

# TinSil® 80-Series RTV Silicone Rubbers

## *Low-Shrinkage Silicones with Long Library Life*

**DESCRIPTION:** TinSil® 80-Series RTV Silicone Rubbers are condensation-cure, tin-catalyzed, flexible mold rubbers. TinSil 80-Series products were designed for applications where high tear, excellent chemical resistance, low shrinkage upon cure, and longer library life for the cured molds are required.

TinSil products consist of a liquid Part B base and Part A accelerator, which, after mixing at the proper ratio by weight, cure at room temperature to rubber with a tough, knotty tear property. TinSil molds have easy release properties and are resistant to high temperatures. TinSil molds are excellent for casting polyesters, epoxy and polyurethane resins, waxes and many other materials.

As with other Polytek® elastomers, the last two digits in the product name indicate the approximate Shore A hardness of the cured rubber.

**MODEL PREPARATION:** Porous models such as wood or plaster must be sealed to prevent penetration of the liquid rubber into the pores of the material. Wax, petroleum jelly, lacquer, paint and most other coatings are suitable sealers. Pol-Ease® 2350 Release Agent can be sprayed or brushed onto an unsealed model to act as both a sealer and release agent. A couple of coats of Pol-Ease 2350 may be required depending on the porosity of the model. Allow to dry before pouring rubber. Do not use Pol-Ease 2300 Release Agent on surfaces that contact liquid TinSil, since inhibition and/or adhesion can occur. Pol-Ease 2500 Release Agent can be used on sealed models or on cured silicone rubber to prevent additional liquid silicone from adhering. TinSil rubbers bond to cured silicone rubbers unless a parting agent is used. Modeling clays containing sulfur may inhibit curing. In every case where there is any question about the com-

### Why Choose TinSil® 80-Series Rubbers?

- High tear and excellent chemical resistance leads to long mold life
- Lower viscosity than similar hardness silicone systems
- Less shrinkage upon cure than other tin-catalyzed systems
- Longer library life than other tin-catalyzed systems

patibility between the rubber and the prepared model surface, a test cure should be made on an identical surface to determine that complete curing and good release are obtained.

Porous models should be vented from beneath to prevent trapped air from causing bubbles in the rubber.

**MIXING & CURING:** Weigh proper amounts of Part B and then Part A into a clean mixing container. *Accurate weighing is essential to obtain optimum physical properties from the cured rubber.* Mix thoroughly, scraping sides and bottom of the container. If the liquid rubber is mixed carefully, so as not to whip air into the mix, it can be poured without vacuum degassing. To ensure a bubble-free mold, however, deaerate the liquid rubber under vacuum at 28-29 inches mercury until the mass of rubber rises and then collapses. Deaerate for additional 2 minutes. When vacuuming, use a mixing container three to four times larger than the volume of rubber.

To reach full hardness in the specified demold time, temperature should be above 77°F (25°C). At lower temperatures, more time may be needed to reach full hardness. Curing below 65°F (18°C) is not recommended.

TinSil products release alcohol while curing. Before casting polyurethanes in a TinSil mold, be sure that all alcohol has evaporated since alcohol inhibits surface cure of some polyurethanes. Exposure for 24 hours to a warm location in open air is often adequate, but the mold can be baked for four hours at 212°F (100°C) to speed alcohol evaporation.

**USING THE MOLD:** No release agent is necessary for casting most materials in TinSil molds. For longer mold life, however, apply a barrier coat, or Pol-Ease 2300 or 2500 Release Agent to molds before casting epoxy, polyurethane or polyester resins. TinSil molds can be stored, but as with most tin-catalyzed silicones, molds may eventually deteriorate and lose their elasticity. Molds made with excess catalyst may degrade from aging faster than silicone rubbers cured with less catalyst.

