

# Product Bulletin

# CASS POLYMERS

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SC-9001 Registered



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EL-336  
EPOXY LAMINATING SYSTEM  
HIGH TEMP - UNFILLED

0302

## DESCRIPTION

EL-336 is an improved, health-safe, two component, 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.

## USES

Vacuum Form Molds  
High Temp Bonding Fixtures  
Compression Molds  
Parts for High Temp Applications

Prototype Injection Molds  
Spray Metal Molds  
High Temp Laminated Molds

## HANDLING CHARACTERISTICS @ 25°C/77°F

Mix Ratio (parts by weight)	100R/22H
(parts by volume)	4.024 R/1 H
Density (Mixed)	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
Color Resin - Amber Hardener - Amber	Mixed - Amber
Shelf Life (Storage at ambient temperature)	1 Year

## PHYSICAL PROPERTIES

6 Layer, 10 Ounce Glass Fabric Laminate:

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

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CAST BAR:

Ultimate Compressive Strength .....	13,390 psi
Impact Strength (Notched Izod) .....	7.0 in lbs
Hardness .....	88 Shore D
Coefficient of Thermal Expansion .....	$3.02 \times 10^{-5}$ in/in/°F
Tensile Elongation .....	2.61%
Glass Transition Temperature (Tg).....	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 .....	$0.53 \times 10^6$ psi

**CURE SCHEDULE**

PRELIMINARY CURE

24 Hours @ 25°C/77°F  
2 Hours @ 66°C/150°F

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

POST CURE

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

Insure proper heat curing temperatures are met by installing a thermocouple directly in the center of the tool.

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

When taking tools through a preliminary or post cure phase always place a tool in a room temperature oven and increase temperature at a rate of 5°F/minute.

When cooling tools always allow tool to remain in heat environment and decrease temperature at a rate of 10°F/minute. Do not remove tool from heat environment until tool has reached 100°F or less. Removing tool at temperatures above 100°F can result in thermal shock and warpage.

NOTICE TO HEALTH AND SAFETY COMMITTEE: THIS SYSTEM DOES NOT CONTAIN MDA OR VCHD.