

EpoPro 144A/B

Transparent Rigid Room Temperature Curing Epoxy Adhesive, Coating and Encapsulant

Typical Properties (Not for specification purposes. All tests run at 25°C unless otherwise noted)

EpoPro 144A Properties:

Appearance	Visual	Clear to very light blue
Specific Gravity	ASTM-D-1475	1.14 g/cc
Viscosity	ASTM-D-2393	3,200 cP
Flash Point, PMCC		>95°C

EpoPro 144B Properties:

Appearance	Visual	Clear to light amber liquid
Specific Gravity	ASTM-D-1475	0.95 g/cc
Viscosity	ASTM-D-2393	40 – 60 cP
Flash Point, Closed cup	ASTM D-92	>124°C

Mix Ratio:

Parts by weight (volume) 100A : 50B (100A:60B)

Mixed Properties:

Initial Viscosity at 25°C	ASTM-D-2393	1,400cP
Work-life, 100g at 25°C		60 – 120 minutes *
Gel-time, 100g (≈5 fluid oz), at 25°C	Gardener Gel timer	150 minutes
Tack Free time, 5 mil thick coating at 25°C		12 – 14 hours

Recommended Minimum Cure Schedules:

24-48 hours at 25°C or 3-6 hours @ 65°F.

Please note: any cure schedule selected for use should be confirmed through testing as being appropriate for your particular processing methods and for your intended application.

Cured Properties (cured 7 days at 25°C)

Appearance	Visual	Water Clear to very light yellow solid*
Specific Gravity	ASTM-D-792	1.15 g/ml
Shore Hardness	ASTM-D-2240	82D
Tensile Strength	ASTM D-638	8,000
Tensile Elongation at break	ASTM D-638	4 - 5 %
Izod Impact Strength		0.55 ft-lb/inch of notch
Flexural Strength	ASTM D-638	10,900 psi
Compressive Strength	ASTM D-638	17,000 psi
Linear Shrinkage		0.004 in/in
Glass Transition Temp.		45°C
Coefficient of thermal Expansion (CTE) (per °C)	ASTM-D-150	85 X 10 ⁻⁶
Thermal conductivity	ASTM D-638	5 x 10 ⁻⁴ cal/sec-cm-°C
Dielectric Strength	ASTM-D-149	450 volts/mil
Dielectric Constant at 25C at 1 kHz / at 1 MHz	ASTM-D-149	3.51 / 3.26
Dissipation Factor at 25C at 1 kHz / at 1 MHz	ASTM-D-149	0.006 / 0.02
Volume Resistivity at 25C	ASTM-D-149	>1.96 x 10 ¹⁶ ohm-cm
Chemical Resistance – 24 hours immersion at 25°C:		
Water		0.21%
5% Acetic Acid		0.28%
50:50 Xylene/Isopropanol		8.5%

EpoPro 144A/B is a 100% solids epoxy encapsulating system that cures to become a tough, rigid, transparent polymer. It is suitable for many applications including coating and encapsulation of electronic components and the bonding of mirrors and other optical components.

It is ideal for applications that require visual inspection of potting components or the ability to read labels or bar codes through the encapsulant. EpoPro 144A/B is resistant to yellowing or darkening over time – demonstrating superior performance compared to conventional, room temperature curing epoxy systems. It also demonstrates excellent mar resistance (resistance to scratching or rubbing damage that could impair optical properties).

EpoPro 144A/B is easy to process and handle with a 2:1 by weight mix ratio, a low viscosity and excellent air release and surface wetting properties. It also provides excellent resistance to defects such as “blushing”, “blooming”, or “sweat-out” that can occur in other epoxies when cured under high humidity.

Suggested Applications:

- Potting of electronic devices
- Low-voltage encapsulation
- Adhesive applications including bonding fiber optics, mirrors and many types of materials including precious and semi-precious stones
- Coating and sealing of porous surfaces and for decorative applications

Benefits:

- Exceptional initial and long term clarity, resists yellowing or darkening over time.
- Excellent mar resistance
- Produces clear, glossy cured surfaces even in high humidity conditions
- Long working life
- Convenient mix ratio

Storage Guidelines:

Store this material in a clean, dry environment in its tightly closed original container. These products are not considered especially temperature sensitive, but should be stored between 18 - 30°C (64 - 86°F) to maintain optimum quality. Under these conditions the products will have a minimum shelf-life of 12 months from the date of shipment. If exposed to cold temperatures for extended periods crystallization could occur in either component. If

*Custom colors and Work-lives are available upon request

crystals are observed or the viscosity is unusually high, heat the material at 150°F (65°C) for 2-4 hours to melt the crystals. The stir or shake thoroughly to remix the material prior to use.

Processing Guidelines:

This system can be mixed manually or using mechanical agitation. Whatever method is chosen, be sure to accurately weigh both the resin and the hardener prior to mixing and to ensure the correct mix ratio is used.

If mixing manually, mix for at least 2 minutes and be sure to scrape 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 within 5-10 minutes.

Mixing or curing the material at temperatures less than 18°C (65°F) may lead to excessively long curing or demolding times. Mixing or curing heated material will significantly shorten the work-life or gel time.

When cured for approximately 24 hours at 25°C or for 3-6 hours at 65°C, this system will cure to a rigid, demoldable state. Additional time at room temperature or at elevated temperatures may be required to achieve a full cure.

If you are using an elevated temperature cure, be sure to add to the desired time at the elevated temperature enough time for the oven and parts to heat up to the desired temperature and enough time for the parts to slowly cool back down to room temperature. Do not force cool without testing the process for suitability as the thermal shock can warp or damage the material.

When curing with heat, a uniform heat distribution is desirable. Concentrated or uneven heat such as from a heat lamp can cause distortions and warpage. In general an elevated temperature cure will cause more shrinkage than a room temperature cure schedule. This phenomenon can be minimized by allowing the material to gel at ambient conditions before post curing it at an elevated temperature.

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 144A

WARNING!!! Causes severe eye irritation. Cause skin irritation and possible allergic skin reaction. Harmful if inhaled or swallowed. Avoid contact with eyes, skin, and clothing. Wear impervious clothes and eye protection when handling. Avoid breathing vapor or mist. Keep

containers closed when not in use. Use only with adequate ventilation. Wash thoroughly after handling. Launder contaminated clothing prior to reuse.

EpoPro 144B

DANGER! Corrosive. Causes eye, skin, and respiratory tract burns. Do not get in eyes, on skin or on clothing. Wear impervious clothes and eye protection when handling. Do not breathe vapor or mist. Keep containers closed when not in use. Use only with adequate ventilation. Wash thoroughly after handling. Launder contaminated clothing prior to reuse.

First Aid

In case of contact:

Skin - Wash skin thoroughly with mild soap and water. Remove contaminated clothing and wash before reuse. Discard contaminated shoes and other articles made of leather

Eyes - Flush eyes with plenty of water for 15 minutes and get prompt medical attention.

Inhalation - Remove person to fresh air

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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