

EpoxyBond 110

Two-Part Epoxy Adhesive

WARNING!



Refer to the SDS document for additional safety information.

Description

EpoxyBond 110 is a hard, fast-curing, two-component, epoxy adhesive. The two-part formula is mixed 10:1 by volume and cures bubble-free in five minutes at 150 °C (302 °F). It is a reactive system only when heat is applied. Once cured, it is resistant to most chemical etchants and will not outgas under vacuum. A unique feature of EpoxyBond 110 is the red color that appears when cured. For the best results, cure this epoxy by color instead of time.

Mixing Ratio, by VOLUME

10:1 (Part A: Part B)

Curing Schedule

(thin or thick films only, glue line temperature)

5 minutes at 150 °C (302 °F)

10 minutes at 120 °C (248 °F)

30 minutes at 100 °C (212 °F)

Physical Properties (as-mixed)

Pot Life = 8 hours, at 24 °C (75 °F)

Viscosity = 350-550 cP (@ 100 RPM/23 °C)

Physical Properties (as-cured)

Lap Shear Strength = 2440 psi (@ 23 °C)

Die Shear Strength ≥ 10 kg/3400 psi (@ 23 °C)

Tensile Strength = 10,000 psi (@ 23 °C)

Flexural Strength = 18,000 psi (@ 23 °C)

Storage Modulus = 322,000 psi (@ 23 °C)

Percent Elongation = 4.2 (@ 23 °C)

0.05% Water Absorption after 24 hr. at 25 °C (77 °F)

0.1% Water Absorption after 2 hr. at 100 °C (212 °F)

Electrical Properties (as-cured)

Dielectric Strength = 450 V/mil

Dielectric Constant = 3.74 (@ 1 kHz)

Volume Resistivity ≥ 2 x 10¹³ Ohm-cm (@ 23 °C)

Power Factor = 0.003 (@ 1 kHz)

Dissipation Factor = 0.011 (@ 1 kHz)

Thermal Properties

Flash Point, Part A: 204 °C (400 °F)

Flash Point, Part B: 93 °C (200 °F)

Glass Transition Temperature (T_g) ≥ 90 °C (194 °F)

Heat Deflection Temperature = 150 °C (302 °F)

Degradation Temperature (TGA) = 375 °C (707 °F)

Coefficient of Thermal Expansion (CTE):

CTE Below T_g = 39 x 10⁻⁶ in/in/°C

CTE Above T_g = 175 x 10⁻⁶ in/in/°C

Applications

EpoxyBond 110 is commonly used to bond glass cover slips to small or delicate samples (such as IC devices), adhere multiple samples for TEM stacking, pre-coat samples prior to encapsulation, and fill PCB microvias, among other mounting applications. EpoxyBond 110 can be applied with a brush or dropper. It has excellent adhesion to many different types of materials, including metals, ceramics, glass, and most plastics.

Instructions (IC Cover Slip Technique):

This technique is recommended for when the IC does not have a passivation layer, when rounding occurs during cross-sectioning, or for bond pad protection.

- 1) Using the droppers provided on the bottles, mix 10 drops of Part A (resin) with 1 drop of Part B (hardener) in the mixing cup. Mix thoroughly with a stir stick until the liquids are homogenous in color and no striations appear.
- 2) Using the stir stick, drip the mixed EpoxyBond 110 onto a Glass Cover Slip (#72-20000) so it covers an area slightly larger than the sample/die.
- 3) Place the die into the epoxy, circuit side down, so the edge of the die being cross-sectioned is near the edge of the glass cover slip.
- 4) Place an alligator clip onto the sample to squeeze the excess epoxy, creating a thin layer of adhesive between the sample and the cover slip (this will be thin enough to view the sample under a microscope through the epoxy).
- 5) Place the clamped sample into an oven or onto a hot plate at the appropriate temperature.
- 6) After the epoxy has cured (visually a deep, brick red color), let it cool (do not quench cool). Grind the sharp corners and excess glass from the edges of the die. The edges may also be scored with a scribe and then broken. This will eliminate scoring of the abrasive films used for polishing.

Removal: Cured EpoxyBond 110 can be removed from a sample with Epoxy Dissolver (#145-50210) heated to 150 °C (302 °F). Consult the Epoxy Dissolver instructions for details.

Storage Note: Keep the containers closed when not in use, and do not store above 48 °C (120 °F). The shelf life is one (1) year when stored at room temperature. Refrigeration is not required.