UF3362 TCR Resin System

Technical Data Sheet

UF3362 is a solvent-free, controlled flow and reduced tack version of TCR's UF3360 resin system. UF3362 is formulated to achieve a glass transition temperature comparable to UF3360. The resin tack and flow have been modified to meet the use requirements of unidirectional tape and fabric prepreg applications.

Available Prepreg Product Formats
- Woven form/fabric
- Unidirectional tape

Typical Applications
- Aerospace
- Commercial
- Radomes

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
- Intermediate glass transition (Tg)
- Tailored flow and tack levels
- Excellent dielectric behavior

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 for 1 hour 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.

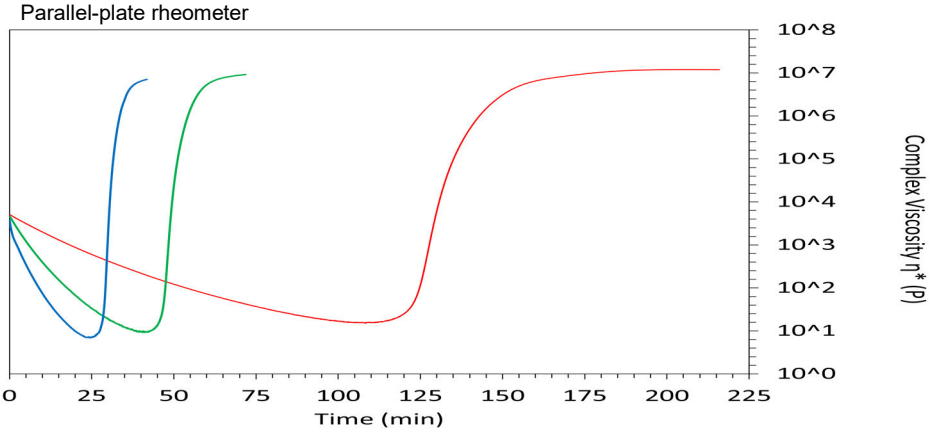
Cured Neat Resin Physical Properties*

Properties	Metric	English	Test Method
Density	1.21 g/cc	0.0437 lbs/in^3	ASTM D 792
Tensile Strength	54 MPa	7.8 kpsi	ASTM D 638
Tensile Modulus	2.86 GPa	415 kpsi	ASTM D 638
Strain (% Elongation)	2.3%		ASTM D 638
Poisson's Ratio	0.31		ASTM D 638
DMA – Dry Glass Transition			
Glass Transition – E" Peak	162°C	324°F	ASTM E 1640
Glass Transition – E' Onset	161°C	321°F	ASTM E 1640
Glass Transition – Tan δ Peak	180°C	356°F	ASTM E 1640
DMA – Wet Glass Transition**			
Glass Transition – E" Peak	118°C	244°F	ASTM E 1640
Glass Transition – E' Onset	110°C	231°F	ASTM E 1640
Glass Transition – Tan δ Peak	128°C	263°F	ASTM E 1640
Water Absorption**	2.6%		ASTM D 570

*Cure cycle: 1 hour 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*: 15.07 P, 100°C (212°F)

1.67°C (3°F)/min—Min η*: 9.20 P, 108°C (226°F)

2.78°C (5°F)/min—Min η*: 6.90 P, 112°C (234°F)

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

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Composite Properties

Reinforcement: 7781 E-Glass Fabric. 8 Harness Satin Weave, 8.81 oz/yd^2.
Composite properties are expressed to two significant figures.
Cure cycle: 1 hour 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	490 MPa	71 kpsi	ASTM D3039
0° Tensile Chord Modulus	28 GPa	4.1 Mpsi	ASTM D3039
0° Tensile Percent Strain	2.1%		ASTM D3039
Max In-plane Shear Stress	96 MPa	14 kpsi	ASTM D3518
In-Plane Shear Stress @ 5% Strain	53 MPa	7.7 kpsi	ASTM D3518
In-Plane Shear Modulus	3.3 GPa	0.48 Mpsi	ASTM D3518
Flexural Shear Strength	42 MPa	6.1 kpsi	ASTM D2344
0° Compressive Strength	420 MPa	61 kpsi	ASTM D6641
0° Compression Modulus	32 GPa	4.6 kpsi	ASTM D6641

Reinforcement: 6781 S Glass Fabric. 8 Harness Satin Weave, 8.92 oz/yd^2.
Composite properties are expressed to two significant figures.
Cure cycle: 1 hour 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	630 MPa	91 kpsi	ASTM D3039
0° Tensile Chord Modulus	29 GPa	4.2 Mpsi	ASTM D3039
0° Tensile Percent Strain	2.3%		ASTM D3039
Max In-plane Shear Stress	96 MPa	14 kpsi	ASTM D3518
In-Plane Shear Stress @ 5% Strain	$6.0x10^1$ MPa	8.7 kpsi	ASTM D3518
In-Plane Shear Modulus	3.8 GPa	0.55 Mpsi	ASTM D3518
Flexural Shear Strength	43 MPa	6.3 kpsi	ASTM D2344
0° Compressive Strength	430 MPa	62 kpsi	ASTM D6641
0° Compression Modulus	$3.0x10^1$ GPa	4.4 Mpsi	ASTM D6641

Dielectric Constants

Material	Dielectric Constant (Ɛ‘)	Loss Tangent (Ɛ’’/Ɛ’)
UF3362 Neat Resin	2.81	0.015
7781 E Glass with UF3362	4.49	0.011
6781 S Glass with UF3362	3.70	0.014
4581 Quartz with UF3362	3.07	0.006

Average X Band values from 8.2 to 12.4 GHz

Cure Profiles

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