### PHYSICAL PROPERTIES

	80-15	80-30
Mix Ratio (By Weight)	1A:10B	1A:10B
Hardness, Shore A	15	30
Pour Time (min)	30	45
Demold Time (hr) @ 77°F	24	24
Specific Gravity	1.10	1.17
Color, Cured	Peach	Peach
Initial Mixed Viscosity (cP)	12,000	17,000
Specific Volume, in <sup>3</sup> /lb	25.3	23.7
Shrinkage Upon Cure (%)	~0.2	~0.2

**FASTER CURES FOR RAPID DEMOLDING:** Use TinSil FastCat in place of any TinSil Part A to accelerate cure and shorten demold time. When using FastCat, the working time is shorter as well, so avoid over-catalyzing. FastCat can be used in a range of two to six parts per 100 parts B. At two parts FastCat to 100 parts B, the working time and demold time will be similar to that observed when using 10 parts of the appropriate TinSil Part A. At three parts FastCat per 100 parts TinSil B, the working time will be reduced to ~20-30 minutes, with less than an eight-hour demold. Experiment with a small mix first to determine the best amount of FastCat to use. Use of FastCat can shorten the library life of cured TinSil rubber.

**BRUSH ON BLANKET MOLDS:** TinSil 80-Series rubbers can be thickened with TinThix liquid thickener or with Fumed Silica for brushing on a blanket mold. Silicone Colors can be used to vary the color of brushed layers to help ensure uniform coverage.

Blanket molds can be reinforced by placing stretchy, open mesh nylon or dacron cloth into the uncured rubber. The fabric should not be too close to the mold surface or the weave of the cloth may show through to the face of the mold.

**THINNING AND SOFTENING WITH SILICONE FLUID:** The very low viscosity 50 cSt Silicone Fluid can be added sparingly to the mixed rubber to thin the mix with some loss of strength, hardness and cure speed. More than 10% fluid addition may exude from the cured rubber. A 10% addition to TinSil 80-30 will reduce hardness to approximately Shore A25.

**BARRIER COAT:** A barrier coat is a fast drying, lacquer-like primer, such as spray paint, that is sprayed into a silicone mold and allowed to dry prior to pouring liquid plastic or foam. Upon removing the cured plastic casting from the mold, the barrier coat comes out on the casting resulting in a primed part. Using a barrier coat can extend mold life.

**SAFETY:** Before use, read product labels and Safety Data Sheets. Follow safety precautions and directions. Contact with uncured products may cause severe eye and skin irritation. Avoid contact. If skin contact occurs, remove by wiping with paper towels, then wash with soap and water. In case of eye contact, flush with water for 15 minutes and call a physician. Use with adequate ventilation. If solvents must be used for cleanup, denatured ethyl alcohol is best, but should be handled with respect for health and flammability hazards. Do not use TinSil products where food or body contact may occur.

**STORAGE LIFE:** For best results, store products in unopened containers at room temperature (60-90°F). Use products within six months. Tightly reseal containers after use.

**DISCLAIMER:** The information in this bulletin and otherwise provided by Polytek is considered accurate. However, no warranty is expressed or implied regarding the accuracy of the data, the results to be obtained by the use thereof, or that any such use will not infringe any patent. Before using, the user shall determine the suitability of the product for the intended use and user assumes all risk and liability whatsoever in connection therewith.

## PACKAGING

Product	Kit Size (lb)	Part A (lb)	Part B (lb)
TinSil® 80-15 and 80-30	1.0	0.1	0.9
Mix Ratio 1A:10B	9.0	0.9	8.1
(By Weight)	44	4.0	40
	495	45	450

## ACCESSORIES

### Fumed Silica

5 gal, 1 bag (10 lb)

### Pol-Ease® 2300 Release Agent

12-oz can, case of 12 cans

### Pol-Ease® 2350 Release Agent

1 qt (1.5 lb), 5 gal (26 lb)

### Pol-Ease® 2500 Release Agent

12-oz can, case of 12 cans

### Poly PVA Solution (Clear or Green)

1 qt (2.0 lb), 5 gal (35 lb)

### PolyCoat (Mold Life Extender)

1 qt (1.5 lb), 1 gal (6 lb)

### Silicone Colors

Fleshtone, Red, Blue, Green, Yellow, Black and White  
4 oz, 1 lb

### Silicone Fluid 50 cSt Grade

1 qt (2 lb), 1 gal (8 lb), 5 gal (40 lb)

### TinSil® FastCat

4 oz, 1 pt (1 lb), 1 gal (8 lb)

### TinThix

4 oz, 1 pt (1 lb)