Smooth-Sil® Series

Addition Cure Silicone Rubber Compounds

www.smooth-on.com

PRODUCT OVERVIEW

Smooth-On **Smooth-Sil®** Platinum Silicones cure at room temperature with negligible shrinkage. With different hardnesses to choose from, **Smooth-Sil®** products offer tremendous versatility and are suitable for making production molds of any configuration, large or small. These silicones exhibit good chemical, abrasion and heat resistance. Materials such as plasters, concrete, wax, low-melt metal alloys or resins (urethane, epoxy or polyester) can then be cast into these silicone rubbers without a release agent.

Smooth-Sil® 945 offers the convenience of a **1A:1B by volume** mix ratio and a fast **6 hour cure time.**

Smooth-Sil® Platinum Silicones are used for rapid prototyping, wax casting (foundries and candle makers), architectural restoration and for casting concrete. Smooth-Sil® 940 is suitable for food related applications. (See separate technical bulletin for usage instructions available at www.smooth-on.com).

TECHNICAL OVERVIEW

	Mixed Viscosity (ASTM D-2393)	Specific Gravity (g/cc) (ASTM D-1475)	Specific Volume (cu. in./lb.) (ASTM D-1475)	Color	Pot Life (ASTM D-2471)	Cure Time	Mix Ratio	Shore A Hardness (ASTM D-2240)	Tensile Strength (ASTM D-412)	100% Modulus (ASTM D-412)	Elongation @ Break % (ASTM D-412)	Die B Tear Strength (ASTM D-624)
Smooth-Sil® 935	40,000 cps	1.18	23.5	Blue	45 min.	24 hrs.	100A:10B by weight	35A	650 psi	170 psi	300%	115 pli
Smooth-Sil® 940	35,000 cps	1.18	23.4	Pink	30 min.	24 hrs.	100A:10B by weight	40A	600 psi	200 psi	300%	100 pli
Smooth-Sil® 945	30,000 cps	1.24	22.3	Purple	25 min.	6 hrs.	1A:1B by volume	45A	700 psi	260 psi	320%	120 pli
Smooth-Sil® 950	35,000 cps	1.24	22.3	Blue	45 min.	24 hrs.	100A:10B by weight	50A	725 psi.	272 psi	320%	155 pli

Useful Temperature Range: -65°F to 450°F (-53°C to 232°C)

Dielectric Strength (ASTM D-147-97a)**:** >350 volts/mil

Shrinkage* *(in./in.)* *(ASTM D-2566)*: < .001

*All values measured after 7 days at 73°F/23°C

PROCESSING RECOMMENDATIONS

PREPARATION... Safety – Use in a properly ventilated area ("room size" ventilation). Wear safety glasses, long sleeves and rubber gloves to minimize contamination risk. Wear vinyl gloves only. Latex gloves will inhibit the cure of the rubber.

Store and use material at room temperature (73°F/23°C). Warmer temperatures will drastically reduce working time and cure time. Storing material at warmer temperatures will also reduce the usable shelf life of unused material. These products have a limited shelf life and should be used as soon as possible.

Cure Inhibition – Addition-cure silicone rubber may be inhibited by certain contaminants in or on the pattern to be molded resulting in tackiness at the pattern interface or a total lack of cure throughout the mold. Latex, tin-cure silicone, sulfur clays, certain wood surfaces, newly cast polyester, epoxy or urethane rubber my cause inhibition. If compatibility between the rubber and the surface is a concern, a small-scale test is recommended. Apply a small amount of rubber onto a non-critical area of the pattern. Inhibition has occurred if the rubber is gummy or uncured after the recommended cure time has passed.

Because no two applications are quite the same, a small test application to determine suitability for your project is recommended if performance of this material is in question.

To prevent inhibition, one or more coatings of a clear acrylic lacquer applied to the model surface is usually effective. Allow any sealer to thoroughly dry before applying rubber. Note: Even with a sealer, platinum silicones will not work with modeling clays containing heavy amounts of sulfur. Do a small scale test for compatibility before using on your project.

