Product Datasheet

EpoPro 7002FC

Electrically conductive epoxy adhesive

Typical Properties

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

Properties:

Appearance	Visual	Silvery paste
Specific Gravity	STM-D-1475	3.0 g/cm^3
Viscosity, spindle 14 @ 10 rpm	ASTM-D-1824	30,000 cps
Viscosity, spindle 14 @ 100 rpm	ASTM-D-1824	10,000 cps
Gel time at 120°C, 10 g	FTM D-2471	15 minutes
Gel time at 150°C, 10 g	FTM D-2471	<3 minutes
Work life @ 25°C, 10 g	FTM-203	>24 hours*
Flash Point, open cup	ASTM-D-92	>118°C (244°F)

*NOTE: EpoPro 7002FC will not gel for at least 2 days in an environment of 25°C and less than 50% relative humidity. However, the usable work life may be affected by elevated temperatures and the viscosity requirements of the particular application.

Recommended Cure Schedules:

Temperature	Minimum Cure	Suggest Cure
120°C	30 minutes	2 hours
150°C	5 – 10 minutes	30 – 60 minutes
175°C	2 minutes	5 minutes

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. Minimum cure times reflect the time required to achieve minimum acceptable bond strengths for most applications. Additional heat curing will improve bond strength and increase heat and chemical resistance.

Cured Properties (Cured at 150°C for 1 hour)

Lap shear, (aluminum substrate)	ASTM-D-1002	2000 psi
Die shear, (gold substrate)	MIL-STD-883B	1720 psi
Glass Transition Temp (TMA)	Perkin Elmer Appl.Cast #20	143°C
Coefficient of Thermal Expansion (CTE) (per °C)	ASTM-E-381	
Alpha 1		50 x 10^{-6}
Alpha 2		140 x 10^{-6}
Weight loss, 300°C,TGA	MIL-STD-883C Method 5011	0.2%
Thermal Conductivity	ASTM D-2214	>1.5 1.3 W/m-K
Volume resistivity	ASTM-D-257	
at 25°C		2 x 10^{-4} Ω-cm
at 60°C		5 x 10^{-4} Ω-cm
at 150°C		5 x 10^{-4} Ω-cm
after aging 1000 hours at 150°C (tested at 25°C)		6 x 10^{-5} Ω-cm

EpoPro 7002FC is a one-component, silver-filled epoxy adhesive designed for die attach and other applications where both thermal & electrical conductivity are required. The formulation is 100% solids and contains no solvents, diluents or other potentially volatile materials. As a result, the EpoPro 7002FC demonstrates very low outgassing and high reliability. In addition, the material has been formulated with extremely pure resins and fillers to provide the exceptional ionic purity that makes it suitable for use in die attach and other high performance applications.

EpoPro 7002FC is a fast curing version of our standard EpoPro 7002. For applications where alternate viscosities or cure schedules would be desirable other variants are available. Contact us for assistance if an alternate viscosity or cure schedule would be helpful for your application.

Suggested Applications:

Microelectronic bonding applications

Benefits:

Extremely high purity
Meets requirements of MIL STD 883C Method 5011
100% solids system

Outgassing and Contaminant Data

Outgassing @ 10^{-6} Torr		
Total Mass loss	ASTM E-595	0.20%
Collectable condensable Volatile materials	NASA SP-R-0022A & ESA PSS-01-702	0.01%

RGA analysis MIL STD 883C Method 5011	**After 168 hours @ 125°C**		**After 1000 hours @ 150°C**	
Gas	**Sample**	**Control**	**Sample**	**Control**
Nitrogen, %	99.8	99.9	99.8	99.8
Oxygen, %	ND	ND	ND	ND
Argon, ppm	ND	ND	326	353
CO_2, ppm	115	165	1055	412
Water, ppm	268	>100	217	188
Hydrogen, ppm	323	410	ND	ND
Helium, ppm	ND	ND	ND	ND
Fluorocarbons, ppm	ND	ND	ND	ND
Ammonia, ppm	ND	ND	ND	ND
ND = none detected	1% = 10.000 ppm			

Extractable Ionic Contaminants, ppm Extraction Ratio:100 gm of deionozed water to 1g of sample. Sample Preparation: Cured on Teflon®; pulverized to –40/+60 mesh.		
Test Method MIL STD 883C Method 5011		
Ion	**24 hours @100°C**	**48 hours @ 121°C / 2 atm**
Sodium	<5	<10
Potassium	<2	<3
Ammonium	<1	<3
Iron	ND	ND
Chloride	<7	<10
Bromide	ND	ND

Storage Guidelines:

EpoPro 7002FC is considered non-hazardous for shipping purposes. However, this product is packaged in special cartons containing enough dry ice for a limited storage life of approximately 48 - 72 hours during shipment. Upon receipt, frozen syringes must be transferred to a freezer for storage at or below -40°C in order to ensure product shelf-life and reliability. Special care should be taken when handling dry ice in order to avoid severe skin damage or the potential for asphyxiation in unventilated areas. Under these conditions the products will have a minimum shelf-life in unopened containers of 6 months from the date of shipment.

Processing Guidelines:

EpoPro 7002FC is premixed, frozen and packed in dry ice at the factory for your convenience. Avoid handling dry ice or frozen syringes from factory container with bare hands. The temperature may be -75°C or less and serious skin burns and permanent damage could occur. Always store frozen syringes at or below -40°C for best shelf life.

Remove syringe(s) from freezer storage and allow to thaw at room temperature (30°C maximum) before use. Do not attempt to quick thaw by heating, as this could reduce the work life or cause premature gelation. Keep containers sealed while thawing and wipe condensation from the syringes prior to use. Typical thawing time for a 3cc syringe is approximately 15 minutes at 25°C.

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 7002FC

WARNING! Causes eye irritation. Causes skin irritation and possible allergic skin reaction. Harmful if inhaled or 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 container 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
Valencia, CA 91355

Tel - 661-294-1790
Fax - 661-294-0640

info@spolymers.com
www.spolymers.com