

# SILPAK, Inc

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## High Temperature Resistance Plastic THERMOCAST II A/B Product Data Sheet

### Description

Unfilled—100% solid Castable, two-component, Urethane Resin system. THERMOCAST II A/B is easy to process and designed for its *High Temperature Heat Resistance—250F*. THERMOCAST II lends its self well for applications where Heat Distortion may be a factor—especially *Vacuum Form Tooling* applications. This system's quick demold time of 10 minutes makes rapid production rates possible. Once cured, parts are easily paintable and can be machined, sanded and drilled. Material can either be hand or meter mixed. Fillers can be added to adjust cost, appearance and function-- *See Filler Product Tech Sheet for more information*. Note: ADD GAP-25 Thermo-conductive filler for improved High Temperature Resistance.

Available Sizes: Pint Kit (2 lb) & Qt Kit (4 lb) Gal Kit (16 lb) & 5 Gal Kit (80 lbs) 55 Gallon Drum Kit (900 lbs)

### Applications

Prototypes, plastic parts, Vacuum form tools and other similar items requiring high temperature resistance 250F.

### TYPICAL PROPERTIES REACTIVITY DATA\*

<u>Property</u>	<u>Test Method</u>	<u>Results</u>
Solids by Weight (%) :	100%	
Shrinkage:	ASTM D-1353	Unfilled-- .009, Filled-- less than .001
Density:	ASTM D-1622	64lb/CU/FT or 5.3lb 12"x12"x1" THICK
Viscosity @ 74 F (CPS)	ASTM D-2196	200 A / 250 B
Coefficient of Expansion		0.000129

Gel Time:	3 min.
De-mold Time:	10 min.

Mixing Ratio:	By Weight:	50 parts A / 50 parts B
	By Volume:	50 % ISO / 50 % POLY

\*Reactivity times are influenced by many equipment variables, including size of pour -shape, ambient temperature and humidity.

### CURED MATERIAL PHYSICAL PROPERITES (Typical):

<u>Property</u>	<u>Test Method</u>	<u>Results</u>
Color:		Tan
Shore "D" Hardness		70
Tensile strength (psi)	ASTM D-2370	6,100
Elongation (percent at yield)	ASTM D-2370	10%
Flexible Strength		5.5 x 10 <sup>3</sup> psi
Heat Resistance		250°F

### Processing Instructions:

Parts A and B should be at room temperature—above 75F—prior to use. Use appropriate plastic mixing containers and spatulas (tongue depressors and paint sticks are acceptable) that are clean and moisture free. ***Part B should be shaken or properly stirred prior to use.*** Weigh or measure appropriate amounts of A and B in container. Combine components and immediately mix, thoroughly scraping sides and bottom for 20-30 seconds before pouring into silicone mold. ***If mold is non silicone, use an appropriate release agent—ER 2300.*** If using filler, ensure that filler is moisture free and premix into Part B using a high shear mix head—airless Jiffy Mixer Blade. **\*Off ratio can cause oily surfaces, which will limit paint adhesion.** GAP-25 is an aluminum filler to aid in lower shrinkage and best thermo resistance.

### Curing:

Do not disturb the mold until part is ready to be de-molded. Prematurely demolding parts may cause deformation, especially in thin areas. Preheating molds—100F—will expedite cure. Low temperatures will slow curing time and extend the demold time. **Post cure parts at 150F for one hour for best high temperature properties.**

\*Curing & Gel Times are influenced by many variables, including size of mix, part shape, filler content, ambient temperature and age of material.

### Finishing:

Unfinished castings are subject to discoloration, yellowing, and chalking when exposed to direct or indirect sunlight and should be painted, coated or sealed. Oil based paints work well. Using an oil based primer will improve paint adhesion. If release was used, wash the surface with grease dissolving soap or mineral spirits before painting. It is best to perform any finishing when parts are fully cured—24 to 72 hours @ 75F. An expedited post cure @ 100F for several hours can speed up cycle after 24 hour room temperature cure.

### Storage/Shelf Life:

A and B components must be stored in their original, unopened containers at temperatures between 75F and 85F. Shelf life of materials when kept in unopened sealed containers, at the recommended storage conditions, is 6 months. Containers should not be opened until ready for use. Once opened, storage life can be extended with the use of a purging gas—Nitrogen.

## ACCESSORIES

### Colorants:

**CU Pigment** *Red, Yellow, White, Blue, Black, Brown, Fleshtone* All pigments should be added to the "B" side only at 1-2%. Castable urethanes are affected by direct and indirect sunshine and should be painted with oil based paint to protect color and surface.

**Bright Shade Powder** *Green, Orange, Red, Yellow, Pink* Dry powdered pigments requiring thorough premixing

**UD Dye** *Red, Yellow, Black, Blue* Transparent coloring used in Clear and Transparent Urethane & Epoxy

### Fillers:

Fillers may be incorporated into urethane resin to change the weight, color, cost, texture and paintability. Several fillers are available to fit an application. Fillers should be handled and stored carefully—sealed—to avoid contamination from moisture. Always mix fillers into part A, which is lower in viscosity, then add proper amount of B when ready to cast a part. Metallic fillers should be mixed when ready to use because they can accelerate the cure drastically. **Recommended levels of additional filler are based on Total Resin Weight—A+B.**

**PE MINI FIBERS** are used to bulk up system for brush-on/ troweled on- processes for parts or mother molds. Pre-mix PE fibers into Part A at 5% or 10% by weight. When ready to use, add Part B at equal weight of Part A only, mix and quickly apply to mold or surface. Applying additional layers should be done immediately before material has fully cured. Cold weather below 65F will cause slow cure.

**CC-200** Limestone to lower cost and add weight to material. Recommended amounts are 50-200%.

**GAP-25** Aluminum mixture used for reducing shrinkage and increasing thermal conductivity for vacuum form tools. Recommended amounts are 50-200%.

**GF-3000** Glass Beads, aids in density and scratch resistance, reduces shrinkage for masters or patterns. Recommended amounts are 100-200%.

**HGF-100** Hollow glass filler for lightweight parts. Recommended amount is 5-10%.

**Pro-Lite FR 50** Non abrasive, light- weight filler. Recommended amounts are 50%.

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