



## EL-315 SERIES

use with  
EL-315-IHL, EL-315-1  
and EL-315-2 HARDENERS

PRODUCT BULLETIN



www.CASSpolymers.com  
31200 Stephenson Hwy

800.344.7776  
Madison Heights MI 48071

ADTECH@CASSpolymers.com  
Ph 248.588.2270 Fax 248.588.5909

### DESCRIPTION

EL-315 Series is a premium high temperature epoxy laminating system developed to withstand extreme heat conditions in composite tooling applications such as autoclave; bonding jigs; oven cured processing or heat induction resin transfer molding. Test results show the physical and mechanical properties of the EL-315 series to be among the highest attainable in high temperature epoxy laminating systems. This advantage minimizes CTE differentials and stresses, resulting in a dimensionally stable and durable composite mold or part. EL-315 resin is available with a choice of three different hardeners to allow adequate construction and bagging time on large or small laminates. EL-315 series contains no MDA or VCHD.

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

	<u>EL-315R/315-IHL</u>	<u>EL315R/315-1</u>	<u>EL315R/315-2</u>
Mix Ratio (parts-by-weight).....	100R/25H .....	100R/19H .....	100R/24H
Mixed Density.....	9.87 lbs/gal .....	9.12 lbs/gal .....	9.5 lbs/gal
.....	0.043 lbs/cu/in .....	0.039 lbs/cu/in .....	0.041 lbs/cu/in
Specify Gravity .....	1.18 gms/cc .....	1.09 gms/cc .....	1.14 gms/cc
Mixed Viscosity .....	2,500-4,000 cps .....	2,000-3,000 cps.....	4,000-5,000 cps
Work Life .....	50-75 minutes.....	50-60 minutes.....	180-210 minutes
Demold Time.....	Refer To Recommended Post Cure Schedule		
Color .....	Clear Amber/Black .....	Clear Amber/Amber .....	Clear Amber/Amber
Shelf Life Resin (in original unopened container) ..	2 years .....	2 years .....	2 years
Shelf Life Hardener (in original container) .....	2 years .....	2 years .....	2 years

### PHYSICAL PROPERTIES

Ultimate Tensile Strength (ASTM D-3039.93).....	33,690 psi .....	62,630 psi .....	56,090 psi
Tensile Elongation (ASTM D-3039.93).....	1.752% .....	1.708%.....	not available
Tensile Modulus (ASTM D-3039.93).....	2,593,000.....	4,048,000.....	3,900,000 psi
Ultimate Flexural Strength (ASTM D-790.92) .....	44,540 psi .....	90,480 psi .....	76,200 psi
Flexural Modulus (ASTM D-790.92).....	2,296,000.....	4,642,000.....	12,020 psi
Coefficient of Thermal Expansion (ASTM-696.91) 10.8 x 10 <sup>-6</sup> in/in/°F .....	not available .....	not available .....	not available
Heat Deflection Temp @264 psi(ASTM D-648.82)161°C/320°F.....	161°C/320°F.....	152°C/306°F.....	198°C/389°F(@66psi)
Tg by DMA .....	166.3°C/331.3°F.....	152.1°C/305.8°F.....	232°C/450°F
Notched Izod Impact Strength (ASTM D-256.93a) 4.5 in-lbs/in .....	4.5 in-lbs/in .....	6.47 in-lbs/in .....	4.5 in-lbs/in
Shrinkage .....	0.0015 in/in.....	0.0015 in/in .....	0.0036 in/in
Hardness.....	88 Shore D .....	90 Shore D .....	90 Shore D

\*Physical Testing conducted on cast bar samples

All other testing conducted on laminate samples: 6 ply – 7500 Style E-Glass

Continued on next page

**POST CURE SCHEDULE**

**PRELIMINARY CURE SCHEDULE**

On Model Cure for 24 hours @ 25°C/77°F  
+ 6 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:

1 hour @ 93°C/200°F  
1 hour @ 121°C/250°F  
1 hour @ 149°C/300°F  
3 hours @ 177°C/350°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.

**QUALIFICATIONS**

EL-315R/EL-315IHL H: Boeing MMS-102 and M41-03-01 Code RHL and IHL  
McDonnell Douglas C1-655, QPL Code L-3

EL-315 Series Tech/Revised 7/15/10  
Supercedes 3/9/10