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)

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, CVM, WVR) (laminate) .......... 0.14 %, 0.02 %, 0.34%

* 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.

RS-17B NEAT RESIN MECHANICAL PROPERTIES
Flexural Strength ...................................... 25 ksi/172 MPa
Flexural Modulus ...................................... 527 ksi/3,633 MPa
**RS-17B M46J (6K) UNITAPE LAMINATE AMBIENT MECHANICAL PROPERTIES**

<table>
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<tr>
<th>Property**</th>
<th>Results</th>
</tr>
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<tbody>
<tr>
<td>Tensile Strength</td>
<td>300 ksi / 2,068 MPa</td>
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<tr>
<td>Tensile Modulus</td>
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<td>36 ksi / 247 MPa</td>
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</tr>
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<td>ILSS</td>
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**RS-17B M55J (6K) UNITAPE LAMINATE AMBIENT MECHANICAL PROPERTIES**

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* All properties normalized to 60% fiber volume except ILSS
** [45,0,-45,90] 2S layup

**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](image-url)
RS-17B
Epoxy Resin System

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)