LAMINATING EPOXY

ADHESIVES

PROCESS EQUIPMENT

Technical Data

195 Resin/295 Hardener

Epoxy Tooling Paste

The 195/295 Tooling Paste is designed for application as a plug or mold surfacing material. This 2 part epoxy paste mixes easily, spreads smoothly, is easy to machine and exhibits very low shrinkage. PRO-SET tooling paste has very low porosity and creates a durable and stable mold surface. 195/295 can be used over wood, foam, composite, or metal structures.

SURFACE PREPARATION

Surfaces must be free of contaminates, dust and loose substrate material. Sand wood, foam and composite surfaces with 80 grit or coarser sandpaper or machine with a multi axis router. Remove dust with a shop vacuum after abrading or machining. When applying multiple layers of tooling paste, apply fresh coat on tacky previous coat or allow to cure and abrade or machine before application of next layer.

MIXING

Some separation may occur during storage. Stir resin and hardener individually before mixing together if there is liquid resin on top of the container.

Combine two parts by volume PRO-SET 195 Resin with one part PRO-SET 295 Hardener. Use measuring cups or scoops to ensure accurate volume measurements. Measure the resin and hardener and place on a flat plastic or cardboard pallette. Stir the mixture thoroughly, making sure there are no streaks of color. Use a folding motion to blend the materials together. Mix only as much as can be applied within the pot life of the mixture. The shear-thinning characteristics make dispensing, mixing and application easy by hand while allowing this material to be dispensed directly onto the plug / mold blank with a mechanized meter / mix machine. When hand mixing, allow a 10 minute induction time for thixotropy recovery before application.

CURING

The cure rate of epoxy products is affected by mass and temperature. Thicker applications will cure more rapidly than thin layers. Low temperatures increase cure time, while higher temperatures reduce cure time. Minimum application and cure temperature is 55°F.

APPLICATION

Use a trowel or spreader to apply mixed material to the surface, or dispense directly from a meter / mix static mixer. Multiple applications may be necessary for filling areas deeper than ½". Cured tooling paste must be sanded to a dull surface before overcoating or re-filling. Once cured and machined, an application of surfacing primer will provide a void free surface that can be sanded and polished.

We recommend testing any product using proposed materials and procedures to confirm working and curing characteristics under your shop conditions.

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PRO-SET®

195/295 Tooling Paste

HANDLING CHARACTERISTICS *(Not for specification purposes)*

Property	**Mixed**
Density	11.46 lb/gal
Density	1.37g/ml

Viscosity	**Resin**	**Hardener**
Brookfield RVF Helipath TE spindle @ 2 rpm	1,500,000 Cps	650,000 Cps

Mix Ratio	**Target**
by volume	2:1
by weight	2.74:1 (100:36.5)

Pot Life (ASTM D-2427-71)	**100ml**	**500ml**
@72°F	50 min	35 min

Maximum cure time to adjacent application

@72°F.	30 min.
@80°F.	25 min.

Cure Time to Machine ½" thick application

@72°F.	8 Hr.
@90°F	4.5 Hr.

PHYSICAL PROPERTIES

Coefficient of Thermal Expansion (CTE)

ASTM E831	26.6ppm/°F
	47.8ppm/°C

Shrinkage . . . . . < 0.5%

Coverage . . . . . 3.2 sq. ft / mixed gallon @ ½" thickness

August 2007

PRO-SET®

EPOXY TOOLING PASTE—PHYSICAL PROPERTIES

195 Resin/295 Hardener

Physical Property	Test Method	Room Temp. x 2 weeks
Hardness (Shore D)	ASTM D-2240	87
Compression Yield (psi)	ASTM D-695	10,400
Tensile Strength (psi)	ASTM D-638	6,310
Tensile Elongation (%)	ASTM D-638	1.1
Tensile Modulus (psi)	ASTM D-638	10.3E+05
Flexural Strength (psi)	ASTM D-790	10,270
Flexural Modulus (psi)	ASTM D-790	9.63E+05
Heat Deflection Temperature (HDT) (°F)	ASTM D-648	132
Onset of Tg by DMA (°F) **		123
Ultimate Tg by DMA (°F) **		135
Izod Impact, notched (Ft-lb/in)	ASTM D-256	0.47

** Determined using Dynamic Mechanical Analysis (DMA)
Value reported is the onset of the glass transition
Test Specimens were neat epoxy (without fiber reinforcement)
Typical Values; not to be construed as specification

August 2007