

PRODUCT DATA SHEET



TENCATE ADVANCED COMPOSITES

RS-17B Epoxy Resin System

TYPICAL APPLICATIONS

- Satellite Structures
- Aerospace Structures

PRODUCT TYPE

- 135–177°C (275–350°F) cure epoxy

SHELF LIFE

Tack Life: Up to 14 days at ambient

Out Life: Up to 30 days at ambient

Frozen Storage Life:

12 months at -18°C (<0°F)

Tack life is the time during which the prepreg retains enough tack, drape, and handling for component lay-up.

Out life is the maximum time allowed at ambient temperature before cure.

* Ambient is 18–22°C (65–72°F).

* *Out life tested by SBS on a 15x15 cm (6x6 in.) laminate, cured in an autoclave. Users may need to separately evaluate out life limits on thicker, larger, and more complex parts.*

PRODUCT DESCRIPTION

RS-17B is a modified epoxy resin which delivers extremely low moisture absorption while providing excellent mechanical properties, toughness, and modulus. RS-17B is a flexible cure system which may be cured from 135°C–177°C (275°F–350°F). RS-17B has a long spaceflight heritage.

RS-17B PRODUCT BENEFITS/FEATURES

- Minimum ambient out life of 4 weeks
- Excellent tack and drape
- Cures in 3 hours at 135°C (275°F) or 2 hours at 177°C (350°F)
- May be post-cured for higher Tg
- Flexible, robust range of process cycles
- Extremely low moisture absorption
- Excellent balance of mechanical properties and toughness
- Autoclave and press consolidation, some reinforcements are OOA compatible

RS-17B NEAT RESIN PHYSICAL PROPERTIES

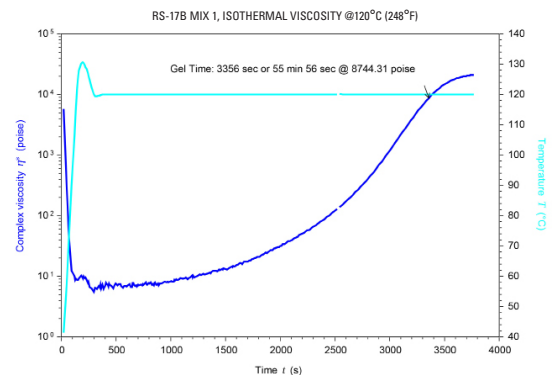
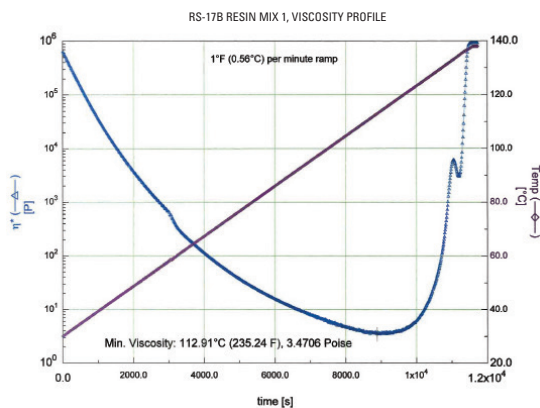
Density	1.19 g/cc
Tg, dry, DMA (after 275°F/135°C)	158°C (316°F)**
Tg, dry, DMA (after 325°F/163°C)	171°C (340°F)**
Tg, dry, DMA (after 350°F/177°C)	171°C (340°F)**
Equilibrium moisture absorption*	2.7%
Outgassing (TML, CVCM, WVR) (laminate).....	0.14 %, 0.02 %, 0.34%

* Determined after 30 days 180°F/82°C water immersion

** Laminate data

RS-17B NEAT RESIN MECHANICAL PROPERTIES

Flexural Strength	25 ksi/172 MPa
Flexural Modulus	527 ksi/3,633 MPa



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RS-17B M46J (6K) UNITAPE LAMINATE* AMBIENT MECHANICAL PROPERTIES

Property**	Results	
Tensile Strength	300 ksi	2,068 MPa
Tensile Modulus	36.5 msi	251.6 GPa
Compressive Strength	154 ksi	1,062 MPa
Compressive Modulus	32.5 msi	224.1 GPa
OHC Strength***	36 ksi	247 MPa
OHC Modulus***	11.3 msi	77.9 GPa
ILSS	10.9 ksi	75 MPa

* CPT: 3 mil.

