# Product Datasheet

SP&S
Specialty Polymers and Services

# EpoPro® 143A/B

## OPTICALLY CLEAR EPOXY ADHESIVE & ENCAPSULANT

EpoPro® 143A/B is a two part epoxy system that cures at room temperature into a heat, transparent polymer that resists yellowing and provides excellent electrical and mechanical properties. The system is excellent for bonding glass, plastics, metal, stone, ceramics, and many other materials. It's extremely low viscosity makes it an excellent impregnant for electrical devices and for porous surfaces such as artificial gemstones. The cured material is also considered nontoxic per USP Class VI biocompatibility standards.

Many variations on the EpoPro 143A/B system are available upon request, including custom colors, adjusted viscosities, work-lives & curing speeds. Please contact us to discuss your application if you think such a variant would be helpful for your application.

**SUGGESTED APPLICATIONS:**

| |
|---|
| • Optical bonding such as glass, optics, mirrors, lenses, etc. |
| • Water clear coating and impregnant for electronic and porous surfaces requiring a polymeric consolidant |
| • Electrical Encapsulant with excellent light transmittance properties |

| HANDLING PROPERTIES | VALUE | TEST METHOD |
|---|---|---|
| EpoPro 143A | | |
| Visual Appearance | Clear liquid | |
| Density, Part A | 1.15 g/cm³ | ASTM E-201 |
| Viscosity, Part A, @ 25ºC | 1,500 cps | ASTM D-2393 |
| Flash Point | >400°F | ASTM D-92 |
| EpoPro 143B | | |
| Visual Appearance | Clear Liquid | |
| Density, | 0.87 g/cm³ | ASTM E-201 |
| Viscosity, Part B, @ 25ºC | 40 cps | ASTM D-2393 |
| Flash Point | >200°F | ASTM D-92 |
| Mix Ratio (part by weight) | 4 : 1 (A:B) | |
| Mix Ratio (parts by volume) | 3 : 1 (A:B) | |
| Viscosity Mixed @ 25ºC | 100 – 200 cps | |
| Gel time, 25 grams: | 50 minutes | |
| Gel time, 100 grams | 30 minutes | |
| Suggested Cure Conditions: 16 – 24 hours @ 25°C (77°F) or 1 hour @ 65°C (149°F). | | |

| **PHYSICAL PROPERTIES** (Tested at 25C unless otherwise noted) | | |
|---|---|---|
| | | TEST METHOD |
| Appearance | Water clear solid | Visual |
| Density | 1.09 g/ml | ASTM D792 |
| Hardness, Shore D | 81 | ASTM D-2143 |
| Lap Shear Strength | 1,700 psi | |
| Glass Transition Temperature (Tg) | >65ºC | ASTM D-648 |
| Coefficient of Thermal Expansion (CTE): | | ASTM E-831 |
| Above Tg / below Tg (ppm/ºC) | 50 / 125 | |
| Initial Degradation Temperature | 341ºC | by TGA |
| Thermal Conductivity | 0.18 W/mK | ASTM D-2214 |
| Volume Resistivity @ 25ºC | 5 x $10^{13}$ ohms-cm | Mil-I-46058C |
| Dielectric Strength (1/8" thick) | 440 V/mil | ASTM D-149 |
| Dielectric Constant @ 25ºC & 60 Hz | 4.1 | ASTM D-150 |
| Dissipitation Factor @ 25ºC & 60 Hz | 0.02 | ASTM D-150 |
| Outgassing: | | |
| @ 200ºC | 0.27% | |
| @ 300ºC | 0.81% | |
| Optical Properties (0.001" thick): | | |
| Index of Refraction | 1.539 | |
| Light Transmission (sodium D line 589nm) | | |
| 320nm – 900 nm | >97% transmission | |
| 910nm – 2.6 microns | >80% transmission | |

**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 ±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 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 be 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 143A/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 15ºC (59ºF). Crystallization may occur if the material is exposed to cold for extend periods. If this occurs, heat the entire container of 143A or 143B for 4 hours at

70ºC to re-liquefy the material. Allow to cool to ambient temperature and re-mix prior to using. Also protect the EpoPro 143A&B from exposure to moisture or high humidity – keep contains 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 143A**

**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 143B**

**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

**Specialty Polymers & Services, Inc. (SP&S)**
**27822 Fremont Court** **Tel: 661-294-1790**
**Valencia, CA 91355** **Fax : 661-294-0640**
**www.spolymers.com** **info@spolymers.com**