

PlatSil® 71 and 73-Series Silicone Rubbers

Technical Bulletin

DESCRIPTION: PlatSil® 71 & 73-Series Silicone Rubbers are two-component, room temperature curing (RTV) systems that cure to flexible, high-strength rubbers. These platinum-cured (or addition-cured) systems can be used to make flexible molds or parts that offer excellent release properties, good chemical resistance, and high dimensional stability. PlatSil® molds offer long library life and are a good choice for casting resin (polyurethane, polyester, epoxy), polyurethane rubber and foam, wax, plaster and concrete. Polytek offers additives to vary viscosity and cure time of the liquid rubber, as well as hardness and color of the cured rubber.

BEFORE USE: Thoroughly read Safety Data Sheets, product labels and the "SAFETY" section in this Technical Bulletin.

MODEL PREPARATION: Porous models must be sealed to prevent the rubber from penetrating the surface. Seal porous models (e.g., wood or plaster) with wax, petroleum jelly, PVA, lacquer or paint to prevent penetration of the rubber into the pores of the material. Some surfaces (e.g., metals and glass) that contact the liquid rubber should be coated lightly with Pol-Ease® 2350 Release Agent or sprayed with Pol-Ease® 2500 Release Agent. Pol-Ease 2350 is both a sealer and release agent and must be allowed to dry before applying liquid rubber. Pol-Ease 2500 is an aerosol spray and does not need to dry before applying liquid rubber. If there is any question about the release properties of PlatSil rubbers against a certain material, perform a small test cure on an identical surface. PlatSil rubbers usually bond to cured silicone rubbers unless a release agent, like Pol-Ease 2500, is used. Do not use silicone-

PRODUCT LINE FEATURES

- Two-part, platinum-cured (addition-cured) silicone rubbers
 - Room temperature curing (RTV)
 - Range of hardness from A10 to A60
 - Reproduces fine details
 - Low shrinkage upon cure; high dimensional stability
- Release agents not required for casting many materials in PlatSil® molds
 - Cured molds have long library life
- Thicken with liquid thickener for brush-on application

based release agents (e.g., Pol-Ease® 2300 Release Agent) on surfaces that contact liquid PlatSil rubbers since inhibition and/or adhesion may occur.

Once sealed and positioned for mold making, vent porous models from beneath to allow trapped air to escape and to prevent air from migrating into the rubber.

CURE INHIBITION: CAUTION! Contamination from amines, sulfur, tin compounds, polyester resins, some paints and some silicone rubbers may inhibit surface cure. Modeling clays containing sulfur are one

PHYSICAL PROPERTIES

Product	71-11	73-15	73-20	71-25	73-25	73-29	71-40	73-40	73-45	71-60	73-60	SiliGlass
Mix Ratio By Weight	1A:1B	1A:1B	1A:1B	1A:1B	1A:1B	1A:10B	1A:10B	1A:10B	1A:10B	1A:10B	1A:10B	1A:1B
Shore Hardness	A10	A15	A22	A25	A25	A30	A40	A40	A45	A60	A60	A40
Pour Time	20 min.	20 min.	5 min.	35 min.	15 min.	45 min.	90 min.	45 min.	40 min.	30 min.	45 min.	7 min.
Demold Time at 73°F	4 hr.	4-5 hr.	1 hr.	16 hr.	4-5 hr.	16 hr.	24 hr.	16 hr.	16 hr.	16-24 hr.	16 hr.	30 min.
Cured Color	Blue-Green	White Translucent	Blue Translucent	Milky White	Green	White	Translucent	Yellow	Green	Magenta	Blue	Clear
Mixed Viscosity (cP)	6,000	2,500	3,000	3,500	6,000	15,000	38,000	15,000	35,000	55,000	40,000	200
Specific Volume (in ³ /lb)	24.7	25	25	25	24.3	25	26.6	25	21.3	22.7	21.3	28
Specific Gravity	1.12	1.10	1.10	1.1	1.14	1.10	1.04	1.10	1.30	1.22	1.30	0.97
Elongation (%)	751	640	460	343	405	531	296	355	707	220	202	N/A
Tensile Strength (psi)	281	265	230	418	380	542	438	465	631	630	537	N/A
Die B Tear Strength (pli)	117	55	45	137	120	90	98.6	52	145	80	113	N/A
Die T Tear Strength (pli)	36	17	17	32.8	30	39	32.9	7	62.9	5	45	N/A
Food Safe ¹				YES					YES		YES	

