

PRODUCT DATA SHEET

DESCRIPTION

Toray RS-4A is a cyanate ester-based film adhesive developed to provide good adhesive performance for core/face skin structures, co-curing, and secondary bonding.

FEATURES

- ▶ Low cure shrinkage
- ▶ Good balance of toughness and material strength
- ▶ Low moisture absorption
- ▶ Low microcracking
- ▶ Meets NASA requirements for outgassing

PRODUCT TYPE

177°C (350°F) Cure Cyanate Ester Film Adhesive

TYPICAL APPLICATIONS

- ▶ Core to skin bonding
- ▶ Space or radome honeycomb structure

STANDARD PRODUCT CONFIGURATION

Widths from 304.8 mm–1066.8 mm (12" to 42") available

- ▶ 0.035 psf, 106 Glass Support
- ▶ 0.065 psf, 106 Glass Support
- ▶ 0.015 psf, Unsupported
- ▶ 0.030 psf, Unsupported

TYPICAL NEAT RESIN PROPERTIES

Dielectric Constant (10 GHz)	2.98
Loss Tangent (10 GHz)	0.014
Outgassing (TML)	0.32%
Outgassing (CVCM)	0.00%
Outgassing (WVR)	0.34%
Density	1.21 g/cc
Dry T _g (DSC) with 177°C (350°F) standard cure 2 hrs	195°C (383°F)
Dry T _g (DSC) with + 232°C (450°F) post cure 1.5–2 hrs	238°C (460°F)

SHELF LIFE

Out Life: 14 days at 25°C (77°F)

Frozen Storage Life: 6 months at -18°C (< 0°F)

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



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MECHANICAL PROPERTIES

Property	Condition	Method	Typical Results	
Flatwise Tensile Strength ⁽¹⁾ (3)	RTD	ASTM D 297	9.65 MPa	1.4 ksi
Single Lap Shear Strength	RTD	ASTM D 1002	28.25 MPa	4.1 ksi
Single Lap Shear Strength ⁽²⁾	ETD	ASTM D 1002	34.5 MPa	5.0 ksi

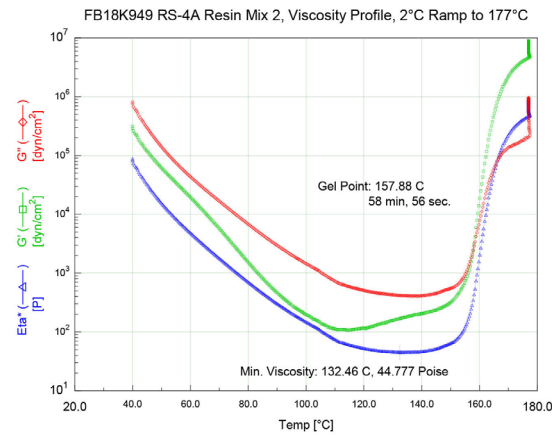
⁽¹⁾ Adhesive areal weight 217gsm (0.065 psf) autoclave cured 2 hours at 177°C (350°F) followed by 2 hours 218°C (425°F) post cure

⁽²⁾ ETD is tested at 125°C (257°F)

⁽³⁾ Failure: Core; Skins: IM-7 (6K) PW/RS-3C, Core #8 Aluminum Honeycomb

CURE PARAMETERS

- ▶ Apply vacuum, pressurize to 45 to 100 psi
- ▶ Release vacuum after pressure is achieved
- ▶ Heat to 177°C (350°F) (5°C/+10°F) at 2°C ± 1°C/min (5°F ± 3°F/min)
- ▶ Hold at 177°C (350°F) for 2 hours (+15 min) then cool
- ▶ May be post cured at 232°C (450°F) for 2 hours if higher service temperature is required



Revised 07/2019

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