

UF3357 TCR™ RESIN SYSTEM



Technical Data Sheet

UF3357 is a solvent-free, controlled flow epoxy based resin. This prepreg system has excellent mechanical properties, and shelf life of 6-months at room temperature. With a 180°C glass transition temperature, UF3357 is suitable for use in Out-Of-Autoclave (OOA) processing of higher temperature applications.

Available Prepreg Product Formats

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

Typical Applications

- High temperature applications
- Commercial

Shelf Life

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

Benefits/ Features

- Tailored flow and tack levels
- High glass transition temperature (T_g)

Cure Conditions

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

- Ramp ≤ 2.78°C/min to 177°C (350°F)
- Hold 2 hours at 177°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*

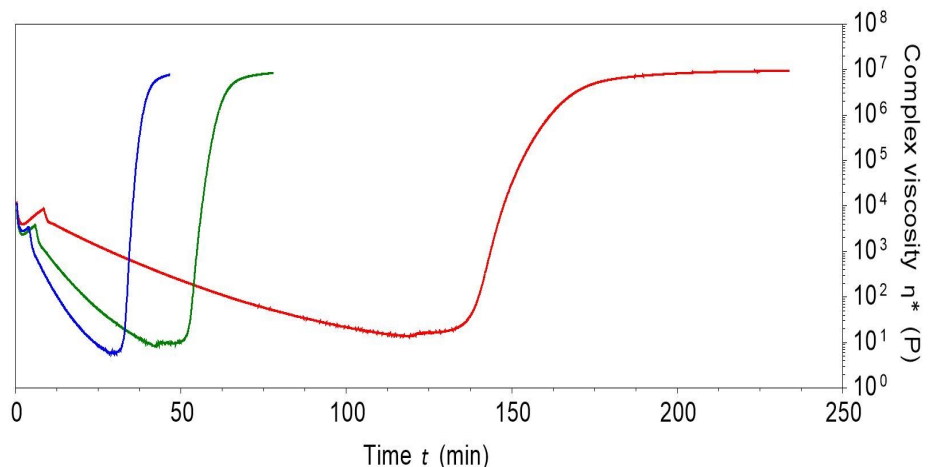
Properties	Metric	English	Test Method
Density	1.24 g/cc	0.0447 lbs/in ³	ASTM D 792
Tensile Strength	41 MPa	6.0 kpsi	ASTM D 638
Tensile Modulus	3.4 GPa	500 kpsi	ASTM D 638
Strain (% Elongation)	1.4 %		ASTM D 638
DMA – Dry Glass Transition			
Glass Transition – E" Peak	180°C	356°F	ASTM E 1640
Glass Transition – E' Onset	175°C	347°F	ASTM E 1640
Glass Transition – Tan δ Peak	197°C	386°F	ASTM E 1640
DMA – Wet Glass Transition**			
Glass Transition – E" Peak	130°C	266°F	ASTM E 1640
Glass Transition – E' Onset	118°C	244°F	ASTM E 1640
Glass Transition – Tan δ Peak	155°C	311°F	ASTM E 1640
Water Absorption**	2.7%		ASTM D 570

*Cure cycle: 2 hours at 177°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*: 13.43 P, 96°C (205°F)

1.67°C (3°F)/min—Min η*: 8.14 P, 101°C (214°F)

2.78°C (5°F)/min—Min η*: 5.69 P, 115°C (239°F)

TCR Composites

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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: 2 hours at 177°C (350°F) via vacuum bag oven cure, tests conducted at 22°C (72°F)

Properties	Metric	English	Test Method
0° Tensile Strength	1.4 GPa	2.0x10 ² kpsi	ASTM D3039
0° Tensile Modulus	120 GPa	18 Mpsi	ASTM D3039
0° Tensile Percent Strain	0.88 %		ASTM D3039
0° Tensile Poisson's Ratio	0.28		ASTM D3039
90° Tensile Strength	18 MPa	2.6 kpsi	ASTM D3039
90° Tensile Modulus	6.2 GPa	0.90 Mpsi	ASTM D3039
0° Compressive Strength	1.4 GPa	210 kpsi	SACMA SRM 1R-94
0° Compression Modulus	54 GPa	7.8 Mpsi	SACMA SRM 1R-94
90° Compression Strength	140 MPa	20 kpsi	SACMA SRM 1R-94
90° Compression Modulus	9.0 GPa	1.3 Mpsi	SACMA SRM 1R-94
Short Beam Strength	67 MPa	9.7 kpsi	ASTM D2344
Flexural Strength	2.1 GPa	3.0x10 ² kpsi	ASTM D790

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Cure Profiles

Option	Ramp Up	Hold Temperature	Hold Time (hours)	Ramp Down
1	≤2.78°C/min (5°F/min)	177°C (350°F)	2	≤2.78°C/min (5°F/min) to 66°C (150°F) or less
2		166°C (330°F)	4	
3		154°C (310°F)	8	

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. **TCR™** is a trademark of TCR Composites, Inc.

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