** All properties normalized to 60% fiber volume except ILSS

*** [45,0,-45,90] 2S layup

RS-17B M55J (6K) UNITAPE LAMINATE AMBIENT MECHANICAL PROPERTIES

Property*	Cure Cycle		
	121°C (275°F) 3 hrs.	149°C (300°F) 2 hrs.	177°F (350°F) 2 hrs.
Tensile Strength, 0°	260 ksi / 1,792 MPa	250 ksi / 1,724 MPa	300 ksi / 2,068 MPa
Tensile Modulus, 0°	47.7 msi / 328.8 GPa	45.6 msi / 314.4 GPa	46.5 msi / 320.6 GPa
Tensile Strength, 90°	6.4 ksi / 44 MPa	7.1 ksi / 49 MPa	6.3 ksi / 43 MPa
Tensile Modulus, 90°	0.82 msi / 5.7 GPa	0.74 msi / 5.1 GPa	0.74 msi / 5.1 GPa
Compressive Strength, 0°	125 ksi / 861 MPa	126 ksi / 869 MPa	112 ksi / 772 MPa
Compressive Modulus, 0°	42.5 msi / 293.0 GPa	47.2 msi / 325.4 GPa	44.6 msi / 307.5 GPa
ILSS (ksi/Mpa)	9.0 ksi / 62 MPa	9.1 ksi / 63 MPa	10.5 ksi / 72.4 MPa

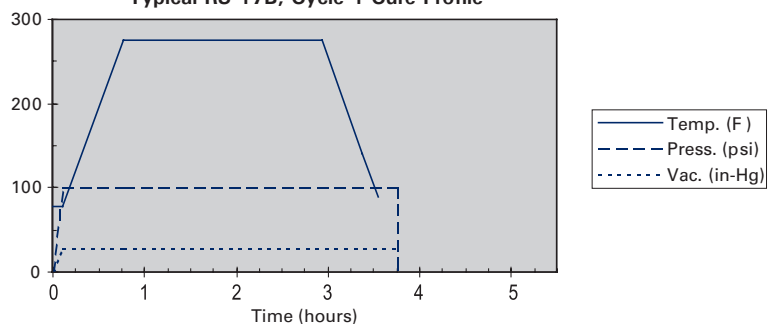
* All properties normalized to 60% fiber volume except ILSS.

TYPICAL RS-17B CURE PARAMETERS

Cycle 1:

- Heat to 135°C (275°F), (+6°C/-2°C) or (+10°F/-4°F)
@ +3°C ± 2°C/min (5°F ± 3°F/min)
- Hold at 135°C (275°F) (nom.) for 180 minutes.
Optional post cure at 163°–177°C (325°–350°F) for higher Tg.
- Cool at 3°C (5°F) (nom.) to below 60°C (140°F),
release vacuum and autoclave pressure

Typical RS-17B, Cycle 1 Cure Profile



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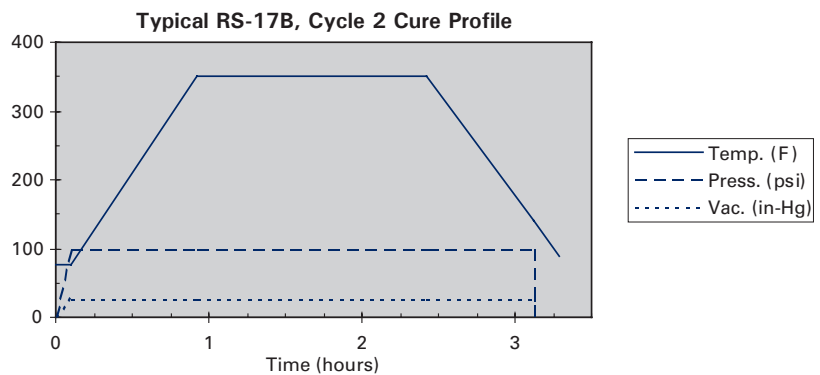
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TYPICAL RS-17B CURE PARAMETERS

Cycle 2:

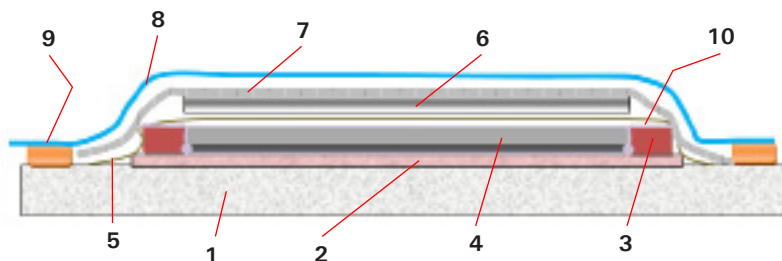
- Heat to 177°C (350°F), (+6°C/-0°C) or (+10°F/-0°F)
@ +3°C ± 2°C/min (5°F ± 3°F/min)
- Hold at 177°C (350°F) for 120 minutes (+15 min/-0 min)
- Cool at 3°C (5°F) min to below 60°C (140°F). Release vacuum and autoclave pressure
- No postcure is required



COMPOSITE LAMINATE STACKING SEQUENCE

LIST OF MATERIALS

1. Tool – aluminum, steel, Invar, composite (tool plates must be release coated or film covered)
2. Release coat or film – Frekote 700NC or 770NC, FEP, TEDLAR
3. Silicone Edge Dams – Thicker than laminate
4. Laminate
5. Release coat or film – Frekote 700NC or 770NC, FEP, TEDLAR
6. Caul plate – aluminum, steel, Invar, silicone rubber sheet (metal caul plates must be release coated or wrapped)
7. 2.2 osy polyester breather – 1 or more
8. Vacuum bag
9. Vacuum sealant
10. Glass yarn string - (alternatively or additionally breather may wrap over top of dam to contact edge)



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