

UF3325 TCR RESIN SYSTEM



Technical Data Sheet

UF3325 is a solvent-free, controlled flow epoxy based resin. This prepreg system has excellent mechanical properties, a one-year room temperature shelf life, and is suitable for use in a variety of applications.

Available Prepreg Product Formats

- Tow (roving)
- Woven form/fabric
- Unidirectional tape
- Braid

Typical Applications

- High pressure tanks
- Rocket motor cases
- Sporting goods

Shelf Life

- 30 months at -18°C (0°F)
- 12 months at 24°C (75°F)
- 6 months at 32°C (90°F)

Benefits/ Features

- Long shelf life
- Tailored flow and tack levels
- Excellent surface gloss
- Excellent outgas performance

Cure Conditions

Curing cycle for composite parts <6.35 mm or 0.25 inches in thickness

- Ramp ≤ 2.78°C/min to 154°C (310°F)
- Hold 1 hour at 154°C
- Ramp ≤ 2.78°C/min to ≤ 66°C (150°F)

Thick composite parts (>6.35 mm or 0.25 inches) will require a modified cure cycle. Please contact TCR Composites for more information.

Cured Neat Resin Physical Properties*

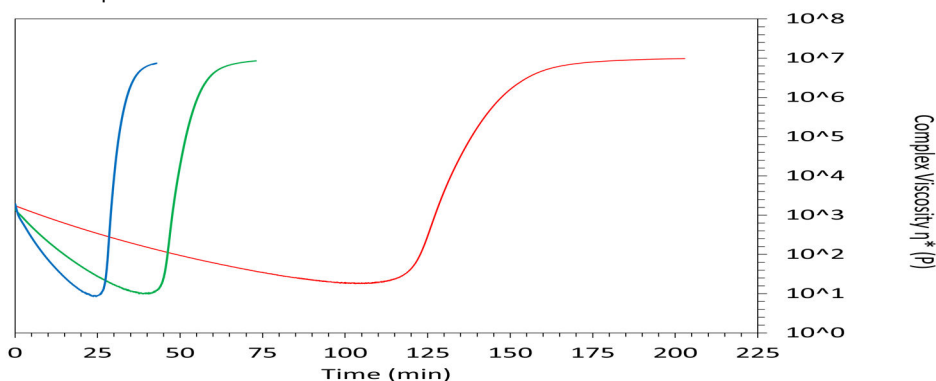
Properties	Metric	English	Test Method
Density	1.21 g/cc	0.0437 lbs/in ³	ASTM D 792
Tensile Strength	79 MPa	11.5 kpsi	ASTM D 638
Tensile Modulus	2.8 GPa	410 kpsi	ASTM D 638
Strain (% Elongation)	4.5%		ASTM D 638
Poisson's Ratio	0.21		ASTM D 638
Fracture Toughness – K _{IC}	0.556 MPa*m ^{1/2}	505.7 psi*in ^{1/2}	ASTM D 5045
DMA – Dry Glass Transition			
Glass Transition – E" Peak	129°C	264°F	ASTM E 1640
Glass Transition – E' Onset	124°C	255°F	ASTM E 1640
Glass Transition – Tan δ Peak	142°C	287°F	ASTM E 1640
DMA – Wet Glass Transition**			
Glass Transition – E" Peak	81°C	178°F	ASTM E 1640
Glass Transition – E' Onset	76°C	169°F	ASTM E 1640
Glass Transition – Tan δ Peak	94°C	202°F	ASTM E 1640
Water Absorption**	3.9%		ASTM D 570

*Cure cycle: 4 hours at 132°C

**DMA wet glass transition and water absorption measured after 24-hour water boil

Resin Cure Viscosity

Parallel-plate rheometer



0.56°C (1°F)/min—Min η*: 17.89 P, 95°C (203°F)

1.67°C (3°F)/min—Min η*: 9.87 P, 106°C (223°F)

2.78°C (5°F)/min—Min η*: 8.49 P, 109°C (228°F)

(η*) Time to Viscosity Minimum: {(Min η* Temperature (°C/°F) – (38°C/100°F)} ÷ {(°C/°F)/min}

TCR Composites

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TDS-RD-0104-R004-UF3325

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Composite Properties

Reinforcement: Standard modulus 12K tow carbon fiber: T700SC-12K-50C.

Composite properties are normalized to 60% fiber volume and expressed to two significant figures.

Cure cycle: 4 hours at 132°C (270°F) via vacuum bag oven cure, tests conducted at 22°C (72°F)

Properties	Metric	English	Test Method
0° Tensile Strength	2.1 Gpa	310 kpsi	ASTM D3039
0° Tensile Modulus	170 GPa	25 Mpsi	ASTM D3039
0° Tensile Percent Strain	1.7%		ASTM D3039
0° Tensile Poisson's Ratio	0.17		ASTM D3039
90° Tensile Strength	31 MPa	4.5 kpsi	ASTM D3039
90° Tensile Modulus	8.3 GPa	1.2 Mpsi	ASTM D3039
0° Compressive Strength	1.4 GPa	210 kpsi	SACMA SRM 1R-94
0° Compression Modulus	83 GPa	12 Mpsi	SACMA SRM 1R-94
Short Beam Strength	63 MPa	9.1 kpsi	ASTM D2344
Flexural Strength	2.0 GPa	290 kpsi	ASTM D790
Composite Density	1.5 g/cc	0.054 lbs/in ³	ASTM D792

Composite Outgas Properties- Reinforcement: T700SC-12K-50C

Requirement	Result	Limit	Pass/Fail	Test Method
TML	0.23 %	<1.00%	Pass	ASTM E595
CVCM	<0.01 %	<0.1%	Pass	
WVR	0.21	N/A	Pass	

TML	CVCM	WVR
Total Mass Loss	Collected Volatile Condensable Material	Water Vapor Recovered

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Cure Profiles

Option	Ramp Up	Hold Temperature	Hold Time (hours)	Ramp Down
1	≤2.78°C/min (5°F/min)	154°C (310°F)	1	≤2.78°C/min (5°F/min) to 66°C (150°F) or less
2		143°C (290°F)	2	
3		132°C (270°F)	4	

All values presented within this technical data sheet are expected ranges based on actual test data. Since values are dependent on specimen preparation and test method, TCR Composites cannot guarantee that these properties will be obtained in all cases. Data should be used only as an indication, since part or component properties are highly dependent on user process and design. It is recommended that end users determine the suitability of this material for each application through their own testing and evaluation.

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