

Smooth-Cast® Semi-Rigids

Semi-Rigid Urethane Casting Resins



www.smooth-on.com

PRODUCT OVERVIEW

The Smooth-Cast™ line of low-cost semi-rigid urethane casting resins cure quickly to semi-rigid plastics that offer excellent impact resistance. These plastics are easy-to-use (mix ratio is 1A:1B by volume) and have low viscosities for minimal bubble entrapment. Vibrant colors are possible by adding SO-Strong® color tints.



These semi-rigid plastics are virtually unbreakable and will really take a beating. They also offer exceptional abrasion resistance. It is good for making high-impact resistance tools, prototypes, abrasion resistant parts, foundry patterns, roller facings, vibration pads, fast concrete stamping pads, etc.

TECHNICAL OVERVIEW

	Pot Life @ 73° F / 23°C (ASTM D-2471)	Cure Time ** @ 73° F / 23°C	Shore D Hardness (ASTM D-2240)	Mixed Viscosity (ASTM D-2393)	Specific Gravity (ASTM D-1475)	Specific Volume cu.in./lb (ASTM D-1475)	Tensile Strength (ASTM D-638*)	Tensile Modulus (ASTM D-638*)	Elongation at Break % (ASTM D-638*)	Flexural Strength (ASTM D-790*)	Flexural Modulus (ASTM D-790*)	Compressive Strength (ASTM D-695*)	Compressive Modulus (ASTM D-695*)	Shrinkage in./in. (ASTM D-2566*)
Smooth-Cast®45D	5 Minutes	30 Minutes	45	500 cps	1.08	26	1,500 psi	N/D	100 %	N/A	N/A	N/A	N/A	0.01
Smooth-Cast® 60D	5 Minutes	30 Minutes	60	1,500 cps	1.05	26.4	2,200 psi	22,000 psi	30 %	410 psi	9,610 psi	1,100 psi	4,710 psi	0.015
Smooth-Cast® 61D	7 Minutes	60 Minutes	61	1,500 cps	1.08	26	1,800 psi	16,400 psi	20 %	350 psi	8,800 psi	950 psi	4,100 psi	0.015

Mix Ratio; By Volume By Weight

Smooth-Cast®45D	1A:1B	115A : 100B
Smooth-Cast® 60D	1A:1B	100A : 86B
Smooth-Cast® 61D	1A:1B	100A : 86B

Color; Caramel

Heat Deflection Temp; N/D (ASTM D-648*)

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

** Depending on Mass

PROCESSING RECOMMENDATIONS

Preparation . . .

Materials should be stored and used in a warm environment (73°F / 23°C). These products have a limited shelf life and should be used as soon as possible. Your mixing tools and containers should be clean and made of metal, glass or plastic. To minimize the introduction of harmful moisture to your mix or unused product, do not use wooden utensils or paper containers. As with most two-component urethane products, mixing should be done in a well ventilated area. Wear safety glasses, long sleeves and rubber gloves to minimize contamination risk. 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 . . .

If you are unsure about surface compatibility, a trial casting on a surface finish similar to the final mold or model should be made to avoid damage to the working surface. Polyurethane, latex or metal molds should be dry and require a coat of suitable release agent. Universal Mold Release or Mann Ease Release 200 (available from Smooth-On) is ideal for this purpose. A liberal coat of release agent should be applied to 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.

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 diphenyldiisocyanate. 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. When mixing with Part A, follow precautions for handling isocyanates.

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.

If machining cured castings, wear dust mask or other apparatus to prevent inhalation of residual particles.

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.

MIXING • POURING • CURING • PERFORMANCE

Before Mixing . . .

Part B (blue label) must be PRE-MIXED. Stir well, making sure that you scrape the bottom of the container several times. Mixed A+B should be caramel in color, not clear amber.

Mixing . . .

The components (Parts A and B) should be at room temperature (73°F /23°C). Combine equal amounts of Parts A & B by volume in a mixing container. Make sure that you scrape the bottom and sides of your container several times. SC 45D & 60D are a very fast setting materials. **Do not delay between mixing and pouring.** Also, the higher the mass concentration, the faster the material gels and cures.

Pouring . . .

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. For best results, pour your mixture in a single spot at the lowest point of the mold or container and let the mixture seek its level. If encapsulating an object, do not pour the mixture directly over the object. Let the mixture seek its own level around and over the object. This will help minimize air entrapment.

Performance . . .

Cured castings are semi-rigid, impact resistant and exhibit negligible shrinkage. They also resist moisture, moderate heat, solvents and dilute acids. Mold release must be removed prior to painting or bonding the cured piece. **Because no two applications are quite 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.

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