

IQ-BOND 1402-WHLV

White, reflective underfill, with very low viscosity, long potlife, and adjusted CTE for high reliability applications

Product Description:

IQ-BOND 1402-WHLV is a reflective white, fast-cure, solvent-free, one-component, pre-mixed, thermoset epoxy based adhesive, developed for underfill applications, especially for LED applications, as well as CSP and BGA components.

IQ-BOND 1402-WHLV is the white, reflective version, of our standard, widely used black CSP/BGA underfill material IQ-BOND 2472-LV.

IQ-BOND 1402-WHLV is a very low viscosity material, to assure it can flow in very fine gaps and/or cavities. Eventhough the viscosity of IQ-BOND 1402-WHLV is already low at room temperature, it can be considered to heat up the substrate to about 50 - 60 °C during the dispensing process, to further improve and accelerate the underfilling-flow process

The chemistry of IQ-BOND 1402-WHLV has been selected to resist temperatures over 150°C for continuous operation. In case of long exposure to 150°C, the white color may change slightly to yellowish, in the presence of air. In inert atmosphere the white reflective color will be maintained, even if exposed for a long time at 150°C.

IQ-BOND 1402-WHLV 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 1402-WHLV is a pre-mixed, one-component epoxy system, the chemistry is stable at moderate storage temperatures (fridge < 5°C). The potlife of IQ-BOND 1402-WHLV is more than 5 days at room temperature. To improve the storage stability of IQ-BOND 1402-WHLV, and specifically to avoid possible risk of filler sedimentation during storage, it can be considered to store IQ-BOND 1402-WHLV at temperatures < -20°C.

When fully cured, IQ-BOND 1402-WHLV is resistant to moisture, cleaning agents and dilute acids and bases. IQ-BOND 1402-WHLV is a solvent-free, 100% solids material.

For cleaning un-cured IQ-BOND 1402-WHLV from stencils, screens, squeegee, or other equipment, the use of IQ-CLEANER 9500 is recommended.

Product Properties:



- Appearance: White
- Chemistry: Epoxy
- Odor: Faint
- Mix-Ratio: Not Applicable – pre-mixed single component adhesive
- Hegmann Fineness: < 45 µm
- Viscosity at 25°C: ~ 2.500 mPa.s (Brookfield RVII, CP51 at 10 rpm)
- Viscosity at 50°C: ~ 540 mPa.s (Brookfield RVII, CP51 at 10 rpm)
- Tg: > 125°C
- CTE1: ~ 35-40 ppm
- Shore hardness: ~ 90 shore D
- Service temperature: -40°C to 150°C
- Die shear strength: > 200 kg/cm²
- Density: ~ 1,4 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 1402-WHLV equilibrate to room temperature. Depending the size of syringes, 15 – 30 minutes is typically recommended.

Reworkability:

IQ-BOND 1402-WHLV 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), touch 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.

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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 acetone, IPA, butyl-acetate or other. Repeat this step with a clean dry cotton swab, until the substrate 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 1402-WHLV has a very long worklife / potlife* of ~ 5 days.

*: Potlife / worklife defined as doubling of initial viscosity

Attention:

The technical information contained herein should not be used in the preparation of specifications, as it's intended for reference only. Please contact your local sales representative for support. The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, Roartis specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Roartis products and services. Roartis specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits. The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license. We recommend that each prospective user tests his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more European or foreign patents or patent applications. The information contained in this data sheet corresponds to the present state of our knowledge ; it is intended for your guidance but we are not bound by it since we are not in a position to exercise control over the manner in which our products are used. Moreover, the attention of the user is drawn to the risks that could possibly occur should a product be used for an application other than that for which it is intended.