

# PRO-SET®

## Technical Data

# XR28A~M2046

## FIRE RETARDANT INFUSION EPOXY

### COMBINED FEATURES

**Very low viscosity** for rapid saturation of fiberglass, Kevlar® and carbon fiber laminate with resin infusion and VARTM processes.

**Fire retardant system** (listed as XR02-099-28A) is accepted for compliance with Lloyd's Register Rules and Regulations and with the International Convention for Safety of Life at Sea (SOLAS), 1974, as amended, for use on ships and offshore installations classed with Lloyd's Register, and for use on ships and offshore installations when authorized by contracting governments to issue the relevant certificates, licenses, permits, etc.

**This combination** is formulated specifically for resin infusion and VARTM processes. Do not use in open mold applications.

**Elevated temperature cure is required;** thermal and mechanical properties suitable for composite components and high temperature tooling and molds.

**T<sub>g</sub> as high as 149°F (65°C)** with proper post cure providing excellent temperature stability and great part cosmetics.

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

**Shelf life** is 3 years for resin and 18 months for hardener when properly stored<sup>2</sup>.

The New  
Standard

EPOXIES for  
Laminating  
Infusion  
Tooling  
Assembly

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ISO9001:2015 Certified

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### HANDLING PROPERTIES

Property	Standard	Units	72°F (22°C)
100g Pot Life	ASTM D2471	minutes	225-275
Viscosity Mixed	ASTM D2196	cP	325
Viscosity (resin)	ASTM D2196	cP	480
Viscosity (hardener)	ASTM D2196	cP	115

### MIX RATIO

Method	Resin:Hardener	Resin:Hardener
Weight	3.85:1	100:26.0
Volume	3.23:1	100:31.0

### DENSITY

State	Units	72°F (22°C)
Resin	lb/gal (g/cc)	9.51 (1.14)
Hardener	lb/gal (g/cc)	8.10 (0.97)

### MECHANICAL PROPERTIES

Property	Standard	Units	RT Gelation + 140°F (60°C) x 8 hrs
Hardness	ASTM D2240	Type D	84
Compression Yield	ASTM D695	psi (MPa)	10,430 (72)
Tensile Strength	ASTM D638	psi (MPa)	8,040 (55)
Tensile Modulus	ASTM D638	psi (MPa)	4.14E+05 (2854)
Tensile Elongation	ASTM D638	%	3.9
Flexural Strength	ASTM D790	psi (MPa)	14,000 (97)
Flexural Modulus	ASTM D790	psi (MPa)	4.27E+05 (2944)

### THERMAL PROPERTIES

Property	Standard	Units	RT Gelation + 140°F (60°C) x 8 hrs
Tg DSC Onset-1st Heat	ASTM E1356	°F (°C)	127 (53)
Heat Deflection Temperature	ASTM D648	°F (°C)	124 (51)
Ultimate Tg by DSC	ASTM E1356	°F (°C)	149 (65) <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.

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

PRODUCT TYPE: SURVIVAL CRAFT MATERIAL  
SPECIFIED STANDARDS: SOLAS Chapter III as revised 1996, Regulations 4 and 34.

LSA Code, Regulations 1.2, 2.1, 4.3, 4.4 and 5.1  
IMO Resolution MSC 81(70) Part 1.  
IMO Circular MSC / Circ. 1006

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