

Product Bulletin

CASS POLYMERS

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EL-325-HTTC
EPOXY COMPOSITE
TOOLING COMPOUND
HIGH TEMP USE TO >400°F
POT LIFE: 1½ - 2 HOURS
EL-325-1 HTTC
POT LIFE: 3 HOURS

0302

DESCRIPTION

EL-325 and EL-325-1-HTTC are epoxy "Composite Tooling Compounds" designed for the construction of tools, jigs, models and other tooling that will see elevated temperatures. Use of EL-325 and EL-325-1-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 and EL-325-1-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 and EL-325-1-HTTC offer the toolmaker a safer alternative to standard epoxy laminates since both resin and hardener are syntactic, therefore, eliminating splash hazards. EL-325 and EL-325-1-HTTC do 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

EL-325-1-HTTC

Mix Ratio (parts by weight).....	100R/25H.....	100R/29H
(parts by volume).....	3.7R/1H.....	3.8R/1H
Density (Mixed).....	5.29 lbs/gal	5.29 lbs/gal
.....	0.023 lbs/cu in.....	0.023 lbs/cu in
Specific Gravity	0.633 gms/cc	0.633 gms/cc
Viscosity.....	Syntactic	Syntactic
Work Life.....	1½ - 2 Hours	3 hours
Demold Time.....	16-24 Hours	16-24 hours
Peak Exotherm (1 lb, 6" deep).....	130°F	115°F
Shelf Life (Stored at ambient temperature).....	One Year	One Year

PHYSICAL PROPERTIES

Ultimate Flexural Strength (ASTM D-790.92).....	9,600 psi	9,600 psi
Flexural Modulus (ASTM D-790.92).....	540,000 psi	540,000 psi
Ultimate Compressive Strength (ASTM D-695.91).....	4,900 psi	4,900 psi
Coefficient of Thermal Expansion (ASTM-696.91).....	0.9 x 10 ⁻⁵ in/in °F.....	0.9 x 10 ⁻⁵ in/in °F
Heat Deflection Temperature (ASTM D-648.82).....	>218°C/425°F	>218°C/425°F
Exotherm(1#, 6" deep).....	130°F	115°F
Hardness.....	65-70 Shore D	65-70 Shore D

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APPLICATION

NOTE: The following suggested construction applications may vary from user to user.

Apply an ADTECH High Temp Surface Coat to prepared model. Allow to tack. Apply 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/EL-325-1 HTTC. Mix catalyzed EL-325/EL-325-1-HTTC with catalyzed laminating system 50/50. 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 and demold.

CURE SCHEDULE

IMPORTANT NOTE: HEATING RATE not to exceed 5°F/minute
COOLING RATE not to exceed 10°F/minute
Remove from oven when tool reaches 100°F or less.

The only way to insure proper heat curing temperatures are met is to install a thermocouple directly in the center of the tool.

PRELIMINARY CURE

RHL: 48 HOURS @ 77°F**

IHL: 24 HOURS @ 77°F
3 HOURS @ 150°F**

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

POST CURE

RHL: 2 HOURS @ 150°F
1 HOUR @ 200°F
1 HOUR @ 250°F
1 HOUR @ 300°F
3 HOURS @ 350°F

IHL: 1 HOUR @ 200°F
1 HOUR @ 250°F
1 HOUR @ 300°F
3 HOURS @ 350°F → OPTIONAL***
1 HOUR @ 350°F
3 HOURS @ 400°F

NOTE: Curing at 400°F may sometimes be necessary to condition tool 25°F above required service temperature.

Always allow tools made with ADTECH Plastic 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 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. Removing tool heated above 100°F can result in thermal shock and warpage.