TCR-1002
Thermal Conductive Dual-Curable Epoxy Adhesive

PRODUCT DESCRIPTION:
- Base chemistry: epoxy only, cationic polymerization
- One component Boron Nitride filled non-electrically conductive adhesive ready for use, solvent-free, UV and heat curing, thixotropic
- Average particle size 7 µm and max size 30 µm

PRODUCT USE:
- Bonding integrated circuits and components in semiconductor packaging,
- Heat transfer and heat dissipate
- Bonding of opaque substrates

FEATURES:
- Thermal conductive and electrical insulating, epoxy only, high adhesion, high Tg, long shelf and working life, low outgas, excellent reliability performances, robust for solder reflow process

INSTRUCTIONS FOR USE:
1) Clean the substrates to remove contamination, dust, moisture, salt and/or oil
2) Dispense adhesive on substrates
3) Bond substrates (with active alignment – optional)
4) UV cure to fix alignment
5) Thermal cure: heat is mandatory for completely cured adhesive

GENERAL USAGE INFORMATION:
Shipment: no restriction on shipment and no cold shipment is needed
Storage: After the adhesive is received in black syringes or amber HDPE bottles, room temperature storage (15-30°C) in the original container is required.

SAFETY AND HANDLING
The uncured adhesive can be cleaned from apparatus with isopropyl alcohol (IPA), methyl ethyl ketone (MEK), or commercial alcohol based cleaning solution. Avoid direct skin and eye contact. Use only in well ventilated areas. Use protective clothing, gloves and safety goggles. Read Material Safety Data Sheet before handling.

TYPICAL PROPERTIES

Uncured resin
- Viscosity at 25 °C, mPa.s or cps (shear rate: 10/s) 26,000 to 30,000
- Thixotropic index (shear rate: 1/s over 10/s) 4
- Appearance of uncured adhesive: white paste
- Shelf life (20 – 25 °C) 6 months
- Work life (Pot life) (20 – 25 °C) 3 months
- Density (g/mL) 1.3

Cured film
- Shrinkage (linear, %) < 0.3
- Hardness – Shore D 85
- Outgas, weight % (per MIL-STD 883/5011) 0.21
- Outgas, weight % (per Telcordia GR-1221) 0.03
- Glass transition temperature (DMA, °C) 160
- Volume Resistivity, ohm-cm >10¹³

Thermal Properties
- Thermal Conductivity: 2.7 W/m °K (75 µm film)
- 1.2 W/m°K (500 µm film)
- Coefficient of thermal expansion (DMA)
  - below Tg (x10⁶), °C⁻¹ 21
  - above Tg (x10⁶), °C⁻¹ 60
- Physical properties tested at 25°C, 50% RH (ASTM D638)
  - Tensile strength, MPa 149
  - Elongation (%) 3
  - Young's Modulus, MPa 15,700
  - Operating temperature, °C -60 to 200

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