



LAMINATING
EPOXY

ADHESIVES

PROCESS
EQUIPMENT

Technical Data

M1003 Resin/229 Hardener

Thixotropic Laminating Epoxy

The M1003/229 laminating epoxy system is formulated for use in molding situations where resin drain-out is a concern. The shear thinning nature of the system provides very good wet-out of the fibers, but will not drain out on vertical or overhead surfaces. This combination works very well in an impregnator or wet-out machine. The 229 Hardener provides approximately 2.5 - 4 hrs. of open time at 72° F.

MIXING

Mix resin before using. Re-mix if allowed to set for more than a week.

Combine the M1003 Resin with PRO-SET 229 Hardener following the ratios by weight or volume shown in the table. Stir the mixture thoroughly and transfer to impregnator, roller pan, or apply directly to the laminate surface.

CURING

The M1003/229 mixtures maintain excellent working properties until gel takes place. The mixture will temper and continue to cure over the next several days at room temperature, and after two weeks will reach an acceptable degree of cure for many applications. Elevated temperature post cure will increase the degree of cure and improve the mechanical and thermal properties.

We recommend building sample panels using proposed materials and manufacturing processes to confirm working and curing characteristics under your shop conditions.

HANDLING CHARACTERISTICS *(Not for specification purposes)*

Property	Mixed	
Viscosity @ 72° F (ASTM D-2393-80)	1,350 cps	
Mix Ratio (M1003:229)	Target	Acceptable Range
By weight	100:26	100:27.6 – 100:23.5
By volume	100:31	100:32.5 – 100:27.6
Pot Life (ASTM D-2471-94)	100g	
@ 72° F	98 minutes	

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THIXOTROPED LAMINATING EPOXY – PHYSICAL PROPERTIES

M1003 Resin/229 Hardener

Physical Property	Test Method	Cure Schedule		
		Room Temp. x 2 weeks	RT* x 15 hr + 110°F x 8 hr	RT x 15 hr + 140°F x 8 hr
Hardness (Shore D)	ASTM D-2240	81	85	85
Compression Yield (psi)	ASTM D-695	13,400	13,142	14,790
Tensile Strength (psi)	ASTM D-638	7,290	7,708	9,641
Tensile Elongation (%)	ASTM D-638	2.1	2.9	4.0
Tensile Modulus (psi)	ASTM D-638	4.75E+05	3.97E+05	4.24E+05
Flexural Strength (psi)	ASTM D-790	12,262	13,434	17,168
Flexural Modulus (psi)	ASTM D-790	4.39E+05	4.44E+05	4.82E+05
Heat Deflection Temperature (HDT) (°F)	ASTM D-648	124°F	123°F	138°F
Onset of Tg by DSC (°F) **		126.5 °F	118.6°F	148.8°F
Ultimate Tg by DSC (°F) **		142.7°F	142.7°F	148.8°F
Izod Impact, notched (Ft-lb/in)	ASTM D-256	0.257	0.549	0.563

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