Product Datasheet

SP&S Specialty Polymers and Services

EpoPro® ER 11-155A/B (black)
EpoPro® ER 11-855A/B (gray)
EpoPro® ER 11-955A/B (brown)

TOUGH, IMPACT & SHOCK RESISTANT ENCAPSULANT & IMPREGNATING SYSTEM

EpoPro® ER 11-155, 11-855, and 11-955 are epoxy systems that have been formulated for encapsulating and sealing electronic circuits, components, and connectors where a room temperature or low temperature oven cure is desired. This filled epoxy system provide good thermal conductance, chemical resistance, and thermal shock resistance. The cured polymers they form provide excellent physical and electrical properties. This product is available in two part kits and in pre-mixed and frozen syringes that are ready to use when thawed.

These systems are available in the indicated colors and other colors including custom colors are available by request. Other variants including lower viscosity or faster setting & curing versions are also available. Please contact us to discuss your application if you would like to receive samples of a modified system that customized to suit your application.

SUGGESTED APPLICATIONS:

- Marking Ink with excellent chemical & abrasion resistance
- Bonding or sealing metal, glass, plastic, and other substrates.
- Potting & Encapsulation of connectors, circuit boards, coils, and other components

HANDLING PROPERTIES	VALUE	TEST METHOD
EpoPro ER 11-115A, 11-855A, & 11-955A (resin)		
Visual Appearance	filled liquid (color indicated by part #)	Visual
Density	1. 55 g/cm³	ASTM E-201
Viscosity at 25ºC	36,000 cps	ASTM D-2393
Flash Point	>100°C	ASTM D-92
EpoPro ER 11-155B, 11-855B, 11-955B (hardener)		
Visual Appearance	clear, yellow to amber liquid	Visual
Density	1.01 g/cm³	ASTM E-201
Viscosity at 25ºC	95 cps	ASTM D-2393
Flash Point	>100°C	ASTM D-92
Mix Ratio	100A:5B part by weight	
Viscosity Mixed at 25ºC	10,000 - 15,000 cps	ASTM D-2393
Gel Time (100 g. mass) at 25ºC	80 – 120 minutes	
Exotherm 100 gram mass at RT	30 degrees C increase	

Curing Options: This system can be cured at room temperature or with heat. Minimum cure time at room temperature (around 25ºC) is 24 hours and final properties may take 3-7 days at

room temperature to fully develop. Heat curing options include 6 hours at 50ºC or 3 hours at 75ºC. To minimize shrinkage and stress on embedded components allow the epoxy to gel fully at room temperature (at least 3 – 4 hours) before heat curing. Allowing for a room temperature gel prior to heat curing may reduce curing shrinkage by 50% or more.

PHYSICAL PROPERTIES (Tested at 25ºC unless otherwise noted – cured 3 hours at 75ºC)

		TEST METHOD
Hardness, Shore D at 25°C	>90D	ASTM D-2240
Rockwell M Hardness at 25°C	100	ASTM D785
Tensile Strength	9,500 psi	ASTM D-638
Flexural Strength	16,000 psi	ASTM D-638
Compressive Strength	26,000 psi	ASTM D-695
Heat Distortion Temperature (Tg)	93ºC	ASTM D-648
Izod Impact, notched	0.45 ft-lbs./inch	ASTM D-256
Coefficient of Thermal Expansion (CTE): Average from -30ºC to +30ºC (ppm/ºC)	30 ppm/ºC	ASTM E-831
Thermal Conductivity	0.55 W/mK	ASTM D-2214
Thermal Shock test, cycles to failure	>10 cycles	Mil-I-16923D
Volume Resistivity (ohm-cm) at 25ºC / 100ºC	1×10^{16} / 3.2×10^{12}	ASTM D-257
Dielectric Strength (V/mil)	400	ASTM D-149
Dielectric Constant at 25 ºC and At 1 KHz / at 100 KHz	4.09 / 3.82	ASTM D-150
Dissipation Factor at 25 ºC and At 1 KHz / at 100 KHz	0.01 / 0.027	ASTM D-150

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

PROCESSING AND APPLICATION INSTRUCTIONS :

For two part kits of these system, the part A should be thoroughly re-mixed prior to use as it may settled or separate during shipment and storage. Once the part A is uniform, mixed the part A & part B at the indicated mix ratio by weight for at least 2 minutes using a spatula or other mixing tool for prior to use. The mixed material may be applied in many different ways. For potting and casting applications it can be poured or dispensed into clean, dry components under ambient conditions or it may be vacuum de-gassing and/or warmed to reduce its viscosity and help to eliminate any voids or air bubbles. Please note that heating will shorten the work-life and gel time of the mixed material.

This product It may be applied as a coating, adhesive, or sealant by brush or robotic dispensing system automated equipment including by spraying. It may also be used to impregnate devices such as rotors and stators and in those case the resin is usually heated to 40ºC after mixing and the components are immersed in the resin. Vacuum and/or pressure may then be used to ensure full impregnation before the component is then removed and placed into an oven to be heat cured.

Pre-mixed and frozen versions of these products are supplied in syringes and may be applied using syringe dispensing system or for manual syringes application may be by hand. Many different sizes and types of syringes are available.

PACKAGING AVIALABLE:

This product is available in gallon kits and in smaller two part kits and pre-mixed and frozen (PM&F) syringes. Other package sizes are available by request. Please contact us if you have specific packaging requirements.

STORAGE GUIDELINES:

Store two part kits these epoxy systems in a clean, cool, and dry environment in their tightly closed original containers. If crystallization occurs in either component, heat the entire container of the effected component for 4 hours at 50ºC - 60ºC to re-liquefy the material. Allow to cool to room temperature and then stir or use a paint shaker to ensure the material is uniform prior to use. Also protect from extended exposure to moisture or high humidity by tightly re-sealing the containers after use. If the recommended storage conditions are observed the products will have a minimum shelf-life of 12 months at 25ºC from the date of shipment for 2 part kits. Pre-mixed and frozen syringes will have a minimum shelf-life of 12 months from date of shipment at -40ºC or colder.

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:

See SDSs for latest safety information and handling precautions.

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 supersedes 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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Former Delta Plastics Company Product*

*Please note that these products were original developed by Delta Plastics Company (also known as Epoxy Resin Innovators, Inc.). That product line was acquired by SP&S in December 2019. Some of the data listed in the datasheet may be based on historical information provided by Delta Plastics Company that may not have been independently re-verified by SP&S.