

EpoPro[®] 240A/B

CHEMICAL & HEAT RESISTANT EPOXY ADHESIVE & ENCAPSULANT

EpoPro[®] 240A/B is a two part epoxy system that cures with heat into a tough, heat and chemical resistant polymer with outstanding electrical and mechanical properties for continuous use at up to 200°C. The system demonstrates low shrinkage, a low coefficient of thermal expansion and excellent resistance to thermal cycling. The cured polymer is dimensionally stable, machinable, and provides high bond strengths to most materials.

Many variations on the EpoPro 240A/B system are available upon request, including custom colors, adjusted viscosities, work-lives & curing speeds, and many other special properties. Please contact us to discuss your application if you think such a variant would be helpful for your application.

SUGGESTED APPLICATIONS:

- Adhesive application where exceptional chemical and thermal resistance for high temperature applications. Bonds are toughened against impact and thermal shock.
- Excellent encapsulant or casting systems for electrical components subject to high temperatures, chemical or environmental stress.

HANDLING PROPERTIES	VALUE	TEST METHOD
<u>EpoPro 240A</u>		
Visual Appearance	Tan or colored liquid	
Density, Part A	1.70 g/cm ³	ASTM E-201
Viscosity, Part A, @ 25°C	105,000 cps	ASTM D-2393
Flash Point	>135°C	ASTM D-92
<u>EpoPro 240B</u>		
Visual Appearance	Tan Liquid	
Density,	1.90 g/cm ³	ASTM E-201
Viscosity, Part B, @ 25°C	10,000 cps	ASTM D-2393
Flash Point	>140°C	ASTM D-92
Mix Ratio (part by weight)	100:100	
Mix Ratio (parts by volume)	100:90	
Viscosity Mixed @ 25°C	25,000 cps	
Viscosity Mixed @ 50°C	3,000 cps	
Viscosity Mixed @ 70°C	1,000 cps	
Gel time, 30 grams	@ 130C: 8 minutes; @ 150C: 5 minutes	
Gel time, 1 lbs.	@25C: >24 hours; @ 60C: 6-8 hours; @ 80C: 2 hours	
Suggested Cure Conditions:		
♦ <u>For adhesive bonds & small castings:</u> apply the EpoPro 240A/B – preheating the parts to be potted or surfaces to be bonded will improve wetting and air release and may improve bond strengths to some surfaces. When ready to cure, heat the EpoPro 240A/B to 80C for 4 hours to allow complete gelation of the polymer then post cure for 2-4 hours @		

150C. This step cure will minimize curing shrinkage and stress in the cured polymer, but may not be necessary in all applications.

- ♦ For potting applications and large castings: preheat mold or parts to 70C, fill with EpoPro 240A/B then either gel for 5 hours @ 80C and post cure for 4 hours @ 150C or 10 hours @ 140C or 16 hours @ 130C. Alternately, instead of the step cure, the mold or parts can be slowly ramped from a starting temperature of 80C up to 140C in a linear fashion over a 16 – 24 hours period. (ramp rate of about 2.5 – 3.75 degrees C per hour.)

Many of these curing variables mentioned above can be adjusted to suit your specific application details. Please contact us for a recommendation on optimizing your curing process.

PHYSICAL PROPERTIES (Tested at 25C unless otherwise noted)

		TEST METHOD
Appearance		Visual
Density	1.83 g/ml	ASTM D792
Hardness, Shore D	88	ASTM D-2240
Tensile Strength	12,000 psi	ASTM D-638
Tensile Elongation	2%	ASTM D-638
Compressive Strength	26,000 psi	ASTM D-790
Compressive Modulus	550,000 psi	ASTM D-790
Flexural Strength	18,000 psi	ASTM D-695
Flexural Modulus	1,240,000 psi	ASTM D-695
Thermal Shock test (Olyphant Washer), cycle from 125°C to -55°C	Pass >10 cycles	
Glass Transition Temperature (Tg)	145°C	ASTM D-648
Coefficient of Thermal Expansion (CTE):		ASTM E-831
Above Tg / below Tg (ppm/°C)	36 / 104	
Moisture absorption (2 hours immersion @ 100C- % weight gain)	0.2%	ASTM D-570
Thermal Conductivity	0.78 W/mK	ASTM D-2214
Thermal Rating	>200°C	EIC 216
Volume Resistivity @ 25°C	1.8 x 10 ¹⁶ ohms-cm	Mil-I-46058C
Dielectric Strength (1/8" thick)	450 V/mil	ASTM D-149
Dielectric Constant @ 25°C & 60 Hz	4.0	ASTM D-150
Dissipation Factor @ 25°C & 60 Hz	0.01	ASTM D-150