example. If there is any question about the compatibility between the rubber and the prepared model surface, perform a test cure on an identical surface to determine that complete curing and good release are obtained.

MIXING AND CURING: Before use, be sure that Parts A and B are at room temperature and that all tools are ready. Surface and air temperatures should be above 60°F during application and for the entire curing period.

Read product labels to determine the correct mix ratio and if pre-mixing of Part A or Part B component is required. Carefully weigh Part B and then Part A in proper ratio into a clean mixing container. Accurate weighing is essential to obtain the optimum physical properties from the cured rubber. Mix thoroughly, scraping sides and bottom of the container.

To ensure a bubble-free mold, it may be necessary to deaerate the liquid rubber under vacuum at 28-29 inches mercury. Evaluate the need for vacuum on a case-by-case basis. Do not attempt to vacuum fast-setting PlatSil 73-20. If vacuum is used, mix Parts A and B in a mixing container three to four times larger than the volume of rubber and deaerate until the mass of rubber rises and then collapses and continue for an additional two minutes. Pour the rubber as soon as possible after mixing/vacuuming for best flow and air bubble release.

If reinforcement of the rubber is needed (e.g., thin blanket molds), place open mesh nylon, dacron cloth, or TieTex® Fabric into the uncured rubber. Be sure that the fabric is not too close to the mold surface or the weave of the cloth may show through to the face of the mold.

At room temperature (~73°F), PlatSil rubbers cure to full hardness in the specified demold time. At higher temperatures, they cure faster. At lower temperatures, more time may be needed to reach full hardness. Curing below 60°F is not recommended.

Note on SiliGlass: As curing progresses, SiliGlass becomes harder and more brittle and the likelihood of breaking increases. Demold SiliGlass within one half to one hour after mixing to prevent crumbling upon demolding.

USING THE MOLD: Release agent is not usually necessary for casting most materials in PlatSil molds, but for longer mold life with epoxy, polyurethane or polyester resins, a barrier coat or release agent (e.g., Pol-Ease 2300 Release Agent or Pol-Ease 2500 Release Agent) is recommended. Properly cured PlatSil molds can last for years without deterioration.

ACCELERATING THE CURE: Cure time can be shortened with the addition of an Accelerator, such as PlatSil® 71/73 Part X Accelerator or by placing the curing rubber in a warm area (do not exceed 140°F). Weigh and add 71/73 Part X to Part B and mix. Then weigh and add Part A and mix thoroughly. Pour over a properly prepared model as soon after mixing as possible. Demold when tack-free. The addition of 1% Part X to the total mixed weight of Parts A+B decreases the pour time to ~1/3 the normal pour time. The addition of 2% decreases the normal pour time

to ~1/4. The addition of 3% decreases the normal pour time to ~1/6. The demold time will also be reduced. Experiment on a small scale before making a larger mix.

RETARDING CURE SPEED: Cure time can be slowed with the addition of PlatSil® 71/73 Part R Retarder. Weigh and add 71/73 Part R to PlatSil Part A prior to mixing with Part B. Adding ~1% of 71/73 Part R to the total mixed weight of PlatSil A+B roughly doubles the pour time. Adding ~2% of 71/73 Part R triples the pour time. Do not use more than 4%, as the system may not cure at all.

THINNING AND SOFTENING WITH SILICONE FLUID: Low-viscosity 50 cSt Silicone Fluid can be added to the mixed liquid rubber to thin the mix, but add sparingly since fluid addition results in some loss of strength, hardness and cure speed. If more than 10% fluid is added to the mix, then fluid may exude from the cured rubber. A 5% addition of 50 cSt Silicone Fluid to PlatSil 73-25, for example, will reduce hardness from Shore A25 to approximately Shore A20.

