

SILPAK, Inc

470 E. BONITA AVE. POMONA, CA 91767
PH (909) 625-0056 WWW.SILPAK.COM FX (909) 625-0082

HARDCAST A/B Product Data Sheet

Description

Unfilled—100% solid Castable, two-component, Urethane Resin system. **HARDCAST A/B** is an odorless, low shrink plastic that exhibits low reactivity temperature (170F - 77C maximum). Parts are extremely durable and impact resistant—exhibiting excellent rigidity in thin cross section parts (3/16") as well as low heat distortion. 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.*

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

Applications

Prototyping & model kits, furniture parts, sporting goods, decorative components, ornamental moldings, mirror and picture frames, master models and other similar items.

TYPICAL PROPERTIES REACTIVITY DATA*

<u>Property</u>	<u>Test Method</u>	<u>Results</u>
Solids by Weight (%):		100%
Shrinkage:	ASTM D-1353	Unfilled-- .01*, Filled—less than .005*
Specific Gravity:	ASTM D-1638	1.09
Viscosity @ 74 F (CPS):	ASTM D-2196	150 A / 225 B
Coefficient of Expansion (in/in/F):		0.000129

Gel Time: 3 minutes
De-mold Time: 15 – 20 minutes

Mix Ratio: By Weight: 50 A / 50 B
By Volume: 47 % ISO / 53 % POLY

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

CURED MATERIAL PHYSICAL PROPERTIES (Typical):

<u>Property</u>	<u>Test Method</u>	<u>Results</u>
Color:		Tan
Hardness, Shore D:		75
Tensile Strength (psi):	ASTM D-2370	2425
Elongation (% at yield):	ASTM D-2370	17%
Izod Impact (FT LB/IN):		.65
Modulus (psi):		12990
Coefficient of Expansion in/in/F:		.000129
Flexural Stress (psi):	D790-03	5820
Flexural Modulus Elasticity (psi):		303407

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.

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.

*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%.

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE RELIABLE, BUT UNKNOWN RISKS MAY BE PRESENT. SILPAK WARRANTS ONLY THAT THE MATERIALS SHALL BE OF MERCHANTABLE QUANTITY; THIS WARRANTY IS IN LIEU OF ALL OTHER WRITTEN OR UNWRITTEN EXPRESSED OR IMPLIED WARRANTIES AND SILPAK EXPRESSLY DISCLAIMS ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, OR FREEDOM FROM PATENT INFRINGEMENT. ACCORDINGLY, BUYER ASSUMES ALL RISKS WHATSOEVER AS TO THE USE OF THESE MATERIALS AND BUYERS EXCLUSIVE REMEDY AS TO ANY BREACH OF WARRANTY OR NEGLIGENCE CLAIM SHALL BE LIMITED TO THE PURCHASE PRICE OF THE MATERIALS. FAILURE TO STRICTLY ADHERE TO RECOMMENDED PROCEDURES SHALL RELIEVE SILPAK OF ALL LIABILITY WITH RESPECT TO THE MATERIALS OR THE USE THEREOF.