

Cleanliness is Reliability: Our Advanced PCBA Cleaning and Contamination Control



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Modern no-clean fluxes are designed to be benign if left on the board, but "benign" does not mean inert. Under humidity, temperature, and bias voltage, residues can still cause failures. For high-reliability applications like medical, aerospace, automotive, and industrial controls, cleaning is specified to ensure decades of trouble-free operation. Even for commercial products, cleaning improves cosmetic appearance and reduces the risk of field failures.

Our Cleaning Methods

We offer multiple cleaning approaches matched to your assembly and contamination type. Aqueous cleaning uses deionized water and saponifiers in inline or batch systems—environmentally friendly and effective for most flux types. Semi-aqueous cleaning combines solvents with water rinses—more aggressive for difficult residues. Manual cleaning with brushes and approved solvents—used for assemblies not suitable for machine cleaning. All processes are validated to achieve specified cleanliness levels without damaging components or board finishes.

Ionic Contamination Testing

Cleaning effectiveness is measured through ionic contamination testing. The test extracts mobile ions from the board surface using a solution of 75% isopropyl alcohol and 25% deionized water, measures the conductivity of the extraction solution, and calculates equivalent sodium chloride contamination per unit area. Typical acceptance criteria range from $<1.56 \mu\text{g}/\text{cm}^2$ (military/aerospace) to $<10.0 \mu\text{g}/\text{cm}^2$ (commercial). We provide test reports for each production batch when required.

ROSE Testing and Alternatives

Resistivity of Solvent Extract (ROSE) testing is the standard ionic contamination method. For higher sensitivity, we offer Ion Chromatography (IC) which identifies specific contaminant species—chlorides, bromides, sulfates, organic acids—rather than just total contamination. IC is particularly valuable for failure analysis or when specific contaminants are of concern.

Cleaning Process Validation

Our cleaning processes are validated to ensure consistency, including verification of cleaning chemistry concentration, temperature, and dwell time; regular ionic contamination testing of processed boards; cross-sectioning for under-component residue inspection; and ongoing monitoring of cleaning equipment performance.

Cleanliness is not cosmetic—it is functional. Our advanced cleaning and contamination control processes ensure that your PCBAs will perform reliably for their intended service life, free from the hidden threats of ionic residues.

Does your application demand the highest levels of cleanliness? Contact us to discuss how our cleaning and contamination testing capabilities can protect your product's long-term reliability.



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