IQ-BOND 2472-LV

Economic, one component, low CTE underfill, with long potlife

Lower viscosity version of IQ-BOND 2472

Product Description:

IQ-BOND 2472-LV is a fast-cure, solvent-free, one-component, pre-mixed, thermoset epoxy based adhesive, developed for underfill applications, especially for CSP and/or BGA applications. It is the lower viscosity version of IQ-BOND 2472.

The rheology of IQ-BOND 2472-LV, in combination with its low thermal expansion, make it an ideal solution for high reliability applications in harsh environments.

IQ-BOND 2472-LV was especially designed to combine high filler loading to minimize the thermal expansion, combined with low viscosity and low thyxotropy. These properties make IQ-BOND 2472-LV an ideal underfill solution for applications where the thermal expansion (CTE) of the underfill needs to be minimized. To facilitate and accelerate the underfilling-flow process, it can be considered to heat the substrate to about 80°C during the dispensing process.

The chemistry of IQ-BOND 2472-LV has been selected to resist temperatures over 150°C for continuous operation.

The special selected filler type allows a high filler loading, assuring low CTE (coefficient of thermal expansion), which improves thermal cycling performance for applications in harsh environments.

IQ-BOND 2472-LV can also be used for bonding applications where thin bondlines are required, and will provide good adhesion to materials such as glass, ferrite, aluminum, FR4, ceramic and steel.

Although IQ-BOND 2472-LV is a pre-mixed, one-component epoxy system, the chemistry is stable at moderate storage temperatures (fridge < 5°C). The potlife of IQ-BOND 2472-LV is more than 5 days at room temperature. To improve the storage stability of IQ-BOND 2472-LV, and specifically to avoid possible risk of filler sedimentation during storage, it can be considered to store IQ-BOND 2472-LV at temperatures < -20°C.

When fully cured, IQ-BOND 2472-LV is resistant to moisture, cleaning agents and dilute acids and bases. IQ-BOND 2472-LV is a solvent-free, 100% solids material.

Roartis

ROARTIS bvba – Heikantstraat 25 – B-3670 Meeuwen-Gruitrode – Belgium BTW/VAT BE 0809.153.115
Tel. +32(0)11 729231 - fax +32(0)11 754255 – info@roartis.com

For cleaning un-cured IQ-BOND 2472-LV from substrates, dispensing equipment, or other tools, the use of IQ-CLEANER 9500 is recommended.

Product Properties:

- Appearance: Milky liquid (before cure) → Beige solid (after cure)
- Chemistry: Epoxy
- Odor: Faint
- Mix-Ratio: Not Applicable – pre-mixed single component adhesive
- Hegmann Fineness: < 40 µm
- Viscosity at 25°C: ~ 1.700 mPa.s (Brookfield RVII, CP51 at 10 rpm)
- Viscosity at 70°C: ~ 250 mPa.s (Brookfield RVII, CP51 at 10 rpm)

- Filler content (wgt%): ~ 48%
- T_g: ~ 105°C
- CTE_1: ~ 35 - 40 ppm
- Shore hardness: ~ 90 shore D
- Service temperature: -55°C to 150°C
- Die shear strength: > 200 kg/cm²
- Density: ~ 1,47 gr/cm³
- Cure Speed:
  - 3 minutes @ 150°C
  - 20 minutes @ 120°C
  - 60 minutes @ 100°C

For good mechanical strength, cure according above conditions is recommended. The final bond strength will depend on the residence time at the given cure temperature. Typically, a higher curing temperature, as well as a longer cure time will result in higher adhesion strength, and improved polymer crosslinking. In any case, it's recommended to consider a post-cure of about 1 hour at temperature similar or above the maximum operation temperature to have optimum properties, and elevated Tg.

Processing parameters:

Prior to use, it's advised to let the adhesive IQ-BOND 2472-LV equilibrate to room temperature. Depending the size of syringes, 15 – 30 minutes is typically recommended.

Reworkability:

IQ-BOND 2472-LV is an underfill adhesive that can be reworked.

a) Removal of the CSP, BGA or other component from the PCB

Any instrument capable of melting solder is suitable for removing the CSP, BGA or other component in this step. When the instrument has reached a sufficiently high temperature (270 – 300 °C), tough the fillet of the underfill around the component, using for example a scraper, to see if the underfill is softened and can be removed. If the fillet is soft enough, remove the fillet.

When the bondline reaches temperatures above the melting point of the solder (270 – 300°C), indicated by molten solder blowing out between the CSP, BGA or other component and the printed circuit board, the component can be removed from the PCB by a simple scraper or spatula.

b) Removing the underfill residue from the PCB

After removing the component, remove all the underfill with a scraper and solder residues with a solder iron. Scraping of residue should be carefully executed to avoid that the PCB pads and resist would be damaged.

c) Clean up

Wipe the surface using a cotton swab, soaked with a suitable cleaning solvent, such as aceton, IPA, butyl-acetate or other. Repeat this step with a celan dry cotton swab, until the substate is completely clean.

Storage stability:

Storage stability is 4 months from date of production, when stored in a fridge at temperatures < 5°C. To avoid filler sedimentation, storage at temperatures < -20°C can be considered. Under those conditions, storage life is 12 months from date of production.

At room temperature, IQ-BOND 2472-LV has a very long worklife / potlife* of ~ 5 days.

*: Potlife / worklife defined as doubling of initial viscosity