Toray E722

Toray Advanced Composites

PRODUCT DATA SHEET

DESCRIPTION

Toray E722 is a 120°C (248°F) cure toughened epoxy component prepreg. E722 is designed for structural applications in the motorsport and marine industries. Toray E722 would also suit general aircraft fittings, sporting equipment, and a wide range of engineering applications. Toray E722 is compatible for co-cure with Toray MicroPly™ EF72, a 120°C (248°F) cure resin film, and Toray MicroPly™ SC72A syntactic core.

FEATURES

- **Excellent drapeability—complex shapes easily formed**
- **Good surface finish**
- **Medium tack level—easily laminates to mold surface**
- **Low volatile content—no solvents used during processing**
- **60 days out life at ambient temperature**
- **Autoclave, vacuum bag, or press curable**

PRODUCT TYPE

120°C (248°F) Cure Toughened Epoxy Resin System

TYPICAL APPLICATIONS

- Motor racing
- Marine industries
- General aircraft fittings
- Sporting equipment
- Wide range of engineering applications

SHELF LIFE

Out Life:	60 days at 20°C (68°F)
Storage Life:	12 months at -18°C (0°F)

Out life is the maximum time allowed at room temperature before cure.

To avoid moisture condensation
Following removal from cold storage, allow the prepreg to reach room temperature before opening the polythene bag. Typically, the thaw time for a full roll of material will be 4 to 6 hours.

TYPICAL NEAT RESIN PROPERTIES

Density	1.21 g/cm^3 (75.5 lbs/ft^3) at 23°C (73.4°F)
T_g (DMTA) after 1 hr at 120°C (248°F)	Onset: 120°C (248°F); Peak tan δ: 138°C (280°F)

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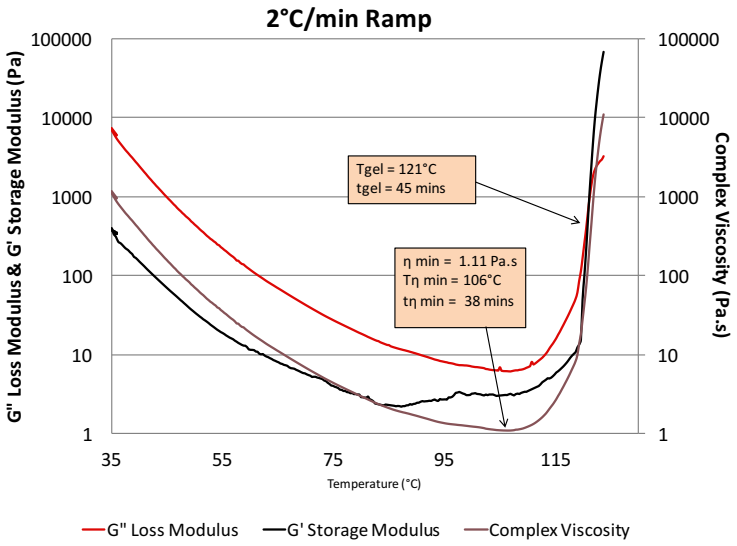
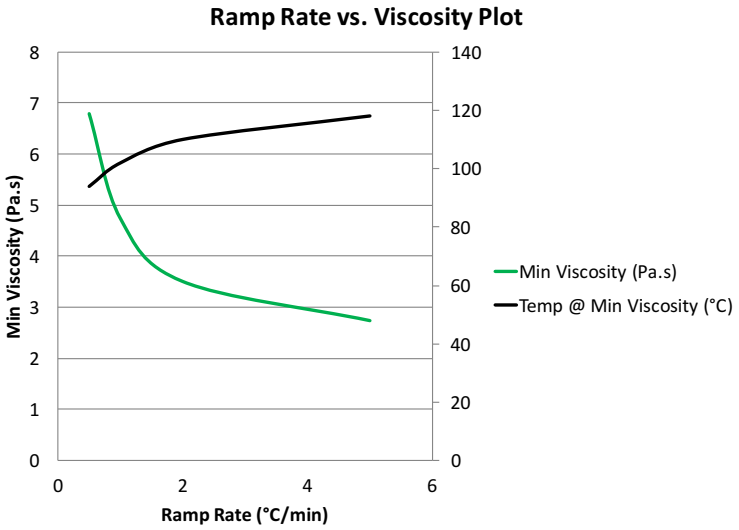
TYPICAL LAMINATE PROPERTIES

