EpoxAcast® 655
Metal Filled Castable Epoxy

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PRODUCT OVERVIEW

EpoxAcast® 655 (formerly Metalset® A-30) is a versatile aluminum filled castable epoxy that is very hard and strong. It is dimensionally stable, even when mass cast up to 512 in^3/ 8,390 cm^3. Different hardener speed options are available depending on your project requirements. **Maximum heat resistance is achieved using HT HIGH TEMP hardener (up to 225°F/108°C).** Cured **EpoxAcast® 655** epoxy has high physical properties and is used for a variety of applications including making hard tooling, vacuum forming dies/molds, injection molds, foundry patterns, jigs and fixtures and metal forming dies. Depending on project requirements, Part A Base can be mixed with **101 FAST**, **102 MEDIUM**, **103 SLOW** or **HT HIGH TEMP** hardeners.

Part A Base Mixed With	Mix Ratio Base:Hardener	Pot Life	Cure Time (@ 73°F/23°C)	Cure Time (@ 150°F/60°C)
101 FAST Hardener	100A : 10B by weight	30 Minutes	3 Hours	90 Minutes
102 MEDIUM Hardener	100A : 11B by weight	75 Minutes	9 Hours	135 Minutes
103 SLOW Hardener	100A : 12B by weight	3.5 Hours	24 Hours	195 Minutes
HT HIGH TEMP Hardener	100A : 8B by weight	4.0 Hours	24 Hours followed by: Heat Cure for 2 hrs at 175°F/80°C Followed by 3 hours at 300°F/150°C	n/a

PRODUCT SPECIFICATIONS

EpoxAcast® 655 Metal Filled Castable Epoxy		
Handling Properties	**Using 101 102 or 103 Hardener**	**Using HT Hardener**
Mixed Viscosity - cps. (ASTM D2393)	23,000	12,000
Specific Gravity - Mixed; g./c.c. (ASTM D1475)	1.66	1.64
Spec. Volume - Mixed; cu. in./lb. (ASTM D792)	16.7	16.5
Color - Mixed	Grey	Grey
Physical Properties		
Shore D Hardness (ASTM D2240)	90	90
Ultimate Tensile - psi (ASTM D638)	4810	6,000
Tensile Modulus - psi (ASTM D638)	2,040,000	7,200,000
Tensile Elongation (ASTM D638)	0.54%	0.50%
Flexural Strength - psi (ASTM D790)	7,660	n/a
Flexural Modulus - psi (ASTM D790)	1,403,000	n/a
Compressive Strength - psi (ASTM D695)	12,500	15,700
Compressive Modulus - psi (ASTM D695)	125,500	270,000
Shrinkage - in./in. (ASTM D-2566)	0.0006	0.001
Heat Deflection Temp. (ASTM D648) If cured at room temperature	135°F/57°C	n/a
if post cured according to post curing schedule	n/a	225°F/108°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® 655 Resin and Hardener must be properly measured and thoroughly mixed to achieve full, high-strength, solid-cure properties. ***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 – This product is adhesive and will bond to many surfaces. For epoxy to epoxy applications where adhesion is not desired, an application of paste wax followed by Ease Release® 2125 PVA available from Smooth-On may be used. For other surfaces such as metal or plastic, a spray release such as Ease Release® 200 also available from Smooth-On may be used 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.

Pre-mixing Part A – The fillers in this epoxy system will settle in the container over time. Before using, fillers need to be reconstituted by pre-mixing Part A thoroughly. The best method is to use a "Turbine" mixer (available from Smooth-On) or similar drill mixer attached to a power drill and drill mix on medium speed for 2 minutes. Follow with hand mixing using a flat edge paddle for 1 minute until fillers are uniformly dispersed.

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® 655 Resin PART A:

WARNING: IRRITANT TO EYES, SKIN & MUCOUS MEMBRANES.
EpoxAcast® 655 HT 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® 655 Hardener PART B:

WARNING: IRRITANT TO EYES, SKIN & MUCOUS MEMBRANES.
EpoxAcast® Hardeners are 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.

Measuring / Dispensing – Accurate measurement by weight is required for the material to cure properly and develop full physical properties. Dispense proper proportions of Parts A and B into clean plastic, metal or wax-free paper containers. **You must use an accurate scale (gram scale or triple beam balance scale) to weigh these components properly. Do not attempt to measure components by volume.**

Adding Color - EpoxAcast® 655 can be colored with SO-Strong® color tints (from Smooth-On). Pre-mix tint with Part A thoroughly and then add Part B.

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

Vacuuming - EpoxAcast® 655 is low in viscosity compared to other epoxy casting systems and does not require vacuum degassing. If you choose to vacuum the material, subject mixture to 29 h.i.g. mercury in a vacuum chamber until mixture rises, breaks and falls. Allow for 5 times volume expansion in mixing container.

Pouring – If casting EpoxAcast® 655 into a rubber mold, pour mixture in a single spot at the lowest point of the mold. Let the mixture seek its level. A uniform flow will help minimize entrapped air.

If making vacuum forming molds, it is best to use piano wire (15/1000 inch gauge) to make vacuum holes.

Cure Time - Refer to specified **Cure Times** in the **Handling Properties** section. Cured material will be hard and unable to penetrate with a finger nail. Cured epoxy can now 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.**

Heat Curing - For best results, EpoxAcast® 655 should be heat cured in a dedicated industrial oven. Cure at 175° F / 80° C for two hours, followed by three hours at 300° F / 150° C. Allow material to cool to room temperature.

Painting – Cured EpoxAcast® 655 can be painted or primed and then painted with acrylic enamel paints. Let paint fully dry before putting part into service.

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.