EpoxAcast™ 690
Clear Castable Epoxy

www.smooth-on.com

PRODUCT OVERVIEW

EpoxAcast™ 690 is a clear casting epoxy resin suitable for a variety of industrial and art-related projects requiring a rigid, clear finished casting. It is mixed 100A:30B by weight (gram scale required) and features a very low viscosity for easy mixing and minimal bubble entrapment. Working time is 5 hours and cure time is 24 hours at room temperature. Castings cure with negligible shrinkage and are very hard and strong. Resin can be colored with **UVO™ or IGNITE™ colorants**. This product is not moisture sensitive and can be used in humid environments. Recommended casting thickness maximum per layer is 3/8 in. / 0.95 cm.

PRODUCT SPECIFICATIONS

EpoxAcast™ 690 Clear Castable Epoxy	
Handling Properties	
Mix Ratio By Weight	100A : 30B
Mixed Viscosity - CPS. (ASTM D2393)	280
Specific Gravity - Mixed; g./c.c. (ASTM D1475)	1.10
Spec. Volume - Mixed; cu. in./lb. (ASTM D792)	25
Pot Life - (ASTM D2471)[T]	5 Hours
Cure Time	24 Hours
Color - Mixed	Clear
Physical Properties	
Shore D Hardness (ASTM D2240)	80
Ultimate Tensile - P.S.I. (ASTM D638)	6,630
Tensile Modulus - P.S.I. (ASTM D638)	572,000
Tensile Elongation (ASTM D638)	1.8
Flexural Strength - P.S.I. (ASTM D790)	10,980
Flexural Modulus - P.S.I. (ASTM D790)	410,000
Compressive Strength - P.S.I. (ASTM D695)	9,610
Shrinkage - in./in. (ASTM D-2566)	0.002
Compressive Modulus - P.S.I. (ASTM D695)	91,300
Heat Deflection Temp. (ASTM D648)	115°F/46°C
Index Of Refraction	1.565 at 68°F/20°C

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

***Pot Life and Cure Time values are dependent on mass and mold configuration, as epoxies are mass-sensitive.**

PROCESSING RECOMMENDATIONS

Preparation – Avoid breathing fumes - use in a well ventilated area at minimum. NIOSH approved respirator is recommended. Wear safety glasses, long sleeves and rubber gloves to minimize skin contact.

Materials should be stored and used in a room temperature environment (73°F/23°C). Elevated temperatures will reduce Pot Life. EpoxAcast™ 690 Resin and Hardener must be properly measured and thoroughly mixed to achieve full, high-strength, solid-cure properties. 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 – For releasing epoxy from non-porous surfaces such as resin, metal, glass etc., use Ease Release™ 200 or 205 (available from Smooth-On) to prevent adhesion.

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

Measuring / Dispensing – Stir Part A thoroughly before dispensing. The proper mixing ratio is 100 parts of EpoxAcast™ 690 resin to 30 parts hardener by weight. **You must use an accurate digital gram scale to weigh Parts A and B properly. Do not use an analog scale or attempt to measure components by volume.**

Mixing tools and containers should be clean and dry. Mixing should be done in a well ventilated area. Wear safety glasses, long sleeves and rubber gloves to minimize contamination risk. Combine EpoxAcast™ 690 resin with the appropriate amount of hardener. Mix thoroughly for 3 minutes making sure that you scrape the bottom and sides of the container several times.

Adding Color - EpoxAcast™ 690 can be colored with UVO™ or IGNITE™ colorants or Cast Magic™ Effects Fillers. Pre-mix color or filler with Part A thoroughly and then add Part B.

Mixing – Be sure mixing utensils are clean and free of any potential contaminants such as dirt, dust or grease. Mix Parts A and B thoroughly for at least 3 minutes with a square edged mixing stick. Be aggressive and scrape sides and bottom of mixing container several times. Use the square edge of mixing stick to bring material off of the sides of container and blend. **If using a drill mixer,** follow with hand mixing as directed above to ensure thorough mixing.

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.

