

## EpoPro 7208

Electrically Insulating, Thermally Conductive Epoxy Adhesive

### Typical Properties

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

#### Properties:

Appearance	Visual	Off-white
Specific Gravity	STM-D-1475	2.5 g/cm <sup>3</sup>
Viscosity	ASTM-D-1824	50,000 cP
Spindle #/RPM (Model RVT)		14/10
Gel time at 150°C, 10 gm	ASTM D-2471	5 minutes
Work life @ 25°C, 10 gm 50% RH,	FTM-203	1-2 days
Flash Point, open cup	ASTM-D-92	>200°C

#### Recommended Cure Schedules:

1 hour @ 165°C or 2 hours @ 150°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

Lap shear (Aluminum to aluminum)	ASTM-D-1002	> 2000 psi
Die shear, gold to silicon area 0.0225 in <sup>2</sup>	Mil STD-883-B	1800 psi
area 0.0050 in <sup>2</sup>		3550 psi
Glass Transition Temp	Perkin Elmer Appl.Cast #20	158°C
Coefficient of Thermal Expansion (CTE) - Alpha 1	ASTM-E-381	30 ppm/°C
Alpha 2		96 ppm/°C
Thermal Conductivity	ASTM D-2214	1.8 W/mK
TGA, Weight loss at 300°C	Mil STD-883-C Method 5011	0.04%
Volume resistivity @ 25°C	ASTM-D-257	3.9 x 10 <sup>14</sup> Ω-cm
@ 125°C		6.6 x 10 <sup>12</sup> Ω-cm
Dielectric Strength	ASTM-D-149	350 volts/mil
		14,000 V/mm
Arc resistance	ASTM D-495	190 sec.
Dielectric Constant @100Hz / 1KHz / 1MHz	ASTM-D-150	5.8 / 5.7 / 5.4
Dissipation Factor @100Hz / 1KHz / 1MHz	ASTM-D-150	0.003 / 0.01 / 0.012

#### Benefits:

- High Purity
- Low CTE
- Thermally conductive
- 100% Solids (no volatiles)

#### Out-gassing & Ionic Contaminant Data:

Outgassing @ 10 <sup>-6</sup> Torr (ASTM E-595)		
Total Mass loss	ASTM E-595	0.21%
Collectable condensable Volatile materials	ASTM E-595	0.00%

RGA analysis MIL STD 883C Method 5011	After 168 hours @ 125°C		After 1000 hours @ 150°C	
	Sample	Control	Sample	Control
Gas				
Nitrogen, %	99.9	99.9	99.9	99.9
Oxygen, %	ND	ND	ND	ND
Argon, ppm	152	206	199	149
CO <sub>2</sub> , ppm	<115	123	613	419
Water, ppm	<100	<172	401	<163
Hydrogen, ppm	186	<167	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 deionized 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	3	3
Chloride	7	10
Bromide	ND	ND

**EPOPRO 7208** is a premixed, frozen, one-component, mineral-filled epoxy adhesive designed for die attach and other applications where thermal conductivity and electrical insulation characteristics are required. This 100% solids system contains no solvents or diluents, which greatly reduces the possibility of out-gassing and void formation. EpoPro 7208 has also been formulated with ionically pure resins and fillers to provide the utmost in reliability for microelectronic applications.

#### Suggested Applications:

- Microelectronics bonding requiring high reliability
- Meets requirements of MIL STD 883C Method 5011

#### Storage Guidelines:

EpoPro 7208 is considered non-hazardous for shipping purposes. However, this product is packaged in special styrofoam cartons containing enough dry ice for a limited storage life of approximately 72 to 96 hours during shipment. Upon receipt, frozen syringes must be transferred to freezer storage at or below -40°C to ensure the product's shelf life is maintained. Special care should be taken when handling dry ice in order to avoid severe skin damage or potential of asphyxiation in unventilated areas. Under these conditions the products will have a minimum shelf-life at -40°C of 12

months from the date of shipment.

### **Processing Guidelines:**

EpoPro 7208 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. Temperature is below -70°C and serious skin burns and permanent damage could occur. Always store frozen syringes below -40°C for best shelf life.

When ready to use, remove syringe(s) from freezer storage and allow to thaw at room temperature (20 -30°C maximum). Do not attempt to quick thaw by heating, as this could reduce work life. Typical thawing time for a 3cc syringe is approximately 15 - 30 minutes at 25°C.

EpoPro 7208 is also as a two part system that does not require refrigeration in its unmixed form. This system is known as EpoPro 7208A/B, and exhibits all the same cured properties as EpoPro 7200. Please contact SP&S for more information or pricing and availability.

### **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 7208**

**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**

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