TECHNICAL DATA

TENCATE ADVANCED COMPOSITES

RS-8

PRODUCT TYPE

400°F (204°C) Cure BMI Resin System

TYPICAL APPLICATIONS

- Satellite Structures
- Aerospace/Missile Structures
- Electromagnetic/Dielectric Structures

SHELF LIFE

Tack Life

14 days tack life at 77°F (25°C)

Out Life

30 days out life 77°F (25°C)

Frozen Storage Life

6 months storage life at <0°F (-18°C)

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

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

PRODUCT DESCRIPTION

RS-8 is a BMI resin which provides excellent elevated temperature properties and processability. RS-8 has been evaluated and qualified in the areas of satellite and airframe/missile structures. RS-8 is also available in several modified formulations including: RS-8HT, a high service temperature formulation; and RS-8M, a high service temperature controlled flow formulation.

RS-8 PRODUCT BENEFITS/FEATURES

- Excellent Ambient and Elevated Temperature Properties
- Good Toughness
- Good Moisture Resistance
- Oven, Autoclave, and Compression Consolidation
- Low Dielectric and Loss Tangent Over Wide Thermal and Electrical Ranges
- Elevated Glass Transition Properties Available with Higher Cure or Post Cure
- Good Handleability and Processing

NEAT RESIN PHYSICAL PROPERTIES

		RS-8	RS-8HT
Density		1.23 g/cc	1.23 g/cc
Dry Tg (by DMA)		397°F (203°C)	590°F (310°C)
Wet Tg (by DMA)		NA	567°F (297°C)
Gel Time at 350°F (177°C)		17 min	17 min
Viscosity at:	158°F (70°C)	7370 cps	7160 cps
	212°F (100°C)	300 cps	540 cps
	293°F (145°C)	200 cps	200 cps

RS-8 AND RS-8HT MECHANICAL PROPERTIES

Properties	Condition (RTD, ETD, ETW, Temperature)	RS-8	RS-8HT
Tensile Strength	RTD	11.9 ksi (82 MPa)	13.9 ksi (95.8 MPa)
Tensile Modulus	RTD	0.6 Msi (4.1 GPa)	0.56 Msi (3.9 GPa)
Tensile Strength	ETD-350°F (177°C)	7.4 ksi (51 MPa)	10.1 ksi (69.6 MPa)
Tensile Modulus	ETD-350°F (177°C)	0.35 Msi (2.4 GPa)	0.4 Msi (2.8 GPa)
Tensile Strength	ETD-400°F (204°C)	5.8 ksi (40 MPa)	10.4 ksi (71.7 MPa)
Tensile Modulus	ETD-400°F (204°C)	0.3 Msi (2.1 GPa)	0.4 Msi (2.8 GPa)
Elongation (%)	RTD	2.30%	3%
Elongation (%)	ETD-350°F (177°C)	2.60%	3%
Elongation (%)	ETD-400°F (204°C)	2.30%	4.60%
Fracture Toughness, G1c (in-lb/in^2)	RTD	0.97%	1.2

LAMINATE DATA USED AS-4 (12K)/RS-8 UDPP LAMINATE.

Properties	Condition (RTD, ETD, ETW)	Method	Results	
Flexural Strength 0°	RTD	ASTM D7264	250 ksi	1724 MPa
Flexural Strength 0°	ETD	ASTM D7264	210 ksi	1448 MPa
Flexural Strength 0°	ETW	ASTM D7264	160 ksi	1103 MPa
Interlaminar Shear Strength	RTD	ASTM D2344	16.5 ksi	113.8 MPa
Interlaminar Shear Strength	ETD	ASTM D2344	11 ksi	75.8 MPa
Interlaminar Shear Strength	ETW	ASTM D2344	7.5 ksi	51.7 MPa

- Autoclave cured 2 hours at 400°F (204°C). No post cure.
- Tg by RDA-6' ..... 374°F (190°C)
- ETD is 350°F (177°C)
- ETW is 350°F (177°C)

TENCATE ADVANCED COMPOSITES

RS-8

LAMINATE DATA USED T300-6K/RS-8HT UDPP LAMINATE.

