EpoxAmite™ HT

High-Temp Laminating Epoxy

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PRODUCT OVERVIEW

EpoxAmite™ HT High Temperature Laminating Epoxy is a water clear, UV resistant laminating epoxy that resists high temperatures up to 300°F/149°C when properly cured. Pot life is 1 hour and cure time is 24 hours at 73°F/23°C (post cure required – see post cure schedule). Ultra-low viscosity ensures uniform wetting out and fast penetration of reinforcement materials during hand lay-up or vacuum infusion processes. Cured resin offers superior physical properties.

EpoxAmite™ HT High Temp Laminating Epoxy can be used with S-Glass, E-Glass, Kevlar and carbon fibers for making composite tooling or parts. Applications include making high temperature pre-preg parts, bonding fixtures, vacuum form molds and prototype injection molds.

Use as a backup laminating resin for EpoxAcoat™ HT high temperature surface coat epoxy.

PRODUCT SPECIFICATIONS

Handling Properties	
Mix Ratio By Weight	100 A:33 B
Mixed Viscosity - CPS. (ASTM D2393)[T]	650
Specific Gravity - Mixed; g./c.c. (ASTM D1475)	1.10
Spec. Volume - Mixed; cu. in./lb. (ASTM D792)	25.2
Pot Life - Minutes (ASTM D2471)[T]	60 Minutes
Thin Film Working Time - Minutes	180
Cure Time - Hours[1]	24 Hours
Color - Mixed	Clear
Physical Properties	
Shore D Hardness (ASTM D2240)*	80
Ultimate Tensile (ASTM D638)*	6,500
Ultimate Tensile (ASTM D638)**	32,100
Tensile Modulus (ASTM D638)*	342,000
Tensile Modulus (ASTM D638)**	2,150,000
Tensile Elongation (ASTM D638)*	2.3
Flexural Strength - P.S.I. (ASTM D790)*	12,325
Flexural Strength - P.S.I. (ASTM D790)**	20,700
Flexural Modulus - P.S.I. (ASTM D790)*	429,000
Flexural Modulus - P.S.I. (ASTM D790)**	2,216,000
Compressive Strength - P.S.I. (ASTM D695)*	16,600
Compressive Modulus - P.S.I. (ASTM D695)*	168,000
Heat Deflection With Post Cure (ASTM D648) See 'Post Curing' Section on Page 2	300°F/149°C

[T] 100 Gram Mass in Mixing Cup

[1] Thin Film

** Denotes testing conducted on a ⅛" (3.2mm) thick cast bar after post cure to 320°F.*

*** Denotes testing conducted on a 6 ply/10 oz. laminate after post cure to 320°F.*

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. This material has a high exotherm (generates heat). Do not mix components in glass or foam containers.

Materials should be stored and used in a room temperature environment (73°F/23°C). Elevated temperatures will reduce Pot Life. EpoxAmite™ HT must be properly measured and thoroughly mixed to achieve full performance 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.

MEASURING & MIXING...

Accurate ratio measurements by weight are required for the material to cure properly and develop full physical properties. Stir Part A and Part B thoroughly before dispensing. Refer to specified Mix Ratios in Handling Properties for proper measurements. Using a gram scale, dispense Parts A and B proper proportions into clean plastic, metal or wax-free paper containers.

Adding Color - EpoxAmite™ HT can be colored with UVO™ colorants (from Smooth-On). Pre-mix colorant 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. **NOTE:** If mixture is to be used for coating, pour into a roller pan to extend Pot Life.

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

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.

EpoxAmite™ HT PART A:

WARNING: IRRITANT TO EYES, SKIN & MUCOUS MEMBRANES.

EpoxAmite™ 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.

EpoxAmite™ HT PART B:

WARNING: IRRITANT TO EYES, SKIN & MUCOUS MEMBRANES.

EpoxAmite™ HT Hardeners are corrosive materials and can cause severe eye and skin burns. They are sensitizers that may cause dermatitis from skin contact or vapor inhalation. Use these products only with adequate ventilation. Remove contaminated clothing and wash from skin with soap and water.

First Aid: In case of eye contact, flush thoroughly with water for 15 minutes and get immediate medical attention.

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.

Important - Mixed EpoxAmite™ HT 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 ½" (1.28 cm). If a batch of mixed epoxy begins to exotherm, move it to an open air environment.

APPLICATION & CURING...

Applying **- Pouring:** Mixed EpoxAmite™ HT is initially a low viscosity liquid that can be poured up to ½" (1.28 cm) thickness. **Laminating:** After epoxy is mixed, you must work quickly to apply multiple layers. Use a foam brush or roller to evenly spread a thin layer of resin over surface. Apply reinforcement fabric evenly into Resin. Ensure fabric ply is saturated. Plastic polyethylene spreaders may also be used.

Alternate additional thin layers of epoxy and fabric using above application method. Add additional epoxy as needed to wet out subsequent layers. Repeat as necessary until desired thickness is attained. After final layer of fabric is applied, use lamination roller to evenly distribute epoxy and reduce air bubbles. Be mindful of your Thin Film Working Time.

Cure Time **-** 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.

Post Curing **-** EpoxAmite™ HT High-Temp Laminating Epoxy Post Cure Schedule:

- Allow epoxy to cure on the pattern at room temperature for a minimum of 24 hours.
- Place tool and pattern in a cold oven. Set temperature to 150°F/65°C and hold for 4 hours. You may attach support structure and demold tool after this step is completed, but for maximum stability, we recommend full post cure over pattern.
- After 4 hours, increase temperature to 200°F/93°C and hold for 3 hours.
- After 3 hours at 200°F/93°C, increase the temperature to 250°F/121°C and hold for 3 hours.
- After 3 hours at 250°F/121°C, increase the temperature to 320°F/160°C and hold for 3 hours.
- After completion of the cure cycle, turn off the oven and allow the tool to cool to room temperature before removing part for clean-up and service.

This post cure schedule will result in a casting with a heat distortion temperature of 300°F/149°C.

Note - Post curing in excess of 220°F (104°C) will cause this material to yellow. To retain clarity, use the following post cure schedule:

- Allow epoxy to cure on the pattern at room temperature for a minimum of 24 hours.
- Place tool and pattern in a cold oven. Set temperature to 150°F/65°C and hold for 4 hours. You may attach support structure and demold tool after this step is completed, but for maximum stability, we recommend full post cure over pattern.
- After 4 hours, increase temperature to 220°F/121°C and hold for 3 hours.

This post cure schedule will result in a high-clarity casting with a heat distortion temperature of 200°F/93°C.

Painting **-** Cured EpoxAmite™ HT can be painted and/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.

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Call Us Anytime With Questions About Your Application.

Toll-free: **(800) 381-1733** Fax: **(610) 252-6200**

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