

EpoPro® 7200-85HT-FC

Electrically Insulating, Thermally Conductive Epoxy Adhesive

EpoPro® 7200-85HT-FC is a filled epoxy adhesive designed for die attached, and other electronic applications. It provides excellent electrical insulation combined with high thermal conductivity. The formulation is produced with high purity resins and filler and the finished adhesive meets the ionic content requirements of Mil Std 883C Method 5011 as well as meeting NASA's low outgassing requirements. The cured adhesive has excellent chemical and environmental resistance and provides good mechanical strength up to 200°C.

EpoPro® 7200-85HT-FC is a has good flow properties combined with good run and sag control. It is available in both lower (7200) and higher (7200-100) viscosity versions. In addition, variants with alternate cure speeds, modified run and sag resistance, or glass spacer beads for bond-line control can be provided upon request. EpoPro® 7200-85HT-FC is supplied as frozen one component syringes in a wide range of syringe sizes and types. A two component version is also available by request.

APPLICATIONS & BENEFITS

- Die Attach
- Microelectronics
- Thermally Conductive
- Low Ionics / High Purity
- Low CTE
- NASA compliant Low Outgassing

HANDLING PROPERTIES

<u>EpoPro® 7200-85HT-FC</u>	<u>VALUE</u>	<u>TEST METHOD</u>
Visual Appearance	Off-White Paste*	Visual
Viscosity, Part A, at 25°C	85,000 cps	ASTM D-2393
Density, Part A	2.50 g/cm ³	ASTM E-201
Mix Ratio:	Once Component – thaw and then use as-is	
Pot life (10 grams) at 25°C	4 – 8 Hours	Gardner Gel timer
Gel Time (10 grams) at 150°C	3 minutes	Gardner Gel timer
<u>Recommended Cure Schedules:</u>	30 minutes at 150°C or 15 minutes 170°C.	
Many other cure schedules are possible. Please contact us to discuss alternatives.		

*Alternate colors available by request

PHYSICAL PROPERTIES

	<u>VALUE</u>	<u>TEST METHOD</u>
Shore D Hardness	88D	ASTM D-2240
Lap Shear Strengths at 25°C / 77°F (AL: AL) :	> 2000 psi	ASTM D-1002
Die Shear, Gold to Silicone		Mil-Std 883C
Area 0.0225 in ²	1800 psi	
Area 0.0050 in ²	3500 psi	

Product Datasheet



Dielectric Strength	350 V/mil	ASTM D-149
Dielectric Constant		ASTM D-150
At 100Hz / 1KHz / 1MHz	5.9 / 5.76 / 5.46	
Dissipation Factor		ASTM D-150
At 100Hz / 1KHz / 1MHz	0.003 / 0.008 / 0.012	
Volume Resistivity at 25°C	$3.9 \times 10^{15} \Omega\text{-cm}$	ASTM D-257
Volume Resistivity at 125°C	$6.6 \times 10^{13} \Omega\text{-cm}$	ASTM D-257
Arc Resistance	190 seconds	ASTM D-495
Thermal Conductivity	0.75 W/mK	ASTM D-2214
Glass Transition Temperature (Tg) by TMA	162°C	
Coefficient of Thermal Expansion		ASTM E-381
Alpha 1 (below Tg)	30 ppm/°C	
Alpha 2 (above Tg)	96 ppm/°C	
Weight Loss at 300°C by TGA	0.04%	Mil STD 883C Method 5011
Suggested Temperature Range of Use: -40°C to +180°C		
RGA Analysis		Mil-Std 883C method 5011

Gas	After 168 hours at 125°C		After 1000 hours at 150°C	
	Sample	Control	Sample	Control
Nitrogen, %	99.9	99.9	99.9	99.9
Oxygen, %	ND*	ND	ND	ND
Argon, ppm	152	206	199	149
CO ₂ , ppm	<115	123	613	419
Water, ppm	<100	<172	401	<163
Hydrogen, ppm	ND	ND	ND	ND
Helium, ppm	ND	ND	ND	ND
Fluorocarbons, ppm	ND	ND	ND	ND
Ammonia, ppm	ND	ND	ND	ND

Note: ND = Non detected

Extractable Ionic Contaminants in ppm

Mil-Std 883C method 5011

Extraction ratio 100 grams of deionized water to 1g of sample. Sample prepared by curing on Teflon sheet then pulverizing to -40/+60 mesh powder.

Ion	24 hr. at 100°C	48 hrs. Pressure
<u>Cooker(121°C&2atm)</u>		
Sodium	5	10
Potassium	3	3
Ammonium	1	3
Iron	3	3
Chloride	7	10
Bromide	ND	ND
NASA Outgassing:		ASTM E 595
Total Mass Loss (TML)	< 0.21%	
Collectible Volatile Condensable Material (CVCM)	< 0.01%	

NOTE : Typical Properties determined using EpoPro® 7200-85 cured for 1 hour at 165°C. Values are based on laboratory or typical production results and are not for specification purposes.

SUGGESTED PROCESSING GUIDELINES:

EpoPro® 7200-85 is supplied in frozen syringes that are shipped on dry ice. Avoid handling dry ice and frozen syringes with bare hands as serious skin damage could occur. When ready to use, remove a syringe from the freezer and allow to thaw to room temperature. Depending on syringe size and the ambient temperature this may take 15 – 60 minutes. Larger diameter syringes will typically take longer to fully thaw than smaller syringes. Do not use heat to speed thawing as this could negatively affect the material. If more rapid thawing is desired a conductive thawing plate can be used to speed the process without risking any negative effects. When thawed the syringe is ready to use and will remain suitable for use at room temperature for 24 – 48 hours at approximate 25°C.

EpoPro® 7200-85 can be applied using a spatula, stiff brush, roller, squeegee, or knife. It can also be dispensed directly from the syringe through a dispensing needle. Apply the adhesive to clean, dry surfaces. The adhesive may be applied to one or all surfaces to be bonded. In most applications only even contact pressure is required to create a good bond. If bond-line thickness control is important to your application this product can be supplied with glass spacer beads in a range of sizes from 1.5 mil to 25 mil in thickness. If this option is desirable, please contact us for a list of the spacer bead sizes available.

STORAGE GUIDELINES:

Store this material at -40°C to maintain its shelf-life. At -40°C/-40°F or colder, the EpoPro® 7200-85 will have a minimum shelf-life of 12 months from date of shipment.

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. See SDS for more information.

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 supersedes 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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