

Smooth-Cast® ROTO®

Semi-Rigid Urethane Casting Resin



www.smooth-on.com

PRODUCT OVERVIEW

Smooth-Cast ROTO® is a low viscosity liquid plastic that gradually builds thixotropy (becomes thicker), making it ideal for rotational casting applications. Castings will be hollow and lightweight but have the appearance of being solid, allowing you to use less material to attain the same finished look (substantially lowering your material costs). ROTO® can also be cast solid for a variety of industrial and art-related applications.

Fully cured castings are semi-rigid and exhibit good impact resistance. Castings resist moisture and mild solvents and can be machined, sanded and painted. Color effects are possible by adding SO-Strong® color tints. ROTO® is ideal for making hollow rotationally cast parts.

TECHNICAL OVERVIEW

Mix Ratio; 1A:1B by volume or 100A:90B by weight

Mixed Viscosity (cps); 120 (ASTM D-2393)

Specific Gravity, g/cc; 1.05 (ASTM D-1475)

Specific Volume, cu. in. /lb.; 26.4 (ASTM D-1475)

Pot Life; 2.5 minutes @73° F / 23°C (ASTM D-2471)

Cure time; 10-15 minutes @73° F / 23°C **

Color; White

Shore D Hardness; 65 (ASTM D-2240)

Ultimate Tensile, psi; 2,400 (ASTM D-638*)

Tensile Modulus; 90,000 psi (ASTM D-638*)

Elongation @ Break; 20% (ASTM D-638*)

Flexural Strength; 2,690 psi (ASTM D-790*)

Flexural Modulus; 75,100 psi (ASTM D-790*)

Compressive Strength; 3,680 psi (ASTM D-695*)

Heat Deflection Temp; 120°F/50°C (ASTM D-648*)

Compressive Modulus; 57,700 psi (ASTM D-695*)

Shrinkage; 0.01 in/in (ASTM D-2566*)

* Value measured after 7 days at 73°F/23°

** Depending on Mass

PROCESSING RECOMMENDATIONS

Preparation . . .

Materials should be stored and used in a warm environment (73°F / 23°C). This material has a limited shelf life and should be used as soon as possible. Mixing should be done in a well-ventilated area. Wear safety glasses, long sleeves and rubber gloves to minimize contamination risk. All liquid urethanes are moisture sensitive and will absorb atmospheric moisture. Mixing tools and containers should be clean and made of metal, glass or plastic. 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.

Applying A Release Agent . . .

A release agent is necessary to facilitate demolding when casting into or over many surfaces. Use a release agent made specifically for mold making and casting such as Mann's **Ease Release® 200** available from Smooth-On. A liberal coat of release agent should be applied onto all surfaces that will contact the plastic.

~IMPORTANT: To ensure thorough coverage, apply release and brush with a soft brush over all surfaces. Follow with a light mist coating and let the release agent dry for 30 minutes.

Smooth-On silicone rubber molds usually do not require a release agent unless casting silicone into the mold. Applying a release agent will prolong the life of the mold.

Mixing . . .

Pre-Mix PART-A and PART-B Thoroughly Before You Begin. After pre-mixing both parts, dispense required amounts of Parts A and B into mixing container and **mix thoroughly**. Stir for at least 30 - 45 seconds, making sure that you scrape the sides and bottom of the mixing container several times. **This material sets quickly, so be aware of your time!**

IMPORTANT: Shelf life of product is reduced after opening. Remaining product should be used as soon as possible. Immediately replacing the lids on both containers after dispensing product will help prolong the shelf life of the unused product. **XTEND-IT® Dry Gas Blanket** (available from Smooth-On) will significantly prolong the shelf life of unused liquid urethane products.

Safety First!

The material safety data sheet (MSDS) for this or any Smooth-On product should be read before using and is available on request. All Smooth-On products are safe to use if directions are read and followed carefully.

Be Careful. Part A (Yellow Label) contains methylene diphenyl diisocyanate. Vapors, which can be significant if heated or sprayed, may cause lung damage and sensitization. Use only with adequate ventilation. Contact with skin and eyes may cause severe irritation. Flush eyes with water for 15 minutes and get immediate medical attention. Remove from skin with soap and water.

Part B (Blue Label) is irritating to the eyes and skin. Avoid prolonged or repeated skin contact. If contaminated, flush eyes with water for 15 minutes and get immediate medical attention. Remove from skin with soap and water. When mixing with Part A, follow precautions for handling isocyanates.

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 a copyright or patent. User shall determine suitability of the product for the intended application and assume all associated risks and liability.

Machine Rotocasting • Curing • Performance

To get a suitable finished rotational casting may take practice, especially if you are attempting to do it by hand. There are rotational casting machines available that do a professional job, but they are expensive. If you need a source for rotational casting machines, contact a Smooth-On distributor for more information.

Machine Rotational Casting . . .

Secure mold to machine base. Have a plug available to “cap” the mold. *Smooth-Cast® ROTO®* sets quickly, so be aware of your time. Mix a small amount of *ROTO®* liquid plastic, pour into mold cavity and cap the opening with your cap. Set the speed setting for both axes to slow and turn on the machine. Adjust the speed of both axes as necessary. Your goal is to attain constant 360° rotation at a constant speed to get a uniform coating of the liquid plastic against the walls of the mold.

Curing . . .

Warning: Fumes, which may be visible as this product starts to “gel” and cure, will dissipate with adequate ventilation. Only use this product with room size ventilation and do not inhale/breathe fumes. Castings will be extremely hot immediately following cure and may burn the skin. Let cool to room temperature before handling. Demold time is directly proportional to mass and mold configuration. Plastic will cure in 10 – 15 minutes at room temperature but because the casting will be thin-walled, the plastic may take longer to cure and you may want to wait 20 – 30 minutes before demolding. Backfilling the hollow casting with a rigid foam (such as *Foam-IT!® 5*) provides reinforcement and even greater impact resistance. Foam backfilling is recommended if castings will be subjected to temperatures above 85°F / 30°C.

Performance . . .

Cured castings are semi-rigid and durable. They resist moisture, moderate heat, solvents, dilute acids and can be machined; primed/painted or bonded to other surfaces (any release agent must be removed). If machining castings, wear dust mask or other apparatus to prevent inhalation of residual particles. Castings can be displayed outdoors after priming and painting. Unpainted castings will darken after being exposed to UV light. **Because no two applications are the same, a small test application to determine suitability is recommended if performance of this material is in question.**



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.