C (300°F).

1.3 Classification: GL-III-26 - 150 (300), non-woven "S" glass fiber impregnated with epoxy resin for service at temperatures from -55° to 150°C (-67° to 300°F).

2. APPLICABLE DOCUMENTS: Shall be as shown in 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.

3.2 Product: Shall be a non-woven, high tensile strength, "S" glass fiber meeting the requirements of MIL-R-60346, Type III, impregnated with epoxy resin formulated to meet the requirements specified herein.

3.2.1 Storage Life: The product shall meet the requirements of this specification when tested at any time up to 12 months from the date of receipt of the product by the purchaser provided it has been stored in the original sealed container at a maximum temperature of 4°C (40°F).

3.2.2 Working Life: The product shall meet the requirements of this specification when tested after exposure to a relative humidity not higher than 70% and a temperature not higher than 27°C (80°F) for a continuous period of not less than 1 month.

3.3 Properties of Uncured Product: Shall be as follows; tests shall be performed on the product as-received, after warming to above the dew point prior to sampling, in accordance with test methods specified in the basic specification.

3.3.1	Volatile Content by weight, max	2%
	Test Temperature: 165°C ± 5 (325°F ± 10) Test Time: 15 min. ± 1	
3.3.2	Total Nonfiber Content by weight	26% ± 3
3.3.3	Resin Flow by weight	9% ± 6
	Test Temperature: 165°C ± 5 (325°F ± 10)	
3.3.4	Gel Time	3 min. ± 2
	Test Temperature: 165°C ± 5 (325°F ± 10)	
3.3.5	Tack	Shall adhere for at least 30 min.

3.3.6 Total weight per unit shall be 336 g/sq yd ± 21 (402 g/m^2 ± 25).

3.3.7 Ply thickness, uncured shall be 0.009 in. ± 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 specified in Table I.

3.4.2 Density: Shall be determined 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%.

3.4.4 Fiber Volume: Shall be determined on the test laminate used to determine mechanical properties; values for each laminate shall be reported. The fiber density to be used shall be 2.485 g/cm^3.

4. QUALITY ASSURANCE PROVISIONS: See AMS 3906.

5. PREPARATION FOR DELIVERY: Shall be in accordance with AMS 3906 and the following:

5.1 Exterior package marking shall indicate storage temperature of 4°C (40°F) maximum.

6. ACKNOWLEDGMENT: See AMS 3906.

7. REJECTIONS: See AMS 3906.

8. NOTES: See AMS 3906.

TABLE I

Property	Value[1] Test Temperature[3] -55°C ± 5 (-67°F ± 10) psi	MPa	Room Temperature 20° - 30°C (68° - 86°F) psi	MPa	150°C ± 5.6 (300°F ± 10) psi	MPa
Tensile Strength, min[2]						
Longitudinal	200,000	1,379	190,000	1,310	125,000	862
Transverse	TBR[4]	TBR	TBR	TBR	TBR	TBR
Tensile Modulus, min[2]						
Longitudinal	8.0×10^6	55,200	8.0×10^6	55,200	6.5×10^6	44,800
Transverse	TBR	TBR	TBR	TBR	TBR	TBR
Compressive Strength, min[2]						
Longitudinal	95,000	655	90,000	621	55,000	379
Transverse	NA[5]	NA	TBR	TBR	NA	NA
Compressive Modulus, min[2]						
Longitudinal	TBR	TBR	7.8×10^6	53,800	TBR	TBR
Transverse	NA	NA	TBR	TBR	NA	NA
Flexural Strength, min[2]						
Longitudinal	200,000	1,379	190,000	1,310	90,000	621
Flexural Modulus, min[2]						
Longitudinal	7.8×10^6	53,800	7.8×10^6	53,800	6.5×10^6	44,800
Short Beam Shear Strength, min	TBR	TBR	7,500	52	TBR	TBR

NOTES: See page 5