Product Datasheet

SP&S Specialty Polymers and Services

EpoPro® 152SF-A/B and A/C

RoHS 76/769/EEC

2 COMPONENT, LOW SHRINKAGE. LOW CTE EPOXY ENCAPSULANTS

EpoPro® 152SF-A/152B and EpoPro® 152SF-A/152C are 2-part, high performance epoxy encapsulant that features low shrinkage and a low coefficient of thermal expansion as well as excellent crack resistance. These systems may be room temperature cure and this will result in glass-transition temperatures (Tg) of about 60°C after curing. The Tg can be increased to up to 120°C by using a heat cure after room temperature gelation or by post-curing room temperature cured parts. The cure polymer provides excellent thermal, environmental, and chemical resistance and these properties are maximized by heat curing or post curing.

The EpoPro® 152SF systems can be used wherever a high performance, low shrinkage, low CTE encapsulating system is required. The standard EpoPro® 152SF-A/B system has a long work-life to allow for casting large parts and to reduce waste. EpoPro® 152SF-A/C system is accelerated to reduce the processing and curing times, but is otherwise identical to the EpoPro® 152SF-A/B system.

SUGGESTED APPLICATIONS:

- Encapsulating pressure/stress sensitive boards and components
- Encapsulating applications where low CTE and low shrinkage are required
- High thermal, chemical and environmental resistance

HANDLING PROPERTIES	VALUE	TEST METHOD
EpoPro 152SF-A		
Visual Appearance	Black thick liquid	
Density	1.80 g/cm³	ASTM E-201
Viscosity, Part A, at 25ºC	70,000 cP	ASTM D-2393
Flash Point	>150°C	ASTM D-92
EpoPro 152B and 152C		
Visual Appearance	Clear to yellow liquid	
Density	0.94 g/cm³	ASTM E-201
Viscosity, Part B/C, at 25ºC	50 cP	ASTM D-2393
Flash Point	>120°C	ASTM D-92
Mixed Properties		
Mix Ratio:	100A: 10B by weight or 100A:20B by volume	
Mixed Viscosity	at 25ºC: 4,800 cP / at 40ºC: 1220 cP	
Shelf-life	at least 12 months at room temperature (~ 25ºC)	
Pot life (100 grams) with 152B:	25ºC: 85 minutes / 40ºC: 35 minutes	
Pot life (100 grams) with 152C:	25ºC: 35 minutes / 40ºC: 14 minutes	

Cure Schedules:

152SF-A/152B - functional cure in 2-3 days at 25ºC (full cure 7 days) or allow to gel for 2-4 hours or longer at room temperature then heat cure 6-8 hour at 85ºC or 4 hours at 95-100ºC.

152SF-A/152C- functional cure in 24 hours at 25ºC (full cure in 2-3 days) or allow to gel for 2 hours or longer at room temperature then heat cure 3 hours at 85ºC or 2 hours at 95-100ºC.
*Note: many other cure schedules are possible. Please contact us for assistance if you'd like to consider an alternate cure schedule.

PHYSICAL & ELECTRICAL PROPERTIES (Tested at 25ºC unless otherwise noted)

		TEST METHOD
Appearance	Black solid	Visual
Hardness, Shore D At 25ºC	90D	ASTM D-2240
Tensile Strength	6,000 psi	ASTM D-638
Tensile Elongation	0.3%	ASTM D-638
Modulus of Elasticity	1.3 million psi	ASTM D-638
Glass transition Temp. (Tg)	60ºC - 120ºC	
Coefficient of Thermal Exp. (CTE) – α 1	33 ppm/ºC	
Moisture absorption (24 hour in boiling water - % weight gain)	0.11%	ASTM D-570
Thermal Conductivity	0.62 W/mK	ASTM D-2214
Thermal Rating	-55ºC to 130ºC	EIC 216
Dielectric Strength	480 V/mil	ASTM D-149
Dielectric Constant @ 60 Hz	3.7	ASTM D-150
Dissipitation Factor @ 60 Hz	0.003	ASTM D-150
Volume Resistivity	3 x 10^{15} ohm-cm	ASTM D-257
Surface Resistivity	1.35 x 10^{15} ohm	ASTM D-

NOTE : Values are based on laboratory or average production results – not for spécification purposes. All data from EpoPro® 152SF-A/B samples cured for 4 hours at 100ºC

PROCESSING AND APPLICATION INSTRUCTIONS :

Measure out the Part A and Part B(or part C) in the recommended ratio as accurately as possible into a clean mixing container. Always use measuring equipment having accuracy in proportion to the amounts being weighted. Blend by using a spatula or stirring stick for 2 minutes using a kneading motion. Scrape the bottom and sides of the mixing container carefully and frequently to produce a uniform mixture. For best electrical insulating results and for highest thermal conductivity, vacuum degas prior to encapsulating. For best flow and wetting heat the EpoPro 152SF-A/B or 152SF-A/C to 40ºC or apply to parts that have been warmed to that temperature.

PACKAGING AVIALABLE:

This product is available in quart & gallon kits or pre-mixed and frozen in syringes. Many other package sizes are available by request.

STORAGE GUIDELINES:

Store the EpoPro 152SF-A, 152B, and 152C in a clean, cool and dry environment in their tightly closed original containers. Protect from extended exposure to temperatures below 15ºC (59ºF) to prevent crystallization. If crystallization occurs, heat the entire container for 4 hours at 60ºC to re-liquefy the material. Also protect from exposure to extended moisture or high humidity. Tightly re-seal containers after use. If the recommended storage conditions are observed the products will have a minimum shelf-life of 12 months from the date of shipment. The EpoPro 152SF-A may settle or separate during shipment or prolonged storage. Stir or place on a paint shaker to thoroughly re-mix prior to use.

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 152SF-A

CAUTION! 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.

EpoPro 152B & 152C

WARNING! Causes skin and eye irritation. May cause allergic skin and respiratory reactions. Harmful if inhaled or 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** – 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

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