

# STAR Technology

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## 611-04

### Epoxy Laminating System

#### DESCRIPTION

STAR Technology 611-04 is a clear, unfilled laminating system for intermediate high temperature applications. This system provides good cloth wet-out and will initially cure at room temperature to allow de-molding. It may be used in applications up to 325°F and requires a heat cure for applications above 150°F. 611-04 has a pot life of around fifty minutes. The overall size, thickness, and layup speed will influence the desirable pot life of laminating system. In general, larger laminates and bagging operations will call for a slow hardener. Typical applications for 611-04 include vacuum form molds, high temperature bonding fixtures, prototype injection molds, RIM molds, spray metal molds, and compression molds.

#### BENEFITS

Excellent intermediate high temperature properties  
Good dimensional stability

Fast wet-out

#### TYPICAL PROPERTIES

		<u>TEST METHOD</u>	<u>VALUE</u>
Mix Ratio, Resin to Hardener	Parts by Weight		100:18.9
	Parts by Volume		100:21
Mixed Viscosity (centipoise)		ASTM D2393	1,000
Density (lbs./cu.in.) (lbs./gal.)		ASTM D1475	.0420
			9.71
Pot Life at 75°F (minutes)		ASTM D2471	55
Color			Amber
Cure Schedule:	24 hours @ 77°F + 2 hours @ 150°F + +1 hour @ 200°F + 1 hour @ 250°F + +1 hour @ 300°F + 2 hours @ 350°F		
Shore Hardness (D)		ASTM D2240	78
Tensile Strength (psi)		ASTM D638	5,724
Flexural Strength (psi)		ASTM D790	16,777
Flexural Modulus (psi)		ASTM D790	73,455
Compressive Ultimate Strength (psi)		ASTM D695	4,300
Glass Transition Temperature (°F)		By DSC	257
Maximum Service Temperature (°F)			325
CTE:			6.4X10 <sup>-5</sup> u/u/°C
Shrinkage (%)			.00461
Coeff or exp. (in/in/'c)			6.0E-5

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**611-04****Epoxy Laminating System****APPLICATION PROCEDURE**

Carefully weigh out appropriate amounts of resin and hardener into a clean container and mix until all streaks are gone. Scrape the sides and bottom frequently to ensure complete mixing.

NOTE: To obtain optimum service temperature follow the suggested curing schedule with thermocouple monitoring. Thermocouple monitoring equipment is recommended on all post cured tools. High temperature tools should be post cured prior to use. High temperature tools should be cured 50°F beyond anticipated use temperature.

CAUTION: Unmixed material from the sides or bottom of the container can cause soft spots or uncured areas in the completed tool. To prevent this, transfer the entire mixed contents to a second clean container and re-mix for a short time before using.

**Additional Cure Schedule** - If thermocouple monitoring equipment is not available then a longer step cure is a better choice, e.g.

*2 hours @ 150°F + 2 hours @ 200°F +*

*2 hours @ 250°F + 2 hours @ 300°F +*

*2 hours @ 350°F*

**SAFETY PRECAUTIONS**

For industrial use only. Keep away from children.

Refer to the Safety Data Sheets (SDS forms) pertaining to this product before using.

Avoid contact with skin or eyes. In the event of an eye splash or contact, immediately flush with cold water for 15 minutes and contact a physician. If skin contact occurs, wash with mild soap and water. The wearing of safety glasses with side shields and impervious gloves is recommended.

**RESIN WARNING STATEMENT**

Warning! Causes irritation. May cause allergic skin reaction. Avoid all contact with skin, eyes, and clothing. Wash thoroughly after handling.

**HARDENER WARNING STATEMENT**

Danger! Corrosive. Causes burns to eye and skin. May cause allergic skin and/or respiratory reaction or sensitization. Do not get in eyes, on skin or clothing. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

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