

TR1185 TCR™ RESIN SYSTEM



Technical Data Sheet

TR1185 is a specialty-formulated toughened resin, with a high glass transition that meets aerospace requirements for flame smoke and toxicity (FST). The TR1185 prepreg resin system has an excellent balance of thermal and structural properties, with exceptional shelf-life at room temperature.

Available Prepreg Product Formats

- Tow (roving)
 - Carbon
 - S-glass
 - E-glass
- Woven form/fabric
- Unidirectional tape

Typical Applications

- Aerospace
- Industrial manufacturing
- Structural

Shelf Life

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

Benefits/ Features

- High toughness and impact resistance
- FST performance
- High glass transition temperature

Cure Conditions

Curing cycle for composite parts <0.25 inches in thickness

- One-hour ramp up to 177°C (350°F)
- Four-hour hold at 177°C
- Two-hour ramp down to ambient.

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

Cured Neat Resin Physical Properties*

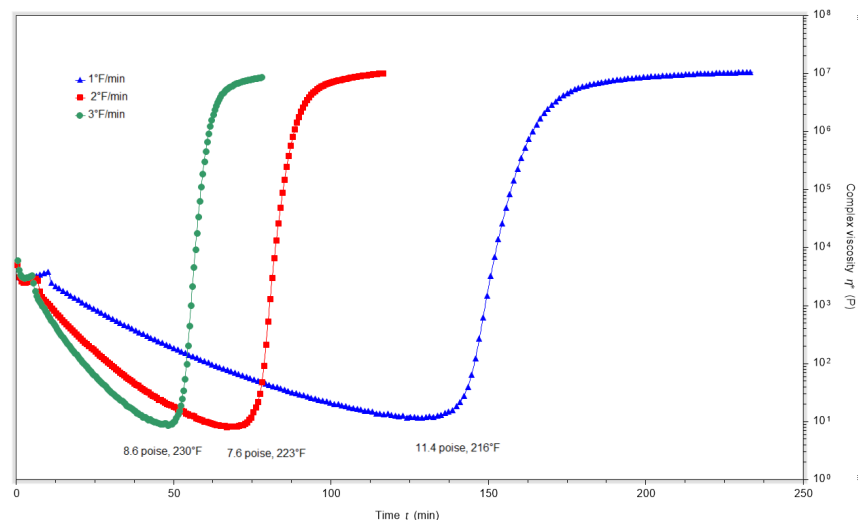
Properties	Metric	English	Test Method
Density	1.24 g/cc	0.0448 lbs/in ³	ASTM D792
Tensile Strength	66.5 MPa	9.65 kpsi	ASTM D638
Tensile Modulus	3.11 GPa	451 kpsi	ASTM D638
Strain (% Elongation)	2.24%		ASTM D638
Poisson's Ratio	0.33		ASTM D638
DMA – Dry Glass Transition			
Glass Transition – E" Peak	200°C	392°F	ASTM E1640
Glass Transition – E' Onset	190°C	374°F	ASTM E1640
Glass Transition – Tan δ Peak	210°C	410°F	ASTM E1640
DMA – Wet Glass Transition**			
Glass Transition – E" Peak	130°C	266°F	ASTM E1640
Glass Transition – E' Onset	120°C	248°F	ASTM E1640
Glass Transition – Tan δ Peak	155°C	311°F	ASTM E1640
Water Absorption**	3.25%		ASTM D 570

*Cure cycle: 4 hours at 177°C

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

Resin Cure Viscosity

Parallel-plate rheometer



TCR Composites

219 North 530 West, Ogden, Utah 84404 USA

1-800-827-3746

1-801-622-3800

sales@tcrcomposites.com | www.tcrcomposites.com

TR1185 TCR™ RESIN SYSTEM



Technical Data Sheet

Composite Properties

Reinforcement: Standard modulus 12K tow carbon fiber. Properties normalized to 60% fiber volume.

Cure cycle: 4 hours at 177°C (350°F), tests conducted at 22°C (72°F)

Properties	Metric	English	Test Method
0° Tensile Strength	1.43 GPa	208 kpsi	ASTM D3039
0° Tensile Modulus	137 GPa	19.9 Mpsi	ASTM D3039
0° Tensile Percent Strain	1.10%		ASTM D3039
90° Tensile Strength	18.1 MPa	2.63 kpsi	ASTM D3039
90° Tensile Modulus	7 GPa	1 Mpsi	ASTM D3039
0° Compressive Strength	1.47 GPa	213 kpsi	SACMA SRM 1R-94
0° Compression Modulus	74 GPa	11 Mpsi	SACMA SRM 1R-94
90° Compression Strength	142 MPa	20.6 kpsi	SACMA SRM 1R-94
90° Compression Modulus	9.1 GPa	1.3 Mpsi	SACMA SRM 1R-94
Short Beam Strength	68 MPa	9.9 kpsi	ASTM D2344
Flexural Strength	2.09 GPa	303 kpsi	ASTM D0790
Flexural Modulus	130 GPa	18.8 Mpsi	ASTM D0790
Composite Density	1.54 g/cc	0.0555 lbs/in ³	ASTM D792
Fracture Toughness G _{IC}	116 J/m ²	0.664 in*lb/in ²	ASTM D5528

Fracture Toughness in Fabric Composites– Reinforcement: E-glass, 300 gsm fabric

Properties	Metric	English	Test Method
Fracture Toughness G _{IC}	366 J/m ²	2.09 in*lb/in ²	ASTM D5528

Fracture Toughness in Fabric Composites– Reinforcement: Carbon-3K, 200 gsm fabric

Properties	Metric	English	Test Method
Fracture Toughness G _{IC}	232 J/m ²	1.33 in*lb/in ²	ASTM D5528

TCR Composites

219 North 530 West, Ogden, Utah 84404 USA

1-800-827-3746

1-801-622-3800

sales@tcrcomposites.com | www.tcrcomposites.com

Presented values 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. TCR DS-01/Rev.1/[10] [19]

TR1185 TCR™ RESIN SYSTEM



Technical Data Sheet

Flame Resistance

FAR 25.853 Appendix F, Part I, Reinforcement: Standard modulus 12K tow carbon fiber—4 mm sample thickness

Test	Results	Limit	Pass/Fail
Extinguish Time (sec)	2	15	Pass
Burn Length (inch)	.1	6	Pass
Drip Count	0	3	Pass

Smoke Density

Boeing Doc BSS 7238, Rev C, Reinforcement: Standard modulus 12K tow carbon fiber—4 mm sample thickness

Test	Results	Limit	Pass/Fail
D _{s_max} (4 seconds)	86	200	Pass

Smoke Toxicity

Boeing Doc BSS 7239 Rev A, Reinforcement: Standard modulus 12K tow carbon fiber—4 mm sample thickness

Properties	Results	Limit	Pass/Fail
CO (ppm)	175	-	-
SO ₂ (ppm)	0	100	Pass
NO/NO ₂ (ppm)	18	100	Pass
HCN (ppm)	5	150	Pass
HCl (ppm)	63	500	Pass
HF (ppm)	93	200	Pass

TCR Composites

219 North 530 West, Ogden, Utah 84404 USA

1-800-827-3746

1-801-622-3800

sales@tcrcomposites.com | www.tcrcomposites.com

Presented values 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. TCR DS-01/Rev.1/[10] [19]