



LAMINATING
EPOXY

ADHESIVES

PROCESS
EQUIPMENT

Technical Data

135/M2007 Laminating Epoxy

Latent Cure System

The 135/M2007 latent cure epoxy system is formulated for laminating synthetic composite structures. Use 135/M2007 for primary laminating applications. 135/M2007 will provide up to 40 hours of open laminating time at 72°F and up to 20 hours at 90°F. This resin and hardener system requires elevated temperature cure. See Curing section and properties page for complete cure information.

MIXING

Combine the 135 Resin with M2007 Hardener following the ratio shown in the table. Stir the mixture thoroughly and transfer to impregnator or apply directly to the laminate or surface.

CURING

135/M2007 mixtures maintain excellent working properties until gelation 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.** The semi-solid mixture may become flowable during the initial portion of the elevated temperature cure stage. Higher cure temperatures reduce required cure time and increase the cured properties. Minimum cure temperature is 125°F. Maximum cure temperature is 210°F. Refer to the Physical Properties section for 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) 2300 cps
Mixed Density (g/ml)..... 1.17

Mix Ratio (135:M2007)	Target	Acceptable Range
by weight.	100:4.5	100:5.0 to 100:4.0
by volume.	22.2:1	20.0:1 to 25.0:1

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LAMINATING EPOXY—PHYSICAL PROPERTIES

135 Resin/M2007 Hardener

Physical Property	Test Method	Cure Schedule				
		RT* x 15 hr + 125°F x 16 hr	RT* x 15 hr + 140°F x 8 hr	RT x 15 hr + 140°F x 16 hr	RT x 15 hr + 180°F x 4 hr	RT x 15 hr + 180°F x 8 hr
Hardness (Shore D)	ASTM D-2240	87	88	89	89	88
Compression Yield (psi)	ASTM D-695	17,087	16,666	16,453	15,454	15,424
Tensile Strength (psi)	ASTM D-638	10,143	10,805	11,183	10,853	9,974
Tensile Elongation (%)	ASTM D-638	2.4	2.8	3.9	4.3	3.4
Tensile Modulus (psi)	ASTM D-638	5.27E+05	5.15E+05	5.07E+05	4.80E+05	4.63E+05
Flexural Strength (psi)	ASTM D-790	19,972	20,704	18,152	17,546	16,567
Flexural Modulus (psi)	ASTM D-790	5.13E+05	5.27E+05	4.74E+05	4.55E+05	4.30E+05
Onset of Tg by DSC (°F) **		162	176	176	204	206
Ultimate Tg by DSC (°F) **		212	212	212	212	212
Heat Deflection Temperature (HDT) (°F)	ASTM D-648	168	175	182	208	208
Izod Impact, notched (Ft-lb/in)	ASTM D-256	0.48	0.40	0.54	0.42	0.52

Test Specimens were neat epoxy (without fiber reinforcement)

** Determined using a Differential Scanning Calorimeter (DSC). Value reported is the onset of the glass transition

Typical Values; not to be construed as specification

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