



EL-336 EPOXY LAMINATING SYSTEM

PRODUCT BULLETIN



HIGH TEMP, UNFILLED

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DESCRIPTION

EL-336 is an improved, health-safe, two components, unfilled, non-staining, high temp epoxy laminating system specifically developed for room temp hardening (B Stage). The system also possesses high temp properties for high temp tooling applications. EL-336 has excellent handling properties and fabric wet-out to produce a void free tool with high dimensional stability. EL-336 can be used in the construction of large or small tools, as well as production parts. EL-336 can also be used with ADTECH High Temp Surface Coat ES-219. Tools made with EL-336 can be used at continuous temperatures of 160°C/320°F and intermittent temperatures up to 191°C/375°F. While EL-336 will gel at room temp, it must be post-cured to achieve ultimate strength. The system does not contain MDA or VCHD. **Typical applications include: vacuum form molds, prototype injection molds, high temp bonding fixtures, spray metal molds, compression molds, high temp laminating molds and parts for high temp applications.**

HANDLING CHARACTERISTICS @ 25°C/77°F

Mix Ratio (parts by weight)	100R/22H
Mix Ratio (parts by volume)	4.024 R/1 H
Mixed Density	9.6 lbs/gal
.....	0.041 lbs/cu in
Specific Gravity	1.139 gms/cc
Mixed Viscosity	2000-3000 cps
Work Life (228 gram mass)	35-50 minutes
Demold Time	16-24 hours
Complete Cure	3-5 days
Mixed Color	Amber
Shelf Life Resin and Hardener (in original unopened container)	2 years

PHYSICAL PROPERTIES

6 Layer, 10 Ounce Glass Fabric Laminate:

Ultimate Tensile Strength	36,620 psi
Tensile Modulus	1.85 x 10 ⁶ psi
Ultimate Flexural Strength	47,190 psi
Flexural Modulus	1.82 x 10 ⁶ psi
Tg by DMA	127.5°C/261.5°F

Cast Bar:

Ultimate Compressive Strength	13,390 psi
Izod Impact Strength (notched)	7.0 in lbs
Hardness	88 Shore D
Coefficient of Thermal Expansion	3.02 x 10 ⁻⁵ in/in/°F
Tensile Elongation	2.61%
Glass Transition Temperature (Tg by DMA)	116°C/241°F
Shrinkage	0.001862 in/in

Tested @ 149°C/300°F (ASTM D-790)

Ultimate Flexural Strength	7,417 psi
Flexural Modulus	0.53 x 10 ⁶ psi

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POST CURE SCHEDULE

PRELIMINARY CURE SCHEDULE

On model: cure for 24 hours @ 25°C/77°F
+ 2 hours @ 66°C/150°F

You may attach support structure and demold tool after this schedule is completed.

POST CURE SCHEDULE

After completing the Preliminary Cure Schedule, complete the following:

2 hours @ 93°C/200°F
2 hours @ 121°C/250°F
3 hours @ 149°C/300°F

Install thermocouples to monitor the mold temperature throughout the post cure process.

HEATING AND COOLING RATES DURING POST CURE

Always allow tools made with ADTECH high temp systems to gel at room temperature before subjecting them to post cure (24 hours is usually sufficient). This will prevent excessive exotherm and shrinkage from occurring.

When oven curing laminated molds, always place the mold in a room temperature oven increasing the temperature at a rate of no more than 13°C/25°F per hour. When finished, allow molds to remain in the heated oven, decreasing the temperature at a rate of no more than 27°C/50°F per hour. Never remove the mold from the oven until temperature has been lowered to less than 38°C/100°F.

Once a mold has been heat cured and conditioned, during the production curing cycles of composite parts you can revert to the heating/cooling rates prescribed for the production pre-preg or two component resin.

EL-336 Tech/Revised 9/28/09
Supercedes 5/24/06