

# TR1112 TCR™ RESIN

## TECHNICAL DATA SHEET



### TR1112 Low Temperature Cure Resin Summary

- Solvent-free, epoxy resin based, prepreg resin system
- Low cure temperature of 200°F (93°C)
- Reduced exotherm potential in thick parts
- High fiber strength translation >98% possible in carbon fiber pressure vessels depending on fiber used
- 1-month shelf life without refrigeration at 75°F (24°C)
- Resin content tailored to suit your process needs
- Available reinforcement materials: carbon, glass, aramid, and basalt
- Available fiber forms: towpreg
- Typical Use: High pressure tanks (such as type IV composite overwrapped pressure vessels) ; sporting goods; infrastructure repair; any application where lower cure temperatures are required

### Neat Resin Properties

Properties	200°F (93°C) for 4 hours	Test Method
Density	1.2g/cc	ASTM D792
Tensile Strength	94.4 MPa / 13.7 Ksi	ASTM D638
Tensile Modulus	3.3 GPa / 480 Ksi	ASTM D638
Elongation at Break	3.3 %	ASTM D638
Tg – from E" DMA curve	112°C / 234°F	ASTM E1640
Tg after 24-Hr Water-Boil	77°C / 171°F	ASTM E1640
Water Absorption	6.2%	

### Composite Properties\*

Properties	Metric	English	Test Method
0° Tensile Strength	2450 MPa	355 Ksi	ASTM D3039
0° Tensile Modulus	151 GPa	22 Msi	ASTM D3039
0° Tensile Strain	1.8%		ASTM D3039
0° Compressive Strength	1360 MPa	197 Ksi	SACMA SRM 1R-94
90° Tensile Strength	25 MPa	3.6 Ksi	ASTM D3039
Short Beam Strength	66 MPa	9.5 Ksi	ASTM D2344
Flexural Strength	1830 MPa	265 Ksi	ASTM D0790
Bottle Burst Translation	98-100%		Netting Analysis

\*T700-12K– 50C fiber. Normalized to 60% fiber volume. Cured at 200°F (93°C) for 4 hrs.

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.

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**Cure Profile**

Ramp Up	Hold Temperature	Hold Time (Hours)	Ramp Down
≤ 5°F/min (2.78°C/min)	200°F / 93°C	4	≤ 5°F/min (2.78°C/min) to 150°F (66°C) or less
≤ 5°F/min (2.78°C/min)	230°F / 110°C	2.5	≤ 5°F/min (2.78°C/min) to 150°F (66°C) or less

Note: Hold temperature of 200 °F represents the minimum temperature the thickest section of a part must see to ensure completion of cure. As a result, slightly higher oven temperatures or hold times may be necessary.

**Estimated Storage Requirements**

The preimpregnated materials manufactured from this resin shall remain sealed and stored in the original package. The material is to be stored indoors, out of the weather.

Maximum Storage Temperature	Estimated Shelf Life (Months)	Additional Life at Ambient Temperatures After Refrigeration (Months)
75°F / 24°C	1	-
40°F / 4.4°C	4	
0°F / -18°C	12	1 (at Temps ≤ 75°F / 24°C)

Shelf life at temperatures listed are approximate and have not been fully verified by TCR. Customers are encouraged to verify the suitability of these estimates in conjunction with their process and performance requirements.

For additional technical information regarding TCR Composites' products, please call or visit our website.

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