

EpoxyBond 110 2-Part Epoxy Adhesive

Date: 10/2020, v1.8

Refer to the SDS document for additional safety information.



EpoxyBond 110 is a hard, fast-curing, two-component, epoxy adhesive that turns red when cured. The two-part formula is mixed 10:1 by volume, cures bubble-free in five minutes at 150 °C (302 °F) and only reacts when heat is applied. Once cured, it is resistant to most chemical etchants and will not outgas under vacuum.

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 with the bottles, mix 10 drops of Part A (resin) with 1 drop of Part B (hardener) in a 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 that the epoxy covers an area slightly larger than the sample.
3. Place the sample into the epoxy, circuit side down, so that the edge of the die being cross-sectioned is near the edge of the glass cover slip.
4. Use an alligator clip to clamp the sample and glass slide together. The pressure will create a thin bond line that allows the sample to be viewed under a microscope through the epoxy. Place the clamped sample into an oven or onto a hot plate at the appropriate temperature.
5. For best results, determine if the epoxy is cured by its color, not by time. Cured EpoxyBond 110 will be a deep, brick red. Once the epoxy has cured, let it cool

Note: Do not quench cool EpoxyBond 110.

6. Grind 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.

Storage

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.

Removal

Cured EpoxyBond 110 can be removed from a sample using Epoxy Dissolver (#145-50210). Please refer to the Epoxy Dissolver instructions for details.

| Technical Information | | |
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| Mixing Ratio (by volume) | 10:1 (Part A:Part B) | |
| Curing Schedule (minutes) | 5 at 150 °C (302 °F) | |
| | 10 at 120 °C (248 °F) | |
| | 30 at 100 °C (212 °F) | |
| Physical Properties – As-Mixed | | |
| Pot Life | 8 hours at 24 °C (75 °F) | |
| Viscosity | 350-5850 cP (at 100RPM/23 °C) | |
| Physical Properties – As-Cured | | |
| Lap Shear Strength | 2440 psi at 23 °C (74 °F) | |
| Die Shear Strength | 10 kg/3400 psi at 23 °C (74 °F) | |
| Tensile Strength | 10,000 psi at 23 °C (74 °F) | |
| Flexural Strength | 18,000 psi at 23 °C (74 °F) | |
| Storage Modulus | 322,000 psi at 23 °C (74 °F) | |
| Percent Elongation | 1.2 at 23 °C (74 °F) | |
| Water Absorption | 0.05% after 24 hours at 25 °C (77 °F) | |
| | 0.1% after 2 hours at 100 °C (212 °F) | |
| Electrical Properties – As-Cured | | |
| Dielectric Strength | 450 V/mil | |
| Dielectric Constant | 3.74 at 1 kHz | |
| Volume Resistivity | ≥ 2 x 10 ¹³ Ohm-cm at 23 °C (74 °F) | |
| Power Factor | 0.003 at 1 kHz | |
| Dissipation Factor | 0.011 at 1 kHz | |
| Thermal Properties | | |
| Flash Point | Part A | 204 °C (400 °F) |
| | 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) | Below T _g | 39 x 10 ⁻⁶ in/in/°C |
| | Above T _g | 175 x 10 ⁻⁶ in/in/°C |