SILTOOL A/B

Urethane Resin System

SILTOOL A/B is an unfilled—100% solid castable, two-component, Urethane Resin system. This fast cure system is a good, low-cost choice for production parts. Once cured, 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.

Features

- Odorless
- Easily paintable
- Low viscosity / Low shrink
- Low reactivity temperature -- (170°F/77°C maximum)
- Fast cure
- Good impact resistance

Applications

Use for any items not requiring high temperature resistance:

- Production parts
- Prototypes
- Model kits
- Picture frames
- Plastic parts
- Models

Properties Reactivity Data (Typical Values)

Property	Test Method	Results
Solids by weight, %		100
Shrinkage	ASTM D-1353	Unfilled - .009 Filled - less than .001
Density	ASTM D-1622	64lb/ft^3 or 5.3lb 12”x12”x1” Thick
Viscosity @ 74°F, cps	ASTM D-2196	200 A / 205 B
Coefficient of Expansion		0.000129
Gel Time		3 Minutes
Demold Time		15-20 Minutes
Mix Ratio, by weight		50 A / 50 B
Mix Ratio, by volume		47% ISO / 53% POLY

**Reactivity times are influenced by many variables, including size of pour, part’s shape, ambient temperature and humidity*

Physical Properties – Cured Material (Typical Values)

Property	Test Method	Results
Color		Tan
Hardness, Shore D		65
Tensile Strength, psi	ASTM D-2370	3389
Elongation, % at yield	ASTM D-2370	12.5

Mixing

Parts A and B should be at room temperature—above 75°F—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 A 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 demolded. Prematurely demolding parts may cause deformation, especially in thin areas. Preheating molds to 100°F, prior to casting, will expedite cure, especially for thin section parts. Low temperatures will slow curing time and extend the demold time. ***Curing & Gel Times are influenced by many variables, including size of mix, part's 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 @ 75°F.

Storage and Shelf Life

A and B components must be stored in their original, unopened containers at temperatures between 75°F and 85°F. 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

All pigments should be added to the "B" side only at 1-2% of total weight of resin mix. Castable urethanes are affected by direct and indirect sunlight and should be painted with oil-based paint to protect color and surface.

- Red
- Yellow
- Fleshtone
- Black
- White
- Blue
- Brown

Bright Shade Powder

Dry powdered pigments requiring thorough pre-mixing.

- Green
- Orange
- Yellow
- Pink
- Red

UD Dye

Transparent coloring used in Clear and Transparent Urethane and Epoxy.

- Red
- Yellow
- Black
- Blue

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

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 65°F will cause slow cure.

	Description	Recommended Amounts
CC-200	Limestone to lower cost and add weight to material	50-200%
GAP-25	Aluminum mixture used for reducing shrinkage and increasing thermal conductivity for vacuum form tools	50-200%
GF-3000	Glass beads, aids in density and scratch resistance, reduces shrinkage for masters or patterns	100-200%
HGF-100	Hollow glass filler for lightweight parts	5-10%
Pro-Lite FR 50	Nonabrasive, light-weight filler	50%