Properties	Condition (RTD, ETD, ETW, Temperature)	Method	Results	
Tensile Strength 0°	RTD	ASTM D638	252 ksi	1737.5 MPa
Tensile Modulus 0°	RTD	ASTM D638	18 Msi	124.1 GPa
Tensile Strength 0°	ETD-600°F (316°C)	ASTM D638	68 ksi	468.8 MPa
Tensile Modulus 0°	ETD-600°F (316°C)	ASTM D638	18.5 Msi	127.6 GPa
Tensile Strength 0°	ETD-650°F (343°C)	ASTM D638	51 ksi	351.6 MPa
Tensile Modulus 0°	ETD-650°F (343°C)	ASTM D638	21.4 Msi	147.5 GPa
Compressive Strength 0°	RTD	ASTM D695	184 ksi	1268.6 MPa
Compressive Modulus 0°	RTD	ASTM D695	18.3 Msi	126.2 GPa
Compressive Strength 0°	ETD-600°F (316°C)	ASTM D695	25 ksi	172.4 MPa
Compressive Strength 0°	ETD-650°F (343°C)	ASTM D695	33 ksi	227.5 MPa
Compressive Strength 0°	ETD-700°F (371°C)	ASTM D695	18 ksi	124.1 MPa

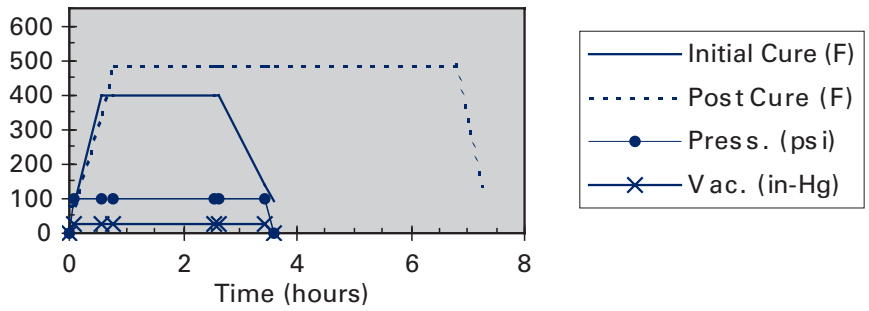
- Autoclave cured 2 hours at 400°F (204°C). No post cure.
- Fiber volume ~58%, data not normalized
- Tg by RDA-6' .....374°F (190°C)

LAMINATE DATA USED T300-6K (3K) 8HS/RS-8HM FPP LAMINATE.

Properties	Condition (RTD, ETD, ETW, Temperature)	Method	Results	
Flexural Strength 0°	RTD	ASTM D638 III	99.4 ksi	685.3 MPa
Flexural Modulus 0°	RTD	ASTM D638 III	10 Msi	68.9 GPa
Compressive Strength 0°	RTD	SACMA SRM 1	85.8 ksi	591.6 MPa
Compressive Modulus 0°	RTD	SACMA SRM 1	9.65 Msi	66.5 GPa
Compressive Strength 0°	ETD-600°F (316°C)	SACMA SRM 1	30.3 ksi	208.9 MPa
Flexural Strength 0°	RTD	ASTM D790	87.3 ksi	601.9 MPa
Flexural Modulus 0°	RTD	ASTM D790	9.13 Msi	62.9 GPa
Flexural Strength 0°	ETD	ASTM D790	38.2 ksi	263.4 MPa
Flexural Modulus 0°	ETD	ASTM D790	8.33 Msi	57.4 GPa
Interlaminar Shear Strength	RTD	ASTM D2344	5.6 ksi	38.8 MPa
Interlaminar Shear Strength	ETD	ASTM D2344	2.9 ksi	20.0 MPa

