CREATIVEMATERIALS

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127-03

SCREEN-PRINTABLE B-STAGEABLE THERMALLY CONDUCTIVE LOW CTE EPOXY ADHESIVE

DESCRIPTION

127-03 is a screen-printable, B-Stageable, thermally conductive, one part epoxy adhesive, suitable for application by screen-printing and syringe dispensing. 127-03 is designed to exhibit minimal flow during bonding. This product has excellent adhesion to copper, aluminum and ceramic and a variety of other substrates. Additional applications include, but are not limited to, die attachment, printed circuit board fabrication, advanced material composites, LED attachment, and heat sink bonding. The chemistry in 127-03 features excellent thermal stability and flexibility in the B-Staged form and is optimal for absorbing stress when bonding mismatched CTE substrates. 127-03 is a thermally conductive, electrically insulating version of 125-22.

UNIQUE FEATURES

- Minimal flow during cure
- B-Stageable
- Excellent Chemical Resistance
- Low CTE
- Long Screen Life
- Excellent High Temperature Performance

TYPICAL UNCURED PROPERTIES

Property	Value	Units
Viscosity – Brookfield HAT Viscometer, 10 rpm @ 25°C	20,000 – 30,000	cps
Specific Gravity (water = 1)	1.71	g/cc
Theoretical Coverage @ 0.001" Thickness[1]	~ 35	in^2
Screen Life	> 8	hrs
Filler	Aluminum Nitride	-

1 Dependent on screen mesh and material

TYPICAL CURED PROPERTIES

Property	Value	Units
Volume Resistivity	1×10^{16}	Ω - cm
Dielectric Constant (1 KHz)	4.1	-
Dielectric Constant (1 MHz)	3.9	-
Dissipation Factor (1 KHz)	0.027	-
Dissipation Factor (1 MHz)	0.038	-
Thermal Conductivity	4.3	W/mK
Percent Filler, cured	> 65	-
Thermal Stability	Good to 325	° C
Useful Temperature Range	-55 to 230	° C
Glass transition Temperature – Tg	150	° C
Coefficient of Thermal Expansion - Below Tg	50×10^{-6}	in/in/°C
- Above Tg	60×10^{-6}	in/in/°C
Tensile Shear Strength, min	2000	Psi
Peel Strength (Copper to copper @ 90°)	9	Pli

CURING GUIDELINES

Temperature (ºC)	Time (min.)
150	60
175	30
200	15

These temperatures and times are presented as a guide only. The end-user is encouraged to experiment to determine optimum curing schedule.

HANDLING AND STORAGE

Material is ready to use as received. Store frozen to maintain consistent flow properties. Allow material to warm up to room temperature before opening container. It is important to resuspend any settled filler before using. Be careful not entrap air while mixing. 127-03 can be thinned with small amounts of CMI 113-12 (fast drying), or 102-03 (slow drying) thinners.

SHELF LIFE

Storage Temperature	Containers	B-Staged Film
25°C	2 months	1 month
-10°C	6 months	3 months

B-STAGE PROCEDURE

Apply adhesive to substrate or release liner. Next apply heat to advance the curing to the non-tacky stage when cooled to room temperature. A temperature of 100°C to 120°C for 5 to 15 minutes is required, B-Stage time is mass related. User is encouraged to experiment for optimum drying time at a given temperature.

BONDING PROCEDURE

To use, apply b-staged adhesive to one part, carefully align parts to be bonded, apply uniform pressure to maintain location. Cure for 15 minutes at 200°C, or 30 minutes at 175°C, or 1 hour at 150°C. For better adhesion of the b-staged film to the first part, it is suggested to warm the part to 40°C. Cure times given are mass related, timing should start after adhesive and substrates reach curing temperature.

HEALTH AND SAFETY

Use with adequate ventilation. Keep away from sparks and open flames. Avoid prolonged contact with skin and breathing of vapors. Wash with soap and water to remove from skin.