

EpoPro[®] 251A/C

Multipurpose, UL 94 V0 Epoxy Encapsulation System

Typical Properties

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

EpoPro 251A Properties:

Appearance	Visual	Liquid Black*
Specific Gravity	ASTM D-792	1.63 g/cm ³
Viscosity	ASTM-D-2393	7,500 cP
Flash point, closed cup	ASTM D-92	>200°C (392°F)

EpoPro 251B Properties:

Appearance	Visual	Liquid Amber
Specific Gravity	ASTM-D-792	0.96 g/cm ³
Viscosity	ASTM-D-2393	8000 cP
Flash Point, closed cup	ASTM D-92	>120°C (248°F)

Mix Ratio:

Parts by weight (volume) 3A:1B by weight (2A:1B by vol.)

Mixed Properties:

Initial Viscosity @ 25°C / 40°C	ASTM-D-2393	8,000 cP / 3,000 cP
Gel time, 100 gram mass @ 25°C		90 minutes

Recommended Cure Schedules:

24 hrs at 25°C or 3 hour at 60°C or 1 hour at 80°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 days at 25°C)

Appearance	Visual	Black*
Specific Gravity	ASTM D-1475	1.54 g/cm ³
Shore Hardness	ASTM D-2240	80D
Tensile Strength at break	ASTM D-638	5,400 psi
Elongation at break	ASTM D-638	2.1%
Flexural Strength	ASTM D-638	10,000 psi
Water absorption, 24 hours soak at 25°C	ASTM D-570	0.18% by weight
Glass Transition Temp (Tg)	Perkin Elmer Aool Case#20	62°C
Coefficient of thermal expansion (CTE) (per °C)	ASTM E-381	below Tg: 63 ppm/C above Tg: 144 ppm/C
Thermal Conductivity	ASTM D-2214	0.56 W/mK
Flame retardance	UL 94 V-O	Passes @ 6mm
Volume. Resistivity	ASTM D-257	1 x 10 ¹⁴ Ω-cm
Surface Resistivity	ASTM D-257	1 x 10 ¹⁵ Ω-cm
Dielectric Strength	ASTM D-149	450 volts/mil
Dielectric Constant, 60 Hz	ASTM D-150	4.8
Dissipation Factor, 60 Hz	ASTM D-150	0.041

*Custom Colors available on request as are other modifications to the standard properties of this system.

EpoPro 251 A/C is a medium viscosity, flame retardant multi-purpose epoxy encapsulant. When fully cured this system produces a tough, rigid thermoset plastic

excellent for many electronic applications. The formulation has been developed to demonstrate excellent air release for bubble free parts and is designed for either hand or meter-mix processing with a convenient 2:1 by volume mix ratio. It is excellent choice for many encapsulating, potting embedding, and sealing applications and has a UL 94VO flame retardance rating.

Suggested Applications:

- Potting and encapsulating electronic modules and components including : sensors, transformers, voltage regulators, relays, resistor networks, magnetic heads, and proximity switches
- Circuit board encapsulation

Benefits:

- Convenient mix ratio by weight or volume
- Excellent Thermal shock resistance from -40C to 120C
- Halogen free (environmentally friendly) system
- Flame retardant, UL 94 V-O

Storage Guidelines:

Store these materials in a clean, dry environment in their tightly closed original container. These products are not considered temperature sensitive, but should ideally be stored at temperatures between 15-40°C (59-104°F). Under these conditions the products will have a minimum shelf-life of 12 months from the date of shipment. If exposed to cold for an extended period crystallization may occur in either the EpoPro 251A or B. If lumps or crystals are observed, heat for 2-4 hours at 50 - 60°C to melt the crystals and thoroughly re-mix before using. Do not use while still hot or the work life may be significantly reduced.

Processing Guidelines:

Mix using meter-mix dispensing equipment, or manually, as follows: Weigh the desired amount of resin into mixing container whose weight has been tared. If material has been heated, allow to cool to 25 ± 5°C (77 ± 9°F) before continuing. The pot life of mixed material will be shortened considerably if warm material is used.

Weigh the desired amount of hardener into mixing container with resin. Mix thoroughly by means of a mechanical mixer or manual stirring. Check for uniform color as a sign of complete mixing.

Vacuum deairing is recommended to remove any entrapped air from the mixing procedure. To deair most

products, 1-2 minutes under 28 inches of vacuum is recommended for each quart of volume of mixed material. After deairing, quickly dispense potting material into cavity or channel to be sealed.

To reduce the cure time, the parts or casting can be heated. To minimize shrinkage it is recommended to allow the material to gel at room temperature before applying heat to complete the cure. Often, however, small parts or casting (less than 100 grams of EpoPro 251A/C) can be processed and cured without waiting for the material to gel.

The suitability of immediate heat curing of masses larger than 100 grams will depend on a number of factors including the amount of EpoPro 251A/C in each part, the temperature being use and the construction of the part. If you are considering using an immediate heat cure, evaluate the results with test parts prior to implementing in production or give SP&S a call so that we can discuss your application and make suggestions on factors to consider.

In case of humid environments ($\geq 75\%$ relative humidity) it is advisable to complete the cure in an oven at 40-60°C or in a dessicator in order to prevent vapor absorption, leading to steaks on the surface of the casting.

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® 251A

Warning! May cause eye irritation. Prolonged or repeated skin contact may cause irritation, and may cause skin reaction. Harmful if inhaled, if 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.

EpoPro® 251C

CAUTION! Causes eye, skin, and respiratory irritations. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Keep container closed when not in use. Use with adequate ventilation. Wash thoroughly after handling. In accord with good industrial practice, handle with due care.

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:

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Specialty Polymers & Services, Inc. (SP&S)
27822 Fremont Court
Valencia, CA 91355

Tel - 661-294-1790

Fax - 661-294-0640

Info@spolymers.com

www.spolymers.com