



CM-500

Epoxy Adhesive for Bonding Glass lid in CMOS

PRODUCT DESCRIPTION:

- Chemistry: epoxy only, cationic polymerization
- One component adhesive ready for use, solvent-free, UV+heat curing

PRODUCT USE:

- CMOS: bonding of glass lid to ceramic, FR4, LCP or Ultem surfaces
- Semiconductor packaging

FEATURES:

- Epoxy only, high adhesion, high Tg, long shelf and working life, low outgas, high reliability, and, 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 ceramic, FR4 or LCP or ceramic or LCP surface.
- 3) Attach glass lid or glass lens, or second transparent substrate
- 4) UV cure to form initial bond
- 5) Thermal cure to finish bonding

GENERAL USAGE INFORMATION:

Shipment: adhesive is shipped in cold pack

Storage: After receipt, cold storage at 3 to 5 °C, or -20 °C in the original container is required

Before use: The cold adhesive needs to reach RT (23-25°C) before use. The container needs to sit at RT, adding heat is not allowed. Room temperature equilibration time is dependent on container size, but a 3-30 gram syringe equilibration time is approximately 30-60 minutes. Condensed water on the container must be removed prior to use.

Shelf life (-20°C)/(3 to 5°C): 6 months/3months

Pot life or working life (20 - 25°C): 7 days

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.

CURING CONDITIONS:

Cure by UV+Heat: 4,000 mJ/cm² + 100 °C for 60 minutes

First step: UV cure

Lamp type:

*Metal halide/Mercury UV: UV-A (320-400 nm), intensity: 100-1,000 mW/cm²

* or LED-365 nm, UV light intensity: 100 to 1,000 mW/cm²

UV set up:

100 mW/cm² x 40 sec

or 200 mW/cm² x 20 sec

or 500 mW/cm² x 8 sec

or 1,000 mW/cm² x 4 sec

Second step: heat cure

120 °C for 30 minutes

or 100 °C for 60 minutes

TYPICAL PROPERTIES

Uncured resin

Viscosity at 25 °C, mPa.s or cps (shear rate: 10/s) 65,000 to 70,000

Thixotropic index (shear rate: 1/s over 10/s) 7

Density (g/mL) 1.2

Cured film

Outgas, weight % (per Telcordia GR-1221) 0.01

Outgas, weight % (per MIL-STD 883/5011) 0.02

Water permeability (g/m 24 hrs, 50 °C/95% RH, 75 µm film) 3 x 10⁻⁴

Shrinkage (linear, %) < 0.3

Hardness – Shore D 80

Glass transition temperature (DMA, °C) 145

Coefficient of thermal expansion (DMA)

below Tg (x10⁻⁶), °C⁻¹ 25

above Tg (x10⁻⁶), °C⁻¹ 64

Physical properties tested at 25°C, 50% RH (ASTM D638)

Tensile strength, MPa 500

Elongation (%) 5

Young's Modulus, MPa 3,000

Operating temperature, °C -40 to 180