

ZESTRON South Asia releases whitepaper “Compatibility of pH-Neutral Cleaning Agent with Under-bump Materials”

ZESTRON, the global leading provider of high precision cleaning products, services, and training solutions in the electronics manufacturing and semiconductor industries, is pleased to release the whitepaper “**Compatibility of pH-Neutral Cleaning Agent with Under-bump Materials**”

Whitepaper Abstract:

Flip-chip technology is widely used in advanced packaging assembly due to its higher level integration, multiple functionalities, thinner package, better processing performance &, etc... Due to its many advantages, it is not limited only to advanced packaging, but can also be integrated into ‘the power package with flip-chip on lead frame (FCOL) by OEM. Flip-chips are connected to the substrate through bumps formed on the under bumps metallurgy (UBM).

The underfill or molding process is a standard process for flip-chip type of packaging. Common issues in this process include mold delamination or solder extrusion. Typically, to attach the flip-chip to the FR4 substrate or lead frame, flux is needed during the reflow soldering process. After the reflow soldering, it is crucial to remove any flux residues before proceeding with the underfill or molding process. This is done to prevent residues within the package causing electrochemical migration, leakage current, or dendrite growth and potentially affecting reliability.

A defluxing process is implemented after reflow soldering, and an aqueous-based pH-alkaline cleaning agent is traditionally used with spray-in-air cleaning equipment. Improper cleaning processes can result in product reliability issues, such as dendrites growth, voids in the package, mold delamination, or under bump material incompatibility with the cleaning agent leading to solder extrusion.

In this study, real conditions were stimulated by using production materials in collaboration with a customer to create realistic case scenarios for investigating the compatibility of under-bump materials (UBM) with pH-neutral cleaning agents. The study demonstrates the advantages of using pH-neutral cleaning agents in reducing solder extrusion failures when compared to traditional aqueous-based pH-alkaline cleaning agents.

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COMPATIBILITY

Mr. GT Yeoh, Mr. Caleb Teo

Compatibility of pH-Neutral Cleaning Agent with Under-bump Materials



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About ZESTRON:

Established in Ingolstadt, Germany, ZESTRON has extended its footprint across over 35 nations. With a global presence encompassing eight cutting-edge technical centers, and a proficient team of engineers, ZESTRON remains steadfastly dedicated to enabling its clients to surpass the most exacting cleaning benchmarks. Committed to excellence, ZESTRON provides comprehensive support and processes to electronics manufacturers, ensuring the utmost reliability and performance of electronic components. Our expertise centers on the intricate realm of power and signal electronics surfaces, with specialized focus areas including but not limited to, flux elimination, moisture resilience, insulation coordination, technical and ionic cleanliness, as well as sinterability.

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Contact:	ZESTRON Precision Cleaning Sdn Bhd 3102, Tingkat Perusahaan 6, Kawasan Perusahaan Prai, Prai, 13600 Pulau Pinang, Malaysia. Tel: +60 4 3996100 Fax: +60 4 3975101 Email: yeap.charmaine@zestronmalaysia.com or leekheng.ng@zestronmalaysia.com 6 October 2023