

## EpoPro<sup>®</sup> 8704 A/B

### Thermally Conductive Epoxy Encapsulation & Adhesive System

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

##### Resin / A-side Properties:

Appearance	Visual	Thick liquid Black
Specific Gravity	ASTM D-792	2.38 g/cc
Viscosity	ASTM-D-2393	120,000 cP
Flash point, closed cup	ASTM D-92	>252 °C (486°F)

##### Hardener/ B-side Properties:

Appearance	Visual	Amber liquid
Specific Gravity	ASTM-D-792	1.01 g/cc
Viscosity	ASTM-D-2393	40 cP
Flash Point, closed cup	ASTM D-92	>127°C (261°F)

##### Mix Ratio:

Parts by weight (volume) 100A : 7B (100A:16.5B)

##### Mixed Properties:

Initial Viscosity @ 25°C	ASTM-D-2393,	25,000 cP
Pot life		90 minutes
OC-WL-001 at 25 °C		

##### Recommended Cure Schedules:

24 hrs at 25°C or 1-2 hrs at 65°C

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	Black
Specific Gravity	ASTM D-1475	2.2 g/cc
Shore Hardness	ASTM D-2240	85D
Tensile Strength at break	ASTM D-638	7,500 psi
Tensile Elongation	ASTM D-638	2%
Water absorption	ASTM D-570	0.08%
Thermal conductivity	ASTM D-638	$33 \times 10^{-4} \text{ Cal}/(\text{sec})(\text{cm}^2)^{\circ}\text{C}$
Glass Transition Temp (T <sub>g</sub> )	Perkin Elmer Appl Case #20 ASTM E-381	65°C

Coefficient of thermal expansion (CTE) (per °C) (-30°C to 30°C)

Volume resistivity	ASTM D-257	$>1 \times 10^{15} \Omega\text{-cm}$
Surface resistivity	ASTM D-257	$3.3 \times 10^{14} \Omega$
Dielectric strength	ASTM D-149	550 volts/mil

Dielectric Constant

@ 60 Hz	5.6
@1 MHz	5.4

Dissipation Factor

@ 60 Hz	0.077
@1 MHz	0.020

#### Suggested Applications:

- Bushings
- Power Supplies
- Voltage Regulators

#### Benefits:

- High Thermal Conductivity
- Low Shrinkage And Thermal Coefficient Of Expansion
- Resistant To Stress Cracking
- Excellent Heat & Chemical Resistance
- Excellent Electrical Protection

#### Storage Guidelines:

Store this material in a clean, dry environment in its tightly closed original container. These products are not considered temperature sensitive, but should ideally be stored at temperatures between 18-30°C (64-86°F). Under these conditions the products will have a minimum shelf-life of 12 months from the date of shipment. EpoPro 8704A may crystallize if exposed to temperatures below 18°C and the filler may settle during storage or transportation. Thoroughly re-mix the 8704 part A prior to use and if crystallized heat to 70°C for 2-4 hours until completely re-liquefied. After heating, allow to cool and re-mix prior to use. (The pot life of hot material will be much shorter than normal.)

#### Processing Guidelines:

To use the material, thoroughly mix the A & b components using meter-mix equipment or manually as follows. Weigh the desired amount of part A into a mixing container whose weight has been tared (zeroed out). Then weigh the desired amount of part B hardener into mixing container following the suggested mix ratio. Mix thoroughly by means of mechanical mixer or manual stirring, preferably for at least 2 minutes.

After thorough mixing, vacuum de-airing is recommended to remove any entrapped air from the mixing procedure. To de-air most products, 1-2 minutes under at vacuum or 29 inches of Hg or greater is suggested for each quart of volume of mixed material. Once de-aired, quickly dispense potting material into cavity or channel to be sealed or spread along surface to be bonded.

EpoPro<sup>®</sup> 8704 A/B is a two-part epoxy system designed to provide excellent mechanical and electrical properties along with very good thermal conductivity. It is unusually heat and chemical resistant for a room temperature curing epoxy system and provide excellent resistance to moisture, humidity and other environmental stresses.

To reduce the cure time, the EpoPro 8704A/B may be allowed to gel at room temperature (~ 2 hours) and then post-cured 2-6 hours at 60-80°C. Small masses (typically 10 grams or less) can often be immediately heat cured at 65°C to affect a rapid cure, but a minor increase in shrinkage may occur and this cure schedule should be evaluated for suitability before widespread use.

**Exotherm Warning:** Like most epoxies & other thermosetting polymers, the EpoPro 8704A/B generates heat during curing. As soon as the A & B components are thoroughly mixed, heat production will begin and the amount of heat will be proportional to the mass of the EpoPro 8704A/B mixed. Large masses (> 1 lbs.) can generate a great deal of heat and if allowed to stand without being broken up into smaller portions or spread out into a thin layer can accelerate the curing reaction leading to a reduced gel time. In extreme cases, the heat generated can begin to burn the epoxy producing acrid smoke. If working with large masses, contact SP&S for suggestions on ways to avoid problems and handling precautions to consider.

#### 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® 8704A

**CAUTION!** May cause eye irritation. Prolonged or repeated skin contact may cause irritation, and may cause skin reaction. Harmful if inhaled, if swallowed. In accordance with good industrial practice, handle with care and avoid unnecessary personal contact. Avoid contact with eyes and prolonged or repeated skin contact. Do not inhale mist. Use with adequate ventilation. For industrial use only.

##### EpoPro® 8704B

**CORROSIVE!** Causes severe eye and skin burns and possible allergic skin reaction. Vapor irritating to eyes, skin and nasal mucous membranes. Harmful if 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** - 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.

**Other**- Referral to a physician is recommended if there is any question about the seriousness of an injury.

#### 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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