Applying A Release Agent - Although not usually necessary, a release agent will make demolding easier when pouring into or over most surfaces. Ease Release® 200 is a proven release agent for making molds with silicone rubber. Mann Ease Release® products are available from Smooth-On or your Smooth-On distributor.

Safety First!

The Material Safety Data Sheet (MSDS) for this or any Smooth-On product should be read prior to use and is available upon request from Smooth-On. All Smooth-On products are safe to use if directions are read and followed carefully.

Keep Out of Reach of Children

Be careful. Use only with adequate ventilation. Contact with skin and eyes may cause irritation. Flush eyes with water for 15 minutes and seek immediate medical attention. Remove from skin with waterless hand cleaner followed by soap and water.

Important: The information contained in this bulletin is considered accurate. However, no warranty is expressed or implied regarding the accuracy of the data, the results to be obtained from the use thereof, or that any such use will not infringe upon a patent. User shall determine the suitability of the product for the intended application and assume all risk and liability whatsoever in connection therewith.

Applying A Release Agent - IMPORTANT: To ensure thorough coverage, lightly brush the release agent with a soft brush over all surfaces of the model. Follow with a light mist coating and let the release agent dry for 30 minutes.

If there is any question about the effectiveness of a sealer/release agent combination, a small-scale test should be made on an identical surface for trial.

MEASURING & MIXING...

Before you begin, pre-mix Part B thoroughly. After dispensing the required amounts of Parts A and B into mixing container (100A:10B by weight), **mix thoroughly for 3 minutes making sure that you scrape the sides and bottom of the mixing container several times.** After mixing parts A and B, vacuum degassing is recommended to eliminate any entrapped air. Vacuum material for 2-3 minutes (29 inches of mercury), making sure that you leave enough room in container for product volume expansion.

POURING, CURING & MOLD PERFORMANCE...

For best results, pour your mixture in a single spot at the lowest point of the containment field. Let the rubber seek its level up and over the model. **A uniform flow will help minimize entrapped air.** The liquid rubber should level off at least 1/2" (1.3 cm) over the highest point of the model surface.

Curing / Post Curing - Allow rubber to cure as prescribed at room temperature (73°F/23°C) before demolding. Do not cure rubber where temperature is less than 65°F/18°C. **Optional:** Post curing the mold will aid in quickly attaining maximum physical and performance properties. After curing at room temperature, expose the rubber to 176°F/80°C for 2 hours and 212°F/100°C for one hour. Allow mold to cool to room temperature before using.

Using The Mold - When first cast, silicone rubber molds exhibit natural release characteristics. Depending on what is being cast into the mold, mold lubricity may be depleted over time and parts will begin to stick. No release agent is necessary when casting wax or gypsum. Applying a release agent such as Ease Release® 200 (available from Smooth-On) prior to casting polyurethane, polyester and epoxy resins is recommended to prevent mold degradation.

Thickening Smooth-Sil® Silicones - **THI-VEX®** is made especially for thickening Smooth-On's silicones for vertical surface application (making brush-on molds). Different viscosities can be attained by varying the amount of THI-VEX®. See the **THI-VEX® technical bulletin** (available from Smooth-On or your Smooth-On distributor) for full details.

Thinning Smooth-Sil® Silicones - Smooth-On's **Silicone Thinner®** will lower the viscosity of Smooth-Sil® for easier pouring and vacuum degassing. **A disadvantage** is that ultimate tear and tensile are reduced in proportion to the amount of **Silicone Thinner®** added. ***It is not recommended to exceed 10% by weight of total system (A+B).*** See the **Silicone Thinner® technical bulletin** (available from Smooth-On or your Smooth-On distributor) for full details.

Mold Performance & Storage - The physical life of the mold depends on how you use it (materials cast, frequency, etc.). Casting abrasive materials such as concrete can quickly erode mold detail, while casting non-abrasive materials (wax) will not affect mold detail. Before storing, the mold should be cleaned with a soap solution and wiped fully dry. Two part (or more) molds should be assembled. Molds should be stored on a level surface in a cool, dry environment.

Call Us Anytime With Questions About Your Application.

Toll-free: **(800) 762-0744** Fax: **(610) 252-6200**

The new **www.smooth-on.com** is loaded with information about mold making, casting and more.