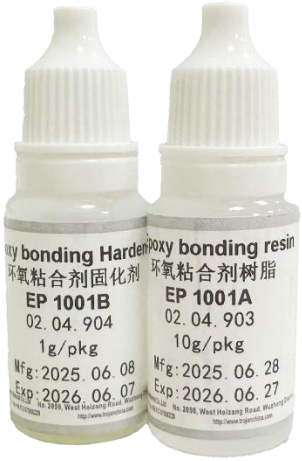
EP 1001 Epoxy Resin



Caution!

GHS05 GHS08 GHS07 GHS09

For further safety information, please refer to the Safety Data Sheet (SDS).

Application:

EP 1001 is typically used for bonding cover glass to small or delicate specimens (e.g., IC devices), adhering multiple specimens for TEM stacking, pre-coating specimens prior to encapsulation, and filling PCB micro-holes as well as other mounting applications.

EP 1001 can be applied using a brush or pipette. It provides excellent adhesion to a wide range of materials, including metals, ceramics, glass, and most plastics.

Instructions:

- ✧ Using the dropper provided with the bottle, mix 10 drops of Part A (resin) with 1 drop of Part B (hardener) in a mixing cup. Stir thoroughly with a stirring rod until the liquid is uniform in color with no visible streaks.
- ✧ Using the stirring rod, dispense the mixed EP 1001 onto a cover glass, ensuring the coated area is slightly larger than the specimen/mold.
- ✧ Place the chip into the epoxy with the circuit side facing down, aligning the cross-section edge of the chip close to the edge of the cover glass.
- ✧ Apply a spring clip over the specimen to squeeze out excess epoxy, leaving a very thin adhesive layer between the specimen and the cover glass (thin enough to allow microscopic observation

through the epoxy).

- ✧ Place the clamped specimen in an oven or on a hot plate at an appropriate temperature to cure.
- ✧ Once the epoxy has cured (visually brick-red in color), allow it to cool naturally (do not quench with cold water). After cooling, grind off sharp mold edges and excess glass, or score with a scribing tool and break off. This will help eliminate scratches on the polishing film during subsequent preparation.

Storage Instructions: Keep the container tightly closed when not in use and store in a cool, dry place below 25 °C.

When stored at room temperature, the shelf life is one (1) year.

Refrigeration is not required.

Description

EP 1001 is a rigid, fast-curing, two-component epoxy resin adhesive. The two components are mixed in a **10:1 volume ratio**, and will cure bubble-free in approximately **5 minutes** at **150 °C (302 °F)**.

This system only reacts upon heating. Once cured, EP 1001 is resistant to most chemical etchants and does not outgas under vacuum conditions.

A unique feature of EP 1001 is the red coloration that appears during curing. For optimal results, the epoxy should be cured based on the observed color change rather than curing time.

Mixing Ratio (by volume)

Part A : Part B = 10:1

Cure Schedule (for thin or thick films, based on adhesive layer temperature)

- 150 °C: ~8 minutes
- 120 °C: ~15 minutes

To accelerate curing, the amount of Part B may be increased (e.g., 8:1 or 5:1)

Physical Properties (mixed state)

- Pot life: ~8 hours at 25 °C
- Viscosity: 350–550 cP (@ 100 RPM, 25 °C)

Physical Properties (Cured State)

- ✧ Lap shear strength: 2440 psi (@ 25 °C)
- ✧ Mold shear strength: ≥ 10 kg / 3400 psi (@ 25 °C)
- ✧ Tensile strength: 10,000 psi (@ 25 °C)
- ✧ Flexural strength: 18,000 psi (@ 25 °C)
- ✧ Modulus of elasticity: 322,000 psi (@ 25 °C)
- ✧ Elongation at break: 4.2 % (@ 25 °C)
- ✧ Water absorption: 0.05 % after 24 h at 25 °C; 0.1 % after 2 h at 100 °C

Electrical Properties (Cured State)

- ✧ Dielectric strength: 450 V/mil
- ✧ Dielectric constant: 3.74 (@ 1 kHz)
- ✧ Volume resistivity: ≥ 2×10^{13} Ω·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), Part B: 93 °C (200 °F)
- ✧ Glass transition temperature (Tg): ≥ 90 °C (194 °F)
- ✧ Heat deflection temperature: 150 °C (302 °F)
- ✧ Decomposition temperature (TGA): 375 °C (707 °F)
- ✧ Coefficient of thermal expansion (CTE):
  - Below Tg: 39×10^{-6} in/in/°C
  - Above Tg: 175×10^{-6} in/in/°C