

# TinSil® 70-Series RTV Silicone Rubbers

## High-Performance, Flexible Mold Rubbers

**DESCRIPTION:** TinSil® 70-Series RTV Silicone Rubbers are condensation-cure, tin-catalyzed, flexible mold rubbers. 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. Choose the appropriate hardness of rubber for your application.

- **TinSil 70-11, 70-20 and TinSil Gel-10** are soft and, therefore, best for delicate castings. TinSil Gel-10 is translucent and especially useful for animatronics and special effects.
- **TinSil 70-25 and 70-30** are Polytek's most popular and versatile, mid-range hardness, silicone rubbers.
- **TinSil Brush/Spray-25** are brushable or sprayable or can be applied by hand or sprayed with a low-cost Plas-Pak spray gun or more sophisticated 1A:10B silicone spray equipment. Spray 25 is great for large scale blanket molds!
- **TinSil 70-60** is stable at higher temperatures making it suitable for casting low melting metals. TinSil 70-60 has limited tear strength because of its hardness.

**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 compatibility 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, 70-Series products 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. For vacuuming, use a mixing container 3 to 4 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.

### PHYSICAL PROPERTIES

	TinSil Gel-10 & 70-11	70-20	70-25	Brush/Spray 25	70-30	70-60
Mix Ratio (By Weight)	1A:10B	1A:10B	1A:10B	1A:10B	2A:100B	5A:100B
Hardness, Shore A	10	20	25	25	30	60
Pour Time (min)	45	60	60	30	60	30
Demold Time (hr) @ 77°F	16	16	16	16-24	24	24
Specific Gravity	1.1	1.1	1.1	1.1	1.1	1.5
Color, Cured	Translucent (Gel-10) Blue (70-10)	Blue	Blue	Translucent	Beige	Red
Initial Mixed Viscosity (cP)	10,000	10,000	14,000	Thixotropic	26,000	17,000
Specific Volume, in <sup>3</sup> /lb	25.3	25.3	25.3	25.3	25.3	18
Shrinkage Upon Cure (%)	~0.3	~0.3	~0.3	~0.3	~0.3	~0.8

**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 for a year or more, but as with most tin-catalyzed silicones, molds eventually deteriorate and lose their elasticity. Molds made with excess catalyst may degrade from aging faster than silicone rubbers cured with less catalyst.

**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 70-Series rubbers can be thickened with TinThix liquid thickener or Fumed Silica for brushing on blanket molds. TinThix is a liquid additive that can be added to the mixed A and B to achieve varying levels of thixotropy. TinSil Brush/Spray 25 is brushable or sprayable as supplied. SiliColor Silicone Pigments can be used to vary the color of brushed layers to help insure 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 70-20 will reduce hardness to approximately Shore A10-15.

**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. Also, 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:** At least 6 months in unopened containers stored at room temperature (60-90°F). Tightly reseal opened containers.

## PACKAGING

Product	Kit Size (lb)	Part A (lb)	Part B (lb)
TinSil® Gel-10, 70-11, 70-20, & 70-25 Mix Ratio 1A:10B (By Weight)	1.0	0.1	0.9
	9.0	0.9	8.1
	44	4.0	40
	495	45	450
TinSil® 70-30 Mix Ratio 2A:100B (By Weight)	1.02	0.02	1.0
	8.3	0.2	8.1
	40.8	0.8	40
	448.8	8.8	440
TinSil® 70-60 Mix Ratio 5A:100B (By Weight)	1.05	0.05	1.0
	8.4	0.4	8.0
	42	2.0	40
TinSil® Brush/Spray 25 Mix Ratio 1A:10B (By Weight)	2.0 (Cartridge)	0.2	1.8
	9.0	0.9	8.1
	44	4.0	40
	495	45	450

## ACCESSORIES

Polytek offers additives that can be used to vary the properties of the cured and uncured silicone rubber. Accessories help make the products easier to use.

### Accelerator

TinSil® FastCat Accelerator - 4 oz, 1 lb, or 8 lb

### Sealers & Release Agents

Poly PVA Solution (Green or Clear) - 2 lb or 35 lb  
 PolyCoat (Mold Life Extender) - 1.5 lb or 6 lb  
 Pol-Ease® 2300 Release Agent - 12-oz aerosol can  
 Pol-Ease® 2350 Release Agent - 1.5 lb or 26 lb  
 Pol-Ease® 2500 Release Agent - 12-oz aerosol can

### Colors

Silicone Colors Pigments - 4 oz or 1 lb  
 (Black, Blue, Fleshtone, Green, Red, White, Yellow)

### Thickeners

Fumed Silica - 5-gal pail or 10-lb bag  
 TinThix - 4 oz or 1 lb

### Thinner

Silicone Fluid 50 cSt - 2 lb or 8 lb

**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.