NOTE : Values are based on laboratory or average production results – not for specification purposes.

SUGGESTED PROCESSING GUIDELINES:

To use, weigh Part A and Part B in the ratio you have selected into a clean mixing container. Mixing containers should preferably be made of polypropylene, polyethylene, glass, or non-corroding metal. (Stainless steel, aluminum, etc.). Always use weighing equipment having

accuracy that is $\pm 1\%$ or less of the smallest quantity that you will be weighing. Blend Part A & B thoroughly using a spatula or stirring stick for at least 2-3 minutes using a kneading motion. Scrape the bottom and sides of the mixing container carefully and frequently to produce a uniform mixture. Vacuum de-gassing after mixing may help to provide the best electrical and physical properties in the cured polymer.

Apply to clean, dry surfaces. For best adhesion, abrade the surface with a wire brush, scouring pad, steel wool or coarse sand paper. After abrasion, clean the surface of any loose material and degrease with solvent or detergent to remove any contaminants. The EpoPro 240A/B may then be applied with any suitable application method include brushes, spatulas, etc.

STORAGE GUIDELINES:

Store these materials in a clean, cool and dry environment in their tightly closed original containers. Protect from extended exposure to temperatures below 15°C (59°F). Crystallization may occur if the material is exposed to cold for extended periods. If this occurs, heat the entire container of 240A or 240B for 4 hours at 70°C to re-liquefy the material. Allow to cool to ambient temperature and re-mix prior to using. Also protect the EpoPro 240A&B from exposure to moisture or high humidity – keep containers tightly sealed when not in use and use a desiccant if extended exposure to moisture may occur. If the recommended storage conditions are observed the products will have a minimum shelf-life of 12 months from the date of shipment.

HANDLING PRECAUTIONS:

Mandatory and recommended industrial hygiene procedures should be followed whenever these products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

PERSONAL HYGIENE:

EpoPro 240A

CAUTION! May cause eye & skin irritation. Prolonged or repeated skin contact may cause allergic skin reactions. Harmful if inhaled or swallowed. Avoid contact with eyes, skin, or clothing. Wear eye protection and impervious gloves when handling. Wash thoroughly after handling. Avoid breathing vapor or mist. Keep containers closed when not in use. Use only with adequate ventilation. Do not take internally.

EpoPro 240B

WARNING! May cause eye & skin irritation. Prolonged or repeated skin contact or inhalation of vapors may cause allergic skin or respiratory reactions. Harmful if inhaled or swallowed. Avoid contact with eyes, skin, or clothing. Wear eye protection and impervious gloves when handling. Wash thoroughly after handling. Avoid breathing vapor or mist. Keep containers closed when not in use. Use only with adequate ventilation. Do not take internally.

FIRST AID

In case of contact:

Skin – Immediately wash skin thoroughly with mild soap and water. Remove contaminated clothing and wash before reuse. Destroy contaminated shoes and other articles made of leather.

Eyes – Immediately flush eyes with plenty of water for 15 minutes and get prompt medical attention.

Inhalation - Remove person to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.

Ingestion - Do not induce vomiting. Dilute with plenty of water and contact physician immediately. Never give anything by mouth to an unconscious person.

DISCLAIMER:

IMPORTANT: The following supercedes Buyer's documents. **SELLER / MANUFACTURER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller / Manufacturer be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results presented are based on controlled or laboratory work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended

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