

EpoPro 243A / 2966

Flame Retardant, high Voltage Epoxy Encapsulating System

EpoPro[®] 243A resin with EpoPro Hardener 2966 is a flow viscosity, semi-flexible encapsulation system which produces tough castings with very good thermal aging and shock resistance. This system is designed as an excellent general-purpose casting system, particularly where pressure-sensitive components are to be encapsulated or where thermal shock or crack resistance is required. The EpoPro 243A/2966 has low shrinkage and good adhesion to most common materials.

Many variations on this system are available include custom colors, faster or slower cure speeds, adjustments to the viscosity or flow rate or the addition of specialty adhesion promoters to increase the bond strength to particular materials. Please contact us to discuss your application if you think a modified version might be needed for your application.

TYPICAL APPLICATIONS

- UL 94VO Compliant
- Moisture & Chemical Resistant
- Excellent Dielectric Properties

HANDLING PROPERTIES

| | <u>VALUE</u> | <u>TEST METHOD</u> |
|-----------------------------|--|--------------------|
| <u>EpoPro 243A</u> | | |
| Appearance | Off-white liquid | |
| Density, g/cm ³ | 1.63 | ASTM E-201 |
| Viscosity @ 25°C, cps | 35,000 | ASTM D-2393 |
| <u>Hardener 2966</u> | | |
| Appearance | Yellow to Amber liquid | |
| Density, g/cm ³ | 0.97 | ASTM E-201 |
| Viscosity @ 25°C, cps | 300 | ASTM D-2393 |
| Mix Ratio By Weight | 100A:11B | Calculated |
| Mix Ratio By Volume | 100A:18.5B | Calculated |
| Viscosity Mixed @ 25°C, cps | 4200 | ASTM D-2393 |
| Viscosity Mixed @ 40°C, cps | 1600 | |
| Gel Time @ 25°C, 100g mass | 40 minutes | ASTM D-2471 |
| Recommended Cure Schedules: | 24 hrs. @ 25°C or allow to gel (1 hrs @ 25°C) then heat cure for 6 hours @ 60°C or 2 hours @ 80°C or 1 hour @ 100°C . | |

PHYSICAL PROPERTIES

| | <u>VALUE</u> | <u>TEST METHOD</u> |
|-----------------------------|--------------|--------------------|
| Color | light tan | Visual |
| Density, g/cm ³ | 1.58 | ASTM E-201 |
| Shore Hardness | 70D | ASTM D-2240 |
| Tensile Strength | 2200 psi | ASTM D-638 |
| Tensile Elongation at break | 15% | ASTM D-638 |

Product Datasheet



| | | |
|--|---------------------------|-------------|
| Elastic Modulus (by tensile) | 3190 psi | |
| Water Absorption, % by weight After 24 hours @ 25°C | 0.25% | ASTM D-638 |
| Glass Transition Temp. (Tg) | 37°C | by DSC |
| Coefficient of Thermal Expansion | | |
| Alpha 1 (below Tg) | 41 ppm/ °C | DIN 53 752 |
| Alpha 2 (above Tg) | 114 ppm/ °C | |
| Flame Retardance | self-extinguishing at 6mm | UL 94V0 |
| Thermal Conductivity | 0. 80 W/mK | DIN 52 612 |
| Shrinkage, in/in | <0.0002 | ASTM D-2566 |

| | <u>VALUE</u> | | | <u>TEST METHOD</u> |
|------------------------------|----------------------|---------------------|--------------------|--------------------|
| | @23°C | @40°C | @50°C | |
| Tracking Resistance | CTI > 600 | | | IEC 112 |
| Electrolytic Corrosion | AN/1.2 | | | DIN 53489 |
| Dielectric Strength, kV/mm | ≥ 16 | | | ASTM D-149 |
| Volume Resistivity, ohm-cm | 2.4x10 ¹⁴ | 8 x10 ¹³ | 1x10 ¹² | ASTM D-257 |
| Dielectric Constant, @ 60Hz | 5.3 | 6.8 | 7.4 | ASTM D-150 |
| Dissipation Factor @ 60Hz | 0.063 | 0.084 | 0.098 | ASTM D-150 |
| Dielectric Constant, @ 1 MHz | 4.6 | | | ASTM D-150 |
| Dissipation Factor @ 60Hz | 0.051 | | | ASTM D-150 |

NOTE : Typical Properties determined using EpoPro 243A/2966 cured for for 48 hours @ 25°C. Values are based on laboratory or average production results – not for specification purposes.

SUGGESTED PROCESSING GUIDELINES:

EpoPro 243A/2966 is typically applied by pouring or dispensing into the parts to be potted. It is suitable for meter-mix dispensing and can be supplied in premixed and frozen syringes for small volume applications. The fillers in the EpoPro 243A are non-abrasive (Moh Hardness of 3 or less) and so only conventional pumping equipment is needed to meter-mix dispense this system and components that come in contact with the resin should not require frequent replacement.

Weigh resin and hardener in the recommended ratio into a clean mixing container. Always use weighing equipment having accuracy in proportion to the amounts being weighted – ideally the accuracy of the scale should be less than 1% of the mass being weighed. Blend by using a spatula or stirring stick for 2-3 minutes using a kneading motion. Scrape the bottom and sides of the mixing container carefully and frequently to produce a uniform mixture.

For best adhesion apply to clean, dry surfaces. Allow to cure at room temperature for 24 hours or allow to set at 25°C for 1 hour then heat cure at 60°C cure for 3 hours. For small volume application immediate heat cures may be possible and more rapid cures are possible at higher temperatures. If you would like recommendation on alternate cures please contact us. Always evaluate a suggested cure schedule in your application prior to implementing it for full scale production as each application unique conditions can effect the results.

STORAGE GUIDELINES:

Store this material in a clean, cool and dry environment in its tightly closed original container. The EpoPro 243A may settle or separate slightly during shipment or storage and should be thoroughly re-mixed prior to use. Avoid extended exposure to high humidity. Tightly re-seal 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:

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 243A

CAUTION! May cause eye irritation. Prolonged or repeated skin contact may cause irritation, may cause allergic skin reaction. 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.

Hardener 2966

WARNING! Causes skin and eye irritation. May cause allergic skin and respiratory reactions. Harmful if inhaled or 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.

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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