

EpoPro[®] 223A/B and 223A/B/C



LOW VISCOSITY, EPOXY ENCAPSULATION & IMPREGNATION SYSTEM

EpoPro[®] 223A/B is 2-part, epoxy system that cures with heat to form a strong, rigid polymer with excellent heat resistance and chemical resistance. It is designed for potting and impregnating coils and windings and is excellent for impregnation fiberglass and other woven and non-woven fabrics. The system has excellent adhesion to metals, wood, fiberglass, and most rigid plastics and is 100% solids and with no volatile organic content.

The EpoPro 223A/B system is available in a standard transparent, light yellow-amber color, but many other custom colors and other variations are available. For shorter pot lives and curing times and optional third component, EpoPro 223C, is available that accelerates the reaction without substantially changing the cured properties. Please contact us to discuss your application if you'd like to receive samples of a custom variant that would be suitable for your application.

SUGGESTED APPLICATIONS:

- Impregnation and Encapsulating Wound Components
- Bonding and wetting fibers and Encapsulating tightly packed devices.

HANDLING PROPERTIES	VALUE	TEST METHOD
<u>EpoPro 223A</u>		
Visual Appearance	Clear to light yellow liquid	
Density	1.15 g/cm ³	ASTM E-201
Viscosity, Part A, @ 25°C	500 cps	ASTM D-2393
<u>EpoPro 223B</u>		
Visual Appearance	Clear to light yellow liquid	
Density	1.02 g/cm ³	ASTM E-201
Viscosity, Part B, @ 25°C	950 cps	ASTM D-2393
<u>EpoPro 223C</u>		
Visual Appearance	Red-Brown liquid	
Density	1.03 g/cm ³	ASTM E-201
Viscosity, Part C, @ 25°C	20 cps	ASTM D-2393
Mix Ratio (part by weight (pbw))	100A:100B (optional 0.1 – 1 pbw 223C)	
Mix Ratio (part by volume)	100A:100B	
Mixed Viscosity @ 25°C, initial	750 cps	
Mixed Viscosity @ 65°C, initial	80 cps	
Mixed Viscosity @ 95°C, initial	20 cps	

Pot life vs. temperature and 223C accelerator level:

Temperature	223A/B	223A/B + 0.5 pbw 223C	223A/B + 1 pbw 223C
25°C	> 7 days	~10 hours	4 hours
65°C	> 48 hours	~3 hours	90 minutes
95°C	> 24 hours	1 hours	30 minutes

Cure Schedules vs. temperature and 223C accelerator level

Temperature	223A/B	223A/B + 0.5 pbw 223C	223A/B + 1 pbw 223C
at 125°C	36 -48 hours	8-12 hours	6-8 hours
at 150°C	24 hours	4-6 hours	2-4 hours

*Please note that cure time is the time at the indicated temperature, ramp up and ramp down times are not included. Please contact us for assistance if you'd like to consider an alternate cure schedule or for assistance in determining appropriate ramp times and temperatures.

PHYSICAL PROPERTIES (Tested at 25C unless otherwise noted – cured 24 hours @ 150C)

		TEST METHOD
Appearance	Amber, transparent solid	Visual
Density	1.12 g/cc	
Hardness, Shore D		
at 25°C / 95°C / 150°C	89D / 82D / 30D	
Tensile Strength	10,800 psi	ASTM D-638
Tensile Elongation	2.4%	
Flexural Strength	14,000 psi	ASTM D-790
Flexural Modulus	410,000	
Compressive Strength	15,800 psi	ASTM D-695
Glass Transition Temperature (Tg)	108°C	ASTM D-648
Moisture Absorption (% weight gain)		ASTM D-570
24 hours @ 25°C	0.12%	
2 hours @ 100°C (boiling water)	0.35%	
Thermal Conductivity	0.18 W/mK	ASTM D-2214
Thermal Rating	-55°C to 125°C	EIC 216
Surface resistivity (ohms)	>1.0 x 10 ¹⁵	ASTM D-257
Volume Resistivity (ohm-cm)		Mil-I-46058C
@ 25°C / @ 95°C	>1.0 x 10 ¹⁵ / 1.4 x 10 ¹⁴	
Dielectric Strength (V/mil)	350	ASTM D-149
Dielectric Constant / Power Factor		ASTM D
At 1KHz	3.5 / 0.005	
At 1 MHz	3.4 / 0.01	
At 1 GHz	3.2 / 0.02	

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

PROCESSING AND APPLICATION INSTRUCTIONS:

Mix using meter-mix dispensing equipment, or manually, as follows: Weigh the desired amount of Part A into mixing container whose weight has been tared. Then weigh the desired amount of Part B into mixing

This system can be mixed manually or by using either dynamic or static mixing systems. Whatever method is chosen, be sure to accurately weigh the components prior to mixing them and to ensure the correct mix ratio is used.

If mixing manually, stir for at least 2 minutes and be sure to scrap the walls and bottom of the mixing vessel to be sure that all of the material is thoroughly mixed. To ensure a void free casting, vacuum de-air the mixture after thorough mixing. A vacuum of 28 inches of mercury is generally sufficient to remove the vast majority of entrapped air from 1 quart volume within 5-10 minutes. Large volumes of the mixed system may require longer times under vacuum.

For impregnation applications, heat the components to be impregnated at up to 150°C and then dip into the fully mixed EpoPro 223A/B or 223A/B/C system. The mixed EpoPro 223 system may also be heated to up to 95°C, which will lower its viscosity significantly allowing for faster impregnations and wetting, but will also reduce the pot life of the system as indicated above.

PACKAGING AVAILABLE:

This product is available in a wide range of package sizes including quarts & 5-gallon pails. It can be supplied pre-mixed and frozen in syringes or in custom kit sizes on request. Please contact us to discuss your preferred packaging if a custom packaging solution would be of interest.

STORAGE GUIDELINES:

Store the EpoPro 223A, 223B, and 223CC in a clean, cool and dry environment in its tightly closed original containers. Protect from extended exposure to temperatures below 15°C (59°F) to prevent crystallization. If crystallization occurs, heat the entire container for 4 hours at 60°C to re-liquefy the material. Also protect from exposure to extended moisture or high humidity by tightly re-sealing containers after use. 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:

Follow all mandatory and recommended industrial hygiene procedures whenever these products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

EpoPro 223A

Warning! May cause skin and eye irritation and possible allergic skin reaction. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated contact with skin. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

EpoPro 223B

Warning! Causes severe eye irritation and possible eye damage. Causes severe skin irritation and possible allergic skin reaction. Harmful if inhaled. Harmful if swallowed. DO NOT get in eyes, on skin, or clothing. Wear chemical splash goggles and impervious gloves when handling. Wash skin and clothing thoroughly after handling. Avoid breathing vapor or mist. Use only with adequate ventilation. Keep containers closed when not in use. DO NOT take internally.

EpoPro 223C

Warning! Corrosive to eyes, respiratory system & skin. May cause skin sensitization. Protect from heat, sparks, and open flame. Harmful if 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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