EpoxAcast™ 690 Resin PART A:
WARNING: IRRITANT TO EYES, SKIN & MUCOUS MEMBRANES.
EpoxAcast™ 690 Resin is irritating to the eyes and skin. Avoid prolonged or repeated skin contact to prevent possible sensitization. Avoid breathing vapors and use only with adequate ventilation. Wear personal protective equipment.
First Aid: In case of eye contact, flush thoroughly with water for 15 minutes and get immediate medical attention. In case of skin contact, wipe clean with white vinegar and wash thoroughly with soap and water. If irritation persists, get medical attention. If swallowed, do not induce vomiting. Drink 1 - 2 glasses of water and get immediate medical attention. If vapors are inhaled or if breathing becomes difficult, remove person to fresh air. If symptoms persist, get medical attention.
Keep Out Of Reach Of Children.

EpoxAcast™ 690 Hardener PART B:
WARNING: IRRITANT TO EYES, SKIN & MUCOUS MEMBRANES.
EpoxAcast™ 690 Hardener is corrosive, causing severe skin and eye burns. Avoid prolonged or repeated skin contact to prevent possible sensitization. Use only with adequate ventilation. If contaminated flush eyes with water for 15 minutes and seek medical attention. Remove from skin with waterless hand cleaner then soap and water. Refer to MSDS. **First Aid:** In case of eye contact, flush thoroughly with water for 15 minutes and get immediate medical attention.
Keep Out Of Reach Of Children.

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.

Adding Fillers - A variety of dry fillers can be added. Pre-mix dry filler with Part A before adding Part B.

Increasing Flexibility - Flexer™ Epoxy Flexibilizer is a clear, low viscosity liquid additive that will lower the durometer (Shore hardness) of some Smooth-On casting and laminating epoxies. When added to the epoxy system in the proper proportion, the cured epoxy will be softer and, in some cases, can be made semi-rigid. See the Flexer™ Technical Bulletin for more information.

IMPORTANT: Mixed EpoxAcast™ 690 is exothermic, meaning it generates heat. A concentrated mass of mixed epoxy in a confined area such as a mixing container can generate enough heat to melt a plastic cup, burn skin or ignite combustible materials if left to stand for its full Pot Life. Do not use foam or glass mixing containers or pour sections thicker than 3/8 in. / 0.95 cm. If a batch of mixed epoxy begins to exotherm, move it to an open air environment.

Pouring – If casting EpoxAcast™ 690 into a rubber mold, pour mixture in a single spot at the lowest point of the mold or enclosure. Let the mixture seek its level. A uniform flow will help minimize entrapped air. Recommended casting thickness maximum 3/8 in. / 0.95 cm.

Layer Pouring - When pouring EpoxAcast™ 690 in layers, allow previous layer to fully cure and come to room temperature (73°F / 23°C) before pouring additional layers.

Cure Time - Cure time is 24 hours at room temperature depending on mass. Castings that are 1/4 in. / 0.64 cm. thickness or less will cure more slowly and may require up to 48 hours to fully cure at room temperature. Cured material will be hard and unable to be penetrated with a finger nail. After curing, epoxy can be dry sanded. ***If machining or sanding, wear NIOSH approved mask to prevent inhalation of particles.*** **Pot Life and Cure Time values are dependent on mass and mold configuration, as epoxies are mass-sensitive.**

Performance - Cured castings are very hard and durable. They resist moisture, moderate heat, solvents, dilute acids and can be machined 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 painting with an aliphatic urethane clear coat (such as Axalta Imron 3.5 Plus High Gloss Polyurethane Topcoat available at www.axalta.com). Unpainted castings will yellow after being exposed to UV light or excessive heat above 115°F/46°C. For longer outdoor UV resistance of an unpainted clear part, Smooth-On's Crystal Clear™ Urethane Resin may be an option for your application.

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

Removing Epoxy – **Uncured / Non-curing epoxy** - Scrape as much material as possible from the surface using a scraper. Clean the residue with E-POX-EE KLEENER™ available from Smooth-On, lacquer thinner, acetone or alcohol. Follow safety warnings pertaining to solvents and provide adequate ventilation.

Call Us Anytime With Questions About Your Application
Toll-free: **(800) 381-1733** Fax: **(610) 252-6200**

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