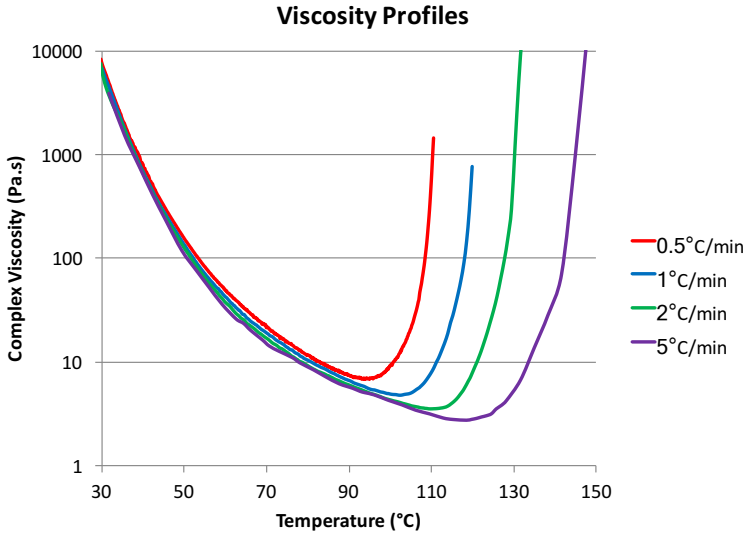
Standard Modulus 3K Carbon 205gsm FAW 2x2 Twill Woven Fabric Laminate				
Property	**Condition**	**Method**	**Results**	
Tensile Strength 0°	RTD	ISO 527-4	641 MPa	93 ksi
Tensile Modulus 0°	RTD	ISO 527-4	56.1 GPa	8.1 Msi
Poisson's Ratio 0°	RTD	ISO 527-4	0.04	
Tensile Strength 90°	RTD	ISO 527-4	580 MPa	84 ksi
Tensile Modulus 90°	RTD	ISO 527-4	52.4 GPa	7.6 Msi
Poisson's Ratio 90°	RTD	ISO 527-4	0.04	
In-Plane Shear Strength	RTD	EN 6031	112 MPa	16 ksi
In-Plane Shear Modulus	RTD	EN 6031	3.5 GPa	0.51 Msi
Poisson's Ratio	RTD	EN 6031	0.8	
Compression Strength 0°	RTD	EN 2850	488 MPa	71 ksi
Compression Modulus 0°	RTD	EN 2850	70 GPa	10.0 Msi
Compression Strength 90°	RTD	EN 2850	488 MPa	71 ksi
Compression Modulus 90°	RTD	EN 2850	70 GPa	10.0 Msi
Interlaminar Shear Strength 0°	RTD	ISO 14130	62 MPa	9 ksi
Interlaminar Shear Strength 90°	RTD	ISO 14130	62 MPa	9 ksi
0/90° Configuration Woven Laminates Cured 1 hour at 120°C (248°F) at 50% Vf				

RHEOLOGY



VISCOSITY





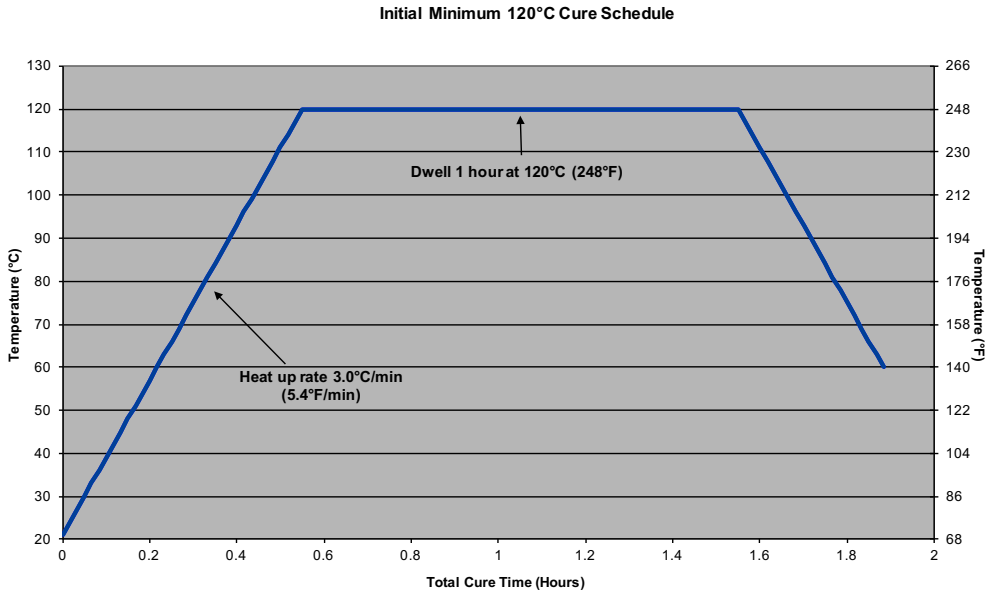
CURE PROPERTIES: VISCOSITY PROFILE 30°C TO 150°C

Ramp rate [°C (°F)/min]	Minimum Viscosity (Pa.s)	Temperature at Minimum Viscosity
0.5 (1.0)	2.2	89°C (192°F)
1.0 (1.8)	1.41	96°C (205°F)
2.0 (3.6)	1.11	106°C (223°F)
5.0 (9.0)	0.5	116°C (241°F)

RECOMMENDED CURE CYCLE

- Toray E722 can be successfully molded by vacuum bag, autoclave, or matched die molding techniques.
- Increase autoclave pressure to 1.4 bar (20 psi) with vacuum applied.
- Vent to atmosphere and raise pressure to 6.2 bar (90 psi) (or max allowed by the core material).
- Increase air temperature at 3°C (5.4°F)/min and hold for 1 hour at 120°C (248°F).
- Allow to cool to 50°C (122°F) before removal of pressure.

CURE SCHEDULE



EXOTHERM

In certain circumstances, such as the production of thick section laminates rapid heat-up rates or highly insulating masters, Toray E722 can undergo exothermic heating leading to rapid temperature rise and component degradation in extreme cases. Where this is likely, a cure incorporating an intermediate dwell of 1 hour at 90°C (194°F) is recommended in order to minimize the risk.

HANDLING SAFETY

Observe established precautions for handling epoxy resins and fibrous materials—wear gloves. For further information, refer to Safety Data Sheet.

PROCESSING

Cut patterns to size and lay-up the laminate in line with design instructions taking care not to distort the prepreg. If necessary, the tack of the prepreg may be increased by gentle warming with hot air. The lay-up should be vacuum debulked at regular intervals using a P3 (pin pricked) release film on the prepreg surface; a vacuum of 980 mbar (29 in Hg) is applied for 20 minutes.

For autoclave cures, use of a nonperforated release film on the prepreg surface trimmed to within 25–30 mm of the prepreg edge is recommended for the cure cycle and a vacuum bag should be installed using standard techniques.

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