

## EpoPro 8773A/Hardener HY 2123

### Flame Retardant, Heat Cured Epoxy Encapsulating System

EpoPro® 8773A with Hardener HY 2123 is a heat-curing epoxy system designed for potting and encapsulation of high-voltage and electronic components requiring flame retardance. It is mineral filled, epoxy encapsulating system that provides excellent mechanical and electrical properties up to at least 140°C. The EpoPro 8773A/HY2123 system has a low mixed viscosity and provides excellent impregnation of coils and windings. The cured epoxy is very resistant to chemical and moisture and has good thermal shock resistance. .

#### TYPICAL APPLICATIONS

- High voltage components such as diode splits
- Relays, voltage regulators, ferrites, transformers, & resistors,
- Applications requiring UL 94VO flame restardance

#### HANDLING PROPERTIES

	<u>VALUE</u>	<u>TEST METHOD</u>
<u>EpoPro 8773A</u>		
Appearance	Black Liquid*	
Density, g/cm <sup>3</sup>	1.66	ASTM E-201
Viscosity at 25°C, cps	30,000	ASTM D-2393
<u>Hardener HY 2123</u>		
Appearance	Brown liquid	
Density, g/cm <sup>3</sup>	1.20-1.22	ASTM E-201
Viscosity at 25°C, cps	50 – 150	ASTM D-2393
Mix Ratio By Weight	100A:34B	Calculated
Mix Ratio By Volume	100A: 48B to 50B	Calculated
Viscosity Mixed, cps		
at 25°C / at 40°C / at 60°C	1,600 / 600 / 180	ASTM D-2393
Time to Double Initial Viscosity		
at 25°C / at 40°C / at 60°C	> 4 hrs / 150 min. / 45 min.	ASTM D-2393
Gel Time, 100g mass at 25°C	> 8 hours	ASTM D-2471

Recommended Cure Schedules: For large parts or to obtain the lowest possible shrinkage during curing, heat to 70°C - 80°C and hold for 2 hours to allow the epoxy to gel, then complete cure by holding at 100°C for 5 hours or at 120°C for at least 2 hours. For small parts, 6 hours at 95C – 100C or 3 hours at 120C will typically achieve a full cure.

\*Custom Colors available by request.

#### PHYSICAL PROPERTIES

# Product Datasheet



	<u>VALUE</u>	<u>TEST METHOD</u>
Color	Black	Visual
Density, g/cm <sup>3</sup>	1.57	ASTM E-201
Shore Hardness	81D	ASTM D-2240
Tensile Strength, psi	8,700	ASTM D-638
Tensile Elongation at break	1.2%	ASTM D-638
Elastic Modulus (from Tensile)	922,400 psi	ASTM D-638
Flexural Strength, psi	11,800	ISO 178
Water Absorption (immersion)		ASTM D-252
After 10 days at 23°C	0.23%	
After 30 min at 100°C	0.16%	
Glass Transition Temp. (Tg) by DSC	108°C	
Heat Deflection Temperature	98°C	DIN 53458
Coefficient of Thermal Expansion		
Alpha 1 (below Tg)	52 ppm/°C	
Thermal Conductivity	0.57 W/mK	
Flame Retardance	Self-extinguishing / UL 94V0 compliant at 1/8"	
Electrolytic Corrosion	Grade AN/1.2	DIN 53489
Tracking Resistance (CTI)	> 600	IEC 112
Dielectric Strength, V/mil	540	ASTM D-149
Volume Resistivity, ohm-cm		ASTM D-257
at 25°C / at 100°C / at 140°C	2.0 x 10 <sup>15</sup> / 9.1 x 10 <sup>14</sup> / 3.0 x 10 <sup>10</sup>	
Dielectric Constant @ 25°C		ASTM D-150
60 aHz / 1 kHz / 100 kHz	4.1 / 3.9 / 3.8	
Dissipation Factor, at 25°C	0.039	ASTM D-150
60 Hz / 1 kHz / 100 kHz	0.025 / 0.022 / 0.020	

**NOTE** : Typical Properties determined using EpoPro 8773A/HY 2123 cured for 3 hrs at 70°C + 5 hours at 100°C. Values are based on laboratory or typical production results and are not for specification purposes.

## **SUGGESTED PROCESSING GUIDELINES:**

The EpoPro 8773A resin is a mineral filled liquid and because of its relatively low viscosity the mineral filler may settle to the bottom of the container during shipping and storage. Before using, re-mix the 8773A to ensure the filler is uniformly dispersed. Remixing can typically be accomplished using a spatula or stirring stick or by placing on a paint shaker for 5-10 minutes. When thoroughly re-mixed, weigh the part A and part B in the recommended ratios as accurately as possible 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 smallest mass being weighed. Blend using a spatula or stirring stick for at least 2 minutes using a kneading motion. Scrape the bottom and sides of the mixing container carefully and frequently to produce a uniform mixture. For bubble free parts, vacuum degas the mixture prior to use at 28 inches of mercury or greater. For best adhesion apply to clean, dry surfaces.

EpoPro 8773A/HY 2123 can be applied by pouring, brushing, injection, or by spraying or dipping components into the mixture. It is also suitable for meter-mix dispensing and can be supplied in premixed and frozen syringes for small volume applications. For molding or casting applications,

the material can be heated to 40°C – 60°C and dispensed at that temperature into molds that are pre-heated to 70°C - 80°C. Elevated temperatures will dramatically reduce the viscosity of the mixed system and assist with impregnation of windings and flow of the epoxy into narrow openings, but will also shorten the pot life of the mixture.

## **STORAGE GUIDELINES:**

Store this material in a clean, cool and dry environment in its tightly closed original container. Products may settle during 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 8773A - 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 HY - WARNING!** May 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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