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AEROSPACE MATERIAL SPECIFICATION

AMS 3867/3A
Superseding AMS 3867/3

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BORON FILAMENT TAPE, EPOXY-RESIN-IMPREGNATED
Type B8.0-E375
(Type B0.200-E190)

1. SCOPE:

1.1 Form: This specification covers one type of epoxy-resin-impregnated boron filaments 0.0080 in. (0.200 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 -55° to +190°C (-65° to +375°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, 0.0080 in. (0.200 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.

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 Ø when tested after continuous exposure for up to 20 days within the relative humidity and temperature limits shown in Fig. 1.

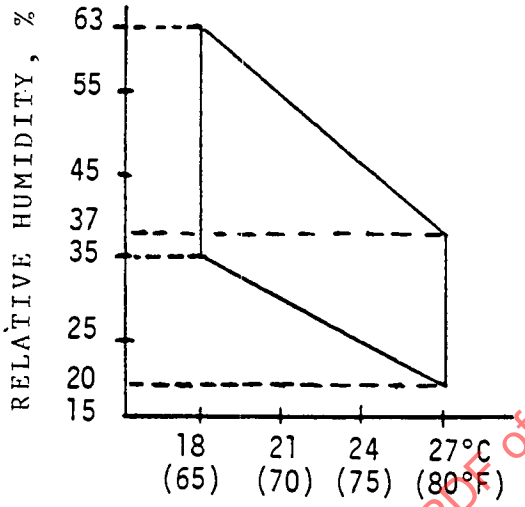

Figure 1

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 Ø	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, sec	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 0.0089 in. (0.225 mm) and the width shall be 3.0 in. (75 mm), unless otherwise ordered. The tape shall contain 102 to 108 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 I.

3.4.1.1 Fiber Volume: Normalized strength and modulus values specified in Ø Table I are based on 51% boron filament by volume, determined on the cured laminates for testing. For calculations, use boron filament density of 2.380 Mg/m^3.

3.4.1.2 Nominal Cured Thickness per Ply: Shall be 0.0092 in. ± 0.0003 (0.230 mm ± 0.008).

TABLE I
MECHANICAL PROPERTIES OF CURED LAMINATE

Property	Test[1] Temperature °C	°F	Time at Test Temperature	Average Values, min[2] Ultimate Strength psi	MPa	Initial Modulus 10^6 psi	MPa
Compression,	RT	RT		375,000	2585	33.0	227,500
(0 deg)	190	375	30 min.	140,000	965	31.0	213,700
	190	375	200 hr	125,000	860	31.0	213,700
Flexure,	RT	RT		250,000	1725	27.0	186,200
(0 deg)	190	375	30 min.	180,000	1240	20.0	137,900
	190	375	200 hr	160,000	1105	20.0	137,900
Flexure,	RT	RT		11,000	76.0	2.0	13,800
(90 deg)	190	375	30 min.	8,000	55.0	0.8	5,500
	190	375	200 hr	7,000	48.5	0.8	5,500
Tension,	RT	RT		200,000	1380	30.0	206,800
(0 deg)	190	375	30 min.	150,000	1035	26.0	179,300
	190	375	200 hr	140,000	965	26.0	179,300
Tension,	RT	RT		7,000	48.5	3.0	20,700
(90 deg)	190	375	30 min.	3,000	20.5	1.0	6,900
	190	375	200 hr	2,500	17.0	0.7	4,800
Shear,	RT	RT		14,500	100.0	-	-
Interlaminar	190	375	30 min.	7,000	48.5	-	-
(0 deg)	190	375	200 hr	4,000	27.5	-	-

[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 Ø test required in AMS 3867. Individual minimums shall be not less than 90% of the value specified for 0 deg orientation specimens and not less than 85% for 90 deg orientation specimens.