



LAMINATING  
EPOXY

ADHESIVES

PROCESS  
EQUIPMENT

## Technical Data

# M1012/M2007 Laminating Epoxy

## Latent Cure System

The M1012/M2007 latent cure epoxy system is formulated for laminating synthetic composite structures. Use M1012/M2007 for primary laminating applications. M1012/M2007 will provide more than 16 hours of open laminating time at temperatures below 100°F (40°C). This resin and hardener system requires elevated temperature cure. See Curing section and properties page for complete cure information.

### MIXING

Combine the M1012 Resin with M2007 Hardener following the ratio shown in the table. Stir the mixture thoroughly and transfer to impregnator, roller pan, or apply directly to the laminate or surface.

### CURING

M1012/M2007 mixtures maintain excellent working properties until gellation begins. Viscosity will increase gradually over time at room temperature and will vitrify to a very brittle solid after several days. This combination will not cure to a usable state at room temperature. Elevated temperature cure is required. Viscosity will increase over time at room temperature, but the epoxy mixture will return to a flowable state, then cure during the elevated temperature cure cycle. Higher cure temperatures reduce required cure time and increase the cured properties. Maximum cure temperature is 210°F. Refer to the Physical Properties section for alternate recommended cure schedules.

We recommend building and testing sample panels using proposed materials and manufacturing processes to confirm working and curing characteristics under anticipated use conditions. This evaluation will help determine cure ramp rates needed to control exotherm temperature during cure. Exotherm temperature should not exceed target cure temperature by more than 20°F. All measuring, mixing and application equipment contaminated with mixed liquid resin and hardener must be cured at elevated temperature prior to disposal. Contact Pro-Set Inc. for additional information.

### HANDLING CHARACTERISTICS *(Not for specification purposes)*

#### Property

Mixed Viscosity @ 72°F (ASTM D-2393-80) 3750 cps

Mixed Density (g/ml) . . . . . 1.17

Mix Ratio (M1012:M2007)	Target	Acceptable Range
by weight . . . . .	100:4.5	100:5.0 to 100:4.0

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PHYSICAL PROPERTIES

M1012 Resin/M2007 Hardener

Physical Property	Test Method	Cure Schedule				
		165°F x 24 hr *	180° F x 4 hr *	180° F x 8 hr *	200° F x 3 hr *	210° F x 2 hr *
Hardness (Shore D)	ASTM D-2240	86	86	87	86	87
Compression Yield (psi)	ASTM D-695	16,125	16,293	16,455	16,098	16,136
Tensile Strength (psi)	ASTM D-638	9,995	9,828	9,997	9,809	9,179
Tensile Elongation (%)	ASTM D-638	3.1	2.9	3.2	3.2	2.9
Tensile Modulus (psi)	ASTM D-638	4.52E+05	4.63E+05	4.60E+05	4.50E+05	4.58E+05
Flexural Strength (psi)	ASTM D-790	13,120	13,465	12,505	14,583	13,655
Flexural Modulus (psi)	ASTM D-790	4.86E+05	5.03E+05	4.76E+05	4.60E+05	4.46E+05
Onset of Tg by DSC (°F) **		202	195	203	211	212
Ultimate Tg by DSC (°F) **		278	278	278	278	278
Heat Deflection Temperature (HDT) (°F)	ASTM D-648	218	219	231	213	212
Percent conversion by DSC **		90	90	91	92	92
Izod Impact, notched (Ft-lb/in)	ASTM D-256	0.29	0.29	0.26	0.31	0.32

\* Cure time at the target temperature is recorded from the time the entire structure reaches the target cure temperature

\*\* Determined using a Differential Scanning Calorimeter (DSC).

Tg value reported is the onset of the glass transition

Test Specimens were neat epoxy (without fiber reinforcement)

Percent Conversion is a measure of the completeness of reaction

Typical Values; not to be construed as specification

flex data for 180 X 8 is avg. of all flex data at all cure schedules

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