THICKENING FOR BRUSH-ON: In order to make brush-on blanket molds, thicken PlatSil rubbers by adding PlatThix liquid thickener (up to 5%, by weight) or Fumed Silica. When brushing on several layers of silicone, wait for the first layer to “gel” (i.e., not fully cured, but when the rubber has cured enough that application of a subsequent layer will not disturb the previous layer) before applying the next layer. Delamination can occur when too much time has passed in between layers; do not allow the layer to fully cure before applying the subsequent layer. Ambient and surface temperature can affect gel and cure times.

Refer to the table below for estimated maximum elapsed time in between application of layers.

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 into the mold. Upon removing the cured plastic or foam 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.

SHELF LIFE: For best results, store products in unopened containers at room temperature (60-90°F). Use products within six months from the date of shipment. Tightly reseal containers after use.

CLEAN UP: Tools should be wiped clean before the rubber cures. Denatured ethanol is a good cleaning solvent, but it must be handled with extreme caution owing to its flammability and health hazards.

SAFETY: Before use, thoroughly read Safety Data Sheets and product labels. Follow safety precautions and directions.

Part A: Keep out of reach of children. Use with adequate general or local exhaust ventilation to minimize exposure levels. If needed, a NIOSH-approved respirator with organic vapor cartridge may be used. If inhaled, remove victim to fresh air and keep at rest in a position

BRUSH-ON APPLICATION: MAXIMUM ELAPSED TIME BETWEEN APPLICATION OF LAYERS

PlatSil® Product	71-11	73-15	73-20	71-25	73-25	73-29	71-40	73-40	73-45	71-60	73-60
Maximum Time Between Layers	1 hr.	1 hr.	15 min.	1.5 hr.	1 hr.	3 hr.	3 hr.	3 hr.	3 hr.	3 hr.	3 hr.

Silicone Color Pigments can be used to vary the color of brushed layers to help ensure uniform coverage.

comfortable for breathing. Wear impervious gloves, such as butyl rubber or nitrile rubber. Wash thoroughly with soap and water after handling. If skin irritation or rash occurs, get medical help. Wear eye protection, such as chemical safety glasses/goggles. If in eyes, rinse cautiously with water for several minutes, removing contact lenses if present and easy to do. If eye irritation persists, get medical help.

Part B: Keep out of reach of children. Use with adequate general or local exhaust ventilation to minimize exposure levels. If needed, a NIOSH-approved respirator with organic vapor cartridge may be used. If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. Wear impervious gloves, such as butyl rubber or nitrile rubber. Wash thoroughly with soap and water after handling. Wear eye protection, such as chemical safety glasses/goggles. If in eyes, rinse cautiously with water for several minutes, removing contact lenses if present and easy to do.

DISCLAIMER: The information in this bulletin and otherwise provided by Polytek® Development Corp. 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.

¹ Tested by an independent laboratory and were found to comply with 21 CFR 177.2600 (as published in the Code of Federal Regulations) for rubber articles intended for repeated use food contact surfaces when accurately measured, thoroughly mixed, and fully cured.

ACCESSORIES

Accelerator:

PlatSil® 71/73 Part X Accelerator

Retarder:

PlatSil® 71/73 Part R Retarder

Sealers & Release Agents:

Pol-Ease® 2300 Release Agent
Pol-Ease® 2350 Release Agent
Pol-Ease® 2500 Release Agent
PolyCoat Sealer & Release Agent
Pol-Ease® Mold Dressing
Pol-Ease® Mold Rinse
Poly PVA Solution (Green or Clear)

Thinner:

Silicone Fluid 50 cSt

Thickeners:

PlatThix Liquid Thickener
Fumed Silica

Colors:

Silicone Color Pigments
Black - Blue - Fleshtone - Green - Red - White - Yellow

Reinforcement Material:

Tietex® Fabric