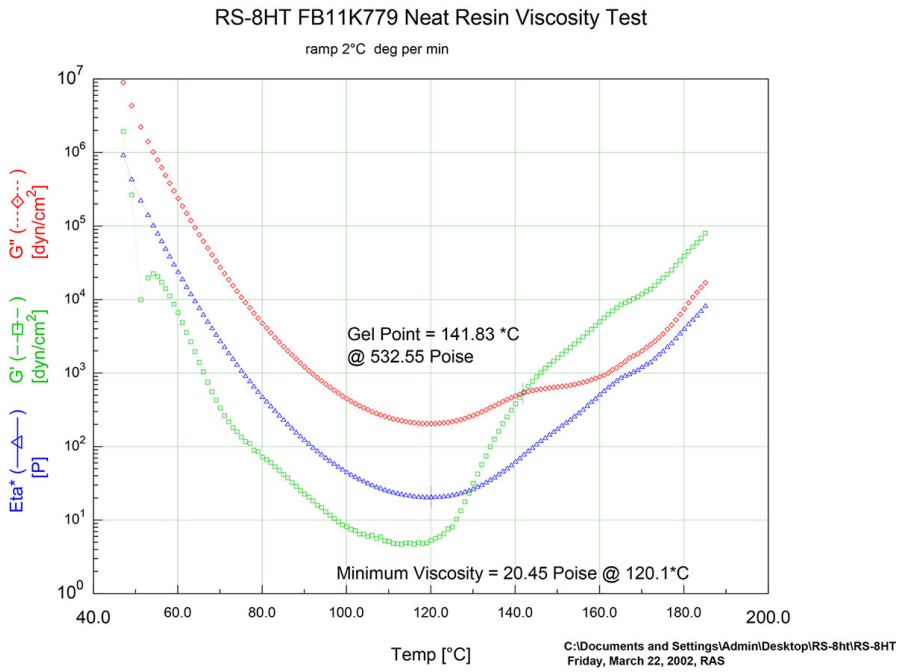
- Press molded with no vacuum or bagging. Cured at 400°F (204°C) for 2 hours, 30 minutes. Post cured in air 4 hours at 550°F (280°C)
- All data normalized to 60% fiber volume, except ILSS.
- Tg by RDA-6' ..... 608°F (320°C)

TYPICAL RS-8 CURE/POST CURE PROFILE



TENCATE ADVANCED COMPOSITES

RS-8

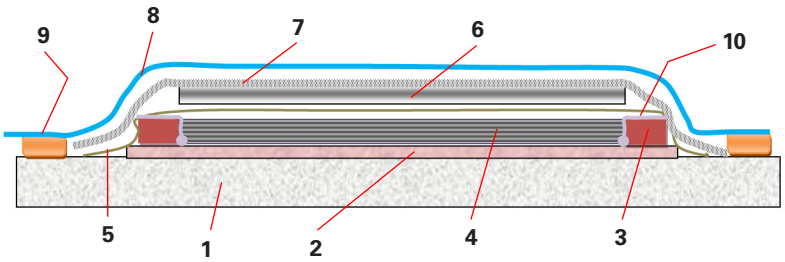


TYPICAL CURE PARAMETERS

- Apply vacuum. For autoclave applications, pressurize to 45-100 psi
- Heat to 400°F (204°C) (+10°F/6°C) at 5°F ± 3°F/min (3°C ± 2°C/min)
- Hold at 400°F (204°C) for 2 hours. (+15 min/-0 min)
- Cool at 5°F/min (3°C/min) to below 140°F (60°C)
- Post cure at 482°F (250°C) for 6 hours

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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All data given is based on representative samples of the materials in question. Since the method and circumstances under which these materials are processed and tested are key to their performance, and TenCate Advanced Composites has no assurance of how its customers will use the material, the corporation cannot guarantee these properties.

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