

# SILPAK R-2340

## Platinum Cured, Flexible, High Strength, Silicone Rubber

**Silpak R-2340** Silicone Rubber is a two-component, room temperature curing (RTV) system that cures to a clear, flexible, high-strength rubber. This platinum-cured (or addition-cured) system can be used to make flexible molds or parts that offer excellent release properties, good chemical resistance, and high dimensional stability. The molds offer long library life and are a good choice for casting resin (polyurethane, polyester, epoxy), polyurethane rubber and foam, wax, plaster and concrete. Additives to vary viscosity and cure time of the liquid rubber, as well as hardness and color of the cured rubber are available.

### Features

- Two-part, platinum-cured silicone rubber
- Reproduces fine details
- Room temperature curing (RTV)
- Release agents not required
- Low shrinkage upon cure: high dimensional stability
- Cured molds have long library life
- Thicken with liquid thickener for brush-on applications

### Applications

For casting:

- Polyurethane resin
- Epoxy resin
- Wax
- Polyurethane rubber and foam
- Polyester resin
- Plaster
- Concrete

### Physical and Handling Properties

Property	Value
Color	Translucent
Mix Ratio, by weight	1A : 10B
Initial Viscosity, Activator, cP	80
Initial Viscosity, Base, cP	60,000
Initial Mixed Viscosity, at 77°F, cP	40,000
Specific Volume (in <sup>3</sup> /lb)	26.9
Specific Gravity	1.03
Hardness, Shore A	40
Pour Time, min	90
Demold Time, hours	24
Tensile Strength, psi	440
Elongation, %	300
Die B Tear Strength(pli)	100
Die T Tear Strength(pli)	33

*Values listed above are typical and not intended for use in specifications.*

## Mold Preparation

Porous molds must be sealed to prevent the rubber from penetrating the surface. Seal porous molds (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 R-2340 against a certain material, perform a small test cure on an identical surface. R-2340 usually bonds to cured silicone rubbers unless a release agent, like Pol-Ease 2500, is used. Do not use silicone-based release agents (e.g., Pol-Ease® 2300 Release Agent) on surfaces that contact liquid R-2340 rubber since inhibition and/or adhesion may occur. Once sealed and positioned for mold making, vent porous molds 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 example. If there is any question about the compatibility between the rubber and the prepared mold 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 Silpak R-2340. 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), R-2340 rubber cures 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.

## Using the Mold

Release agent is not usually necessary for casting most materials in R-2340 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 R-2340 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 mold 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 R-3700-20 by adding PlatThix **(\*\*For Brush On applications, use THIX 5170 Additive to thicken material@ 1-2% level??)** liquid thickener (up to 5%, by weight) or Fumed Silica. When brushing on several layers of silicones, 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. For R-2340, the maximum time between layers is 3 hours. Ambient and surface temperature can affect gel and cure times. Silicone Color Pigments can be used to vary the color of brushed layers to help ensure uniform coverage.

## 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.

## Proper Use and Safety

Read all instructions and safety data sheets prior to use. Consult safety data sheets for all recommended safety precautions.

## Storage & Shelf Life

Part A and B must be stored in their original, tightly closed containers to protect from moisture and foreign materials. Storage area should be maintained at temperatures between 60-90°F. Shelf life of materials when kept in unopened, sealed containers, at the recommended storage conditions, is six months. Containers should not be opened until ready or use. Once opened, storage life can be extended with the use of purging gas, such as nitrogen.

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