

# Smooth-Cast™ ONYX™

**FAST And SLOW Ultra-Black Urethane Resins**



www.smooth-on.com

## PRODUCT OVERVIEW

Smooth-Cast™ ONYX™ is a mercury-free urethane resin that cures at room temperature to a deep black, solid plastic. ONYX™ resins offer the convenience of a 1A:1B by volume mix ratio and have very low viscosities, so they are easy to mix and pour. ONYX™ resins have an ultimate Shore hardness of 80D and offer higher physical properties and higher heat resistance vs. other general purpose resins. ONYX™ resins are available in 2 speeds. ONYX™ FAST resin has a pot life of 2.5 minutes and a cure time of 10-15 minutes, while ONYX™ SLOW has a pot life of 5 minutes and a cure time of 90 minutes.

**Advantages that ONYX™ resins offer over other resins:** 1) if you desire a black casting, adding color pigment is not necessary, 2) cured plastic is ultra-black and darker than competitive black resins, 3) cured ONYX™ plastic can be polished and buffed to a high gloss shine and 4) ONYX™ offers higher heat resistance vs. competitive black resins, 5) unlike other black resins, ONYX™ **does not** contain mercury and 6) ONYX™ is less expensive vs. other black resins.

Applications include reproducing sculpture, making prototypes and potting / encapsulation. Due to its quick cure time and hardness, ONYX™ FAST is a good choice for creating fast cold cast bronze, brass, copper, nickel/silver, etc. effects.

## TECHNICAL OVERVIEW

	Pot Life @ 73°F / 23°C (ASTM D-2471)	Cure Time ** @ 73°F / 23°C	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)
ONYX™ FAST	2.5 min.	10-15 min.	5,840 psi	246,000 psi	4%	8,280 psi	246,000 psi	8,760 psi	77,400 psi	0.010
ONYX™ SLOW	5 min.	90 min.	7,660 psi	374,000 psi	3%	10,230 psi	286,000 psi	11,400 psi	97,900 psi	0.012

Mix Ratio: 100A:100B by volume/120A:100B by weight

Mixed Viscosity: 100 cps (ASTM D-2393)

Specific Gravity: 1.09 g/cc (ASTM D-1475)

Specific Volume: 27.7 cu. in./lb. (ASTM D-1475)

Color: Black

Shore D Hardness: 80 (ASTM D-2240)

Heat Deflection Temps; ONYX FAST: 250°F/121°C  
(ASTM D-648) ONYX SLOW: 212°F/100°C

Post Cure Schedule Required - See 'Post Curing' Section

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

\*\* Depending on Mass

## PROCESSING RECOMMENDATIONS

**Preparation** - These products have a limited shelf life and should be used as soon as possible. Materials should be stored and used in a warm environment (73°F/23°C). All liquid urethanes will react with moisture in the air, causing bubbles. Use in a low humidity environment (below 50% RH). Mixing containers should have straight sides and a flat bottom. Mixing sticks should be flat and stiff with defined edges for scraping the sides and bottom of your mixing container. 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 applying into or over most surfaces. Use Mann's Ease Release™ 200 which will release both urethanes and silicones. 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.

**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 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.

### 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.

**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 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.

## MIXING & POURING...

**Mixing** - Stir or shake Part A and Part B thoroughly before dispensing. After dispensing required amounts of Parts A and B into mixing container, mix thoroughly. Stir for at least 60 seconds, making sure that you scrape the sides and bottom of the mixing container several times.

**Pouring** - For best results, pour your mixture in a single spot at the lowest point of the containment field and let the mixture seek its level. This will help minimize air entrapment.

## CURING & PERFORMANCE...

**Curing** - Important: Use this product with at least room size ventilation or in proximity to a forced outlet air vent and do not inhale/breathe fumes. Fumes, which may be visible with a significant mass concentration, will quickly dissipate with adequate ventilation. Castings with significant mass may be hot to the touch and irritate skin immediately following cure. Let casting cool to room temperature before handling.

Demold time of the finished casting depends on mass and mold configuration. Low mass or thin-walled castings will take longer to cure than castings with higher mass concentration.

**Post Curing** - Although not necessary, post curing will increase physical properties, material performance and heat resistance to 250°F/121°C for ONYX™ FAST and 212°F/100°C for ONYX™ SLOW. After curing at room temperature for 1 hour, expose material in the mold to 250°F/121°C for 4–6 hours. Let cool to room temperature before use.

**Performance** - Cured castings are hard and durable. They resist moisture, moderate heat, solvents, dilute acids and can be machined, primed and 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 may be affected by 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) 381-1733 Fax: (610) 252-6200**

[www.smooth-on.com](http://www.smooth-on.com) is loaded with information about mold making, casting and more.