

Zymet UA-2605-B Reworkable Edgebond Adhesive Enhances Board Level Reliability of Large WLCSP

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EAST HANOVER, NJ – Zymet’s reworkable edgebond adhesive, UA-2605-B, has been shown to enhance the board level reliability of a large WLCSP. The work was performed in a collaborative effort between Portland State University, Cisco, and Zymet, and published in the Proceedings of the SMTA International 2016 conference, held in Rosemont, IL, “Reworkable Edgebond Applied Wafer-Level Chip-Scale Package (WLCSP) Thermal Cycling Performance Enhancement at Elevated Temperature”. Additional work was published in the 66th Electronic Components and Technology Conference, in Las Vegas, “Effect of Local Grain Distribution and Enhancement on Edgebond Applied Wafer-Level Chip-Scale Package (WLCSP) Thermal Cycle Performance”. In the study, 8x8 mm WLCSP’s, assembled on organic substrate, were subjected to 0°C to 100°C thermal cycling. Absent adhesive, first failure occurs at 355 cycles and characteristic life is 638 cycles. With the reworkable edgebond adhesive, no failures were encountered at 2000 cycles, end of test.

WLCSP’s have a coefficient of thermal expansion of about that of silicon, 2.6 ppm/°C, and the CTE of the board is about 17 ppm/°C. The mismatch in CTE results in a considerable amount of stress when the two are assembled, as evidenced by the extensive strain induced grain recrystallization of solder that accompanied early failures. Use of the reworkable edgebond adhesive substantially reduced the damage accumulation, resulting in increased thermal cycle performance.

The benefits of using Zymet’s reworkable edgebond adhesive, over one of its reworkable underfills, are significant. No board preheat and dwell time are needed for capillary flow. The risks of underfill voids and flux-underfill incompatibilities are eliminated. And, when performing rework, there is no need to remove underfill residues from the entire footprint of the package, virtually eliminating the risk of pad damage.

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Zymet is a global supplier of adhesives and encapsulants, focused on the development and manufacture of enabling materials for the electronics industry. Requests for information regarding reworkable edgebond adhesive, or other advanced materials, may be submitted by email to info@zymet.com.

Portland State University’s Mechanical and Materials Engineering Department has been serving the community since 1979, providing high quality education and conducting research in the field of manufacturing, mechanical design, and material science. For more information, go to <http://www.pdx.edu/mme/>.



Figure 1. WLP bonded with a reworkable edgebond adhesive, courtesy of Zymet, Inc.