PRODUCT BULLETIN

EL-325 HTTC
EPOXY COMPOSITE
TOOLING COMPOUND

LIGHT-WEIGHT, HIGH TEMP

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DESCRIPTION

EL-325 HTTC is an epoxy "Composite Tooling Compounds" designed for the construction of tools, jigs, models and other tooling that will see elevated temperatures. Use of EL-325 HTTC allows a considerable time and labor saving in tool construction. The neutral resin and black hardener give a uniform dark gray color when thoroughly mixed that is pliable and can be applied to the tool surface without crumbling or cracking.

Tools constructed with EL-325 HTTC maintain a very high degree of dimensional stability, are light weight, can be machined as well as drilled and tapped. All of these qualities allow EL-325-HTTC to be used in a variety of tooling applications. EL-325 HTTC offers the toolmaker a safer alternative to standard epoxy laminates since both resin and hardener are syntactic, therefore, eliminating splash hazards. EL-325 HTTC does not contain MDA or VCHD, however, the hardener is corrosive and gloves should be worn when handling.

HANDLING CHARACTERISTICS @ 25°C/77°F — EL-325-HTTC

Mix Ratio (parts by weight)	100R/25H
Mix Ratio (parts by volume)	3.7R/1H
Density (mixed)	5.29 lbs/gal
Density (mixed)	0.023 lbs/cu in
Specific Gravity	0.633 gms/cc
Viscosity	Syntactic Dough
Work Life	1½ - 2 hours
Demold Time	16-24 hours
Peak Exotherm (1 lb mass, 6" deep)	130°F
Mixed Color	Dark gray
Shelf Life Resin & Hardener (in original unopened container)	1 year

PHYSICAL PROPERTIES (Cast Bar: 5" x ½" X ½")

Ultimate Flexural Strength (ASTM D-790.92)	9,600 psi
Flexural Modulus (ASTM D-790.92)	540,000 psi
Ultimate Compressive Strength (ASTM D-695.91).	4,900 psi
Coefficient of Thermal Expansion (ASTM-696.91)	0.9 x 10^{-5} in/in °F
Heat Deflection Temperature (ASTM D-648.82)	218°C/425°F
Exotherm(1 lb mass, 6" deep).	130°F
Hardness	65-70 Shore D

APPLICATION

NOTE: The following abbreviated construction sequence will vary depending on intended application.

Apply any ADTECH High Temp Epoxy Surface Coat to prepared model. Allow to tack. Apply a second surface coat and allow to tack. Apply ADTECH High Temp Laminating system to surface coat. Laminate 3 layers 10 oz. tooling cloth. Prepare EL-325 HTTC. Mix catalyzed EL-325 HTTC with catalyzed laminating system at 50/50 parts-by-volume. Brush this bond coat onto the laminate (this helps to ensure an air free tool). Press compound out in all directions until you get the desired thickness. Add new tooling compound to existing tooling compound, therefore, eliminating any possible air pockets. Let the tooling compound firm up (2 hrs) then proceed to brush ADTECH High Temp Laminating system on top of the tooling compound. Apply an additional 3 layers of 10 oz. cloth forming a sandwich construction. Allow to cure/post cure and de-mold.

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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.