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AEROSPACE MATERIAL SPECIFICATION

SAE AMS 3867/2B

Issued JAN 1978
Revised APR 1991
Reaffirmed APR 2001

Superseding AMS 3867/2A

Boron Filament Tape, Epoxy-Resin-Impregnated Type B5.6-E374 (Type B0.142-E190)

FOREWORD

This Reaffirm contains format/editorial changes only.

1. SCOPE:

1.1 Form:

This specification covers one type of epoxy-resin-impregnated boron filaments 0.0056 inch (0.142 mm) in diameter in the form of continuous tape supported on a glass cloth carrier.

1.2 Application:

Primarily for use in structural composites operating in the range of -55 to +190 °C (-67 to +374 °F).

2. APPLICABLE DOCUMENTS:

See AMS 3867.

3. TECHNICAL REQUIREMENTS:

3.1 Basic Specification:

The complete requirements for procuring the tape described herein shall consist of this document and the latest issue of the basic specification, AMS 3867.

3.2 Material:

Shall be AMS 3865, high-modulus, 0.0056 inch (0.142 mm) nominal diameter boron filaments impregnated with epoxy resin formulated to meet the requirements specified herein and supported by an AMS 3824, Style 104, glass cloth carrier.

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3.2.1 Storage Life: Tape shall meet the requirements of this specification when stored in the original unopened containers for a total storage time of 7 months at not higher than -18 °C (0 °F) and, in addition, 7 days (cumulative) at 25 °C ± 3 (77 °F ± 5).

3.2.2 Working Life: Tape shall meet the requirements of this specification when tested after continuous exposure for up to 20 days within the relative humidity and temperature limits shown in Figure 1.

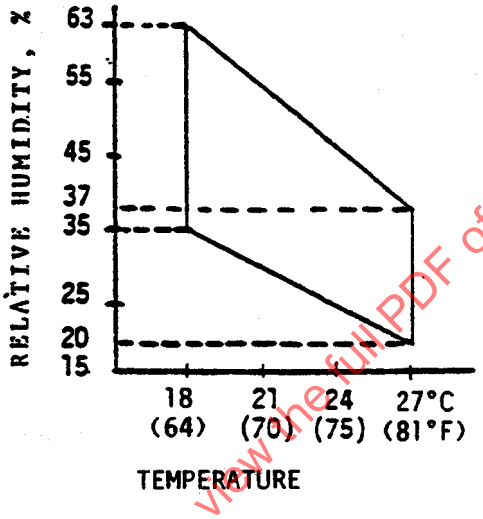

FIGURE 1

3.3 Properties of Uncured Impregnated Tape:

Shall be as follows; tests shall be performed on the tape after warming to above the dew point prior to sampling and in accordance with test methods listed in the basic specification:

3.3.1	Volatile Content by weight	0.3 - 1.7%
3.3.2	Resin Solids by weight	32% ± 2
3.3.3	Resin Flow by weight	9 - 18%
3.3.4	Gel Time, seconds	Preproduction Value ± 20%
3.3.5	Tack	
	Tape to Interleaf Carrier	As agreed upon
	Tape to Tool	Shall adhere for not less than 30 minutes

3.3.6 Dimensions: The thickness of the uncured tape, including scrim, shall be not less than 0.0065 inch (0.165 mm) and the width shall be 6.0 inches (152 mm), unless otherwise ordered. The tape shall contain 146 to 152 filaments for each inch (25.4 mm) width of tape.

3.4 Properties of Cured Laminate:

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

3.4.1 Mechanical Properties: Shall be as specified in Table 1.

3.4.1.1 Fiber Volume: Normalized strength and modulus values specified in Table 1 are based on 51% boron filament by volume, determined on the cured laminates for testing. For calculations, use boron filament density of 2.491 Mg/m^3.

3.4.1.2 Nominal Cured Thickness per Ply: Shall be 0.0069 inch ± 0.0003 (0.175 mm ± 0.008).

TABLE 1 - Mechanical Properties of Cured Laminate

Property	Test[1] Temperature °C	Test[1] Temperature °F	Time at Test Temperature	Average Values, minimum[2] Ultimate Strength psi	Average Values, minimum[2] Ultimate Strength MPa	Average Values, minimum[2] Initial Modulus 10^6 psi	Average Values, minimum[2] Initial Modulus MPa
Compression,	RT	RT		375,000	2586	33.0	227,527
(0 degree)	190	374	30 minutes	140,000	965	31.0	213,737
	190	374	200 hours	125,000	862	31.0	213,737
Flexure	RT	RT		250,000	1724	27.0	186,158
(0 degree)	190	374	30 minutes	180,000	1241	20.0	137,895
	190	374	200 hours	160,000	1103	20.0	137,895
Flexure,	RT	RT		11,000	75.8	2.0	13,790
(90 degrees)	190	374	30 minutes	8,000	55.2	0.8	5,516
	190	374	200 hours	7,000	48.3	0.8	5,516
Tension,	RT	RT		200,000	1379	30.0	206,843
(0 degree)	190	374	30 minutes	150,000	1034	26.0	179,264
	190	374	200 hours	140,000	965	26.0	179,264
Tension,	RT	RT		7,000	48.3	3.0	20,684
(90 degrees)	190	374	30 minutes	3,000	20.7	1.0	6,895
	190	374	200 hours	2,500	17.2	0.7	4,826
Shear,	RT	RT		14,500	100.0	-	-
Interlaminar	190	374	30 minutes	7,000	48.3	-	-
(0 degree)	190	374	200 hours	4,000	27.6	-	-

[1] All room temperature values shall be measured at 25 °C ± 3 (77 °F ± 5) and a relative humidity not higher than 65%. All other tests shall be conducted at the noted temperature ±3 °C (±5 °F).

[2] Requirements are specified as the average of the number of determinations per test required in AMS 3867. Individual minimums shall be not less than 90% of the value specified for 0-degree orientation specimens and not less than 85% for 90-degree orientation specimens.