

# PRO-SET®

## Technical Data

# M1002 M2015

The New  
Standard

## TOUGHENED LAMINATING EPOXY

### COMBINED FEATURES

**Medium viscosity** for good wet out of all synthetic composite fabrics and core materials.

**Extra Fast cure speed** hardener provides a 25 minute working time at 72°F (22°C). A typical laminate will be gelled in about 1 to 2 hours.

**Room temperature cure** properties suitable for many composite components and structures.

**T<sub>g</sub> as high as 162°F (72°C)** with proper post cure providing excellent temperature stability and great part cosmetics.

**Cost effective, high performance** epoxy formulation for synthetic composite manufacturing.

**Quality-control tinting** is available at no extra charge; simply add "QC" after the product code on your order.

**Shelf life** is 3 years for resin and 2 years for hardener when properly stored<sup>2</sup>.

EPOXIES for  
Laminating  
Infusion  
Tooling  
Assembly

### HANDLING PROPERTIES

Property	Standard	Units	72°F (22°C)
100g Pot Life	ASTM D2471	minutes	15-19
Viscosity Mixed	ASTM D2196	cP	2775
Viscosity (resin)	ASTM D2196	cP	4,800
Viscosity (hardener)	ASTM D2196	cP	2,400

### MIX RATIO

Method	Resin:Hardener	Resin:Hardener
Weight	4.0:1	100:25.0
Weight Range	3.78:1–4.46:1	26.40:1–22.40:1
Volume	3.70:1	100:27.0
Volume Range	3.52:1–4.15:1	28.40:1–24.10:1

### DENSITY

State	Units	72°F (22°C)
Cured	lb/gal (g/cc)	9.8 (1.17)

Test specimens were neat epoxy (without fiber reinforcement).  
Typical values, not to be construed as specification.

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ISO9001:2008 Certified

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## TOUGHENED LAMINATING EPOXY

### MECHANICAL PROPERTIES

Property	Standard	Units	72°F (22°C) x 2 wk	RT Gelation + 110°F (43°C) x 8 hrs	RT Gelation + 125°F (52°C) x 8 hrs	RT Gelation + 140°F (60°C) x 8 hrs	RT Gelation + 180°F (82°C) x 8 hrs
Hardness	ASTM D2240	Type D	82	83	83	84	84
Compression Yield	ASTM D695	psi (MPa)	13,290 (92)	13,800 (95)	14,000 (97)	14,200 (98)	13,600 (94)
Tensile Strength	ASTM D638	psi (MPa)	8,490 (59)	8,670 (60)	9,280 (64)	10,000 (69)	9,250 (64)
Tensile Modulus	ASTM D638	psi (GPa)	4.68E+05 (3.23)	4.54E+05 (3.13)	4.52E+05 (3.12)	4.80E+00 (.)	4.53E+05 (3.12)
Tensile Elongation	ASTM D638	%	4.2	3.9	3.9	4.1	4.3
Flexural Strength	ASTM D790	psi (MPa)	14,800 (102)	15,819 (109)	15,600 (108)	15,700 (108)	15,500 (107)
Flexural Modulus	ASTM D790	psi (GPa)	4.64E+05 (3.2)	4.53E+05 (3.12)	4.52E+05 (3.12)	4.49E+05 (3.1)	4.53E+05 (3.12)

### THERMAL PROPERTIES

Property	Standard	Units	72°F (22°C) x 2 wk	RT Gelation + 110°F (43°C) x 8 hrs	RT Gelation + 125°F (52°C) x 8 hrs	RT Gelation + 140°F (60°C) x 8 hrs	RT Gelation + 180°F (82°C) x 8 hrs
Tg DSC Onset– 1st Heat	ASTM E1356	°F (°C)	130 (54)	143 (62)	141 (61)	151 (66)	153 (67)
Heat Deflection Temperature	ASTM D648	°F (°C)	129 (54)	142 (61)	148 (64)	152 (67)	155 (68)
Tg DSC Ultimate	ASTM E1356	°F (°C)			162 (72) <sup>1</sup>		

<sup>1</sup> Additional post cure may be required; contact Technical Department for details.

<sup>2</sup> Store PRO-SET® Epoxy resins and hardeners at room temperature in sealed containers until shortly before use. As with many high-performance epoxy resins, repeated exposure to low temperatures during storage may cause the resin to crystallize. If this occurs, warm the resin to 125° F and stir to dissolve crystals. Hardeners may form carbamation when exposed to CO<sub>2</sub> and moisture in the atmosphere for extended periods of time. Prevent carbamation by protecting hardeners from exposure until immediately prior to processing.

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