WORLDWIDE ENVIRONMENTALLY RESPONSIBLE CLEANING TECHNOLOGIES

KYZEN.COM

KYZEN

Where Science and Care Converge.

ADVANCED PACKAGING & POWER ELECTRONICS

EDITION: ENGLISH

"We recognize your device's performance depends on our performance. We provide both the cutting-edge science and reliable support needed for effective technical problem solving."

- Haley Reid, Chemist

Science isn't the only thing driving the world's most innovative cleaning solutions.

These technologies mean nothing if they aren't backed by the right amount of care and technical support to effectively solve your cleaning challenges.

At KYZEN, our process goes beyond quality product production to:

- **Develop the scientific processes** that ensure you get the best solution for your needs
- **Make cleaning experts readily available** to understand your specific applications, materials and challenges
- **Analyze your cleaning problem** from every angle to prescribe the right solution
- **Back up our world-class service** by engineering the most effective, environmentally responsible cleaning technologies to increase the reliability of your products

When you work with KYZEN, you're tapping into lessons learned from three decades of improving cleaning processes for manufacturers around the world.

32+YEARS

CLEANING EXPERIENCE

PEOPLE STAY IN A WORK ENVIRONMENT THAT INSPIRES CARE, VALUE AND INNOVATION.

ENVIRONMENTALLY FRIENDLY CLEANING TECHNOLOGIES – WITHOUT BORDERS

Today's global environment is the reason why demand for advanced packaging is rising.

So as the electronics assembly industry globalized, so did KYZEN.

We believe on-the-ground technical support for your cleaning processes enables innovators like you to do what you do best – improve the world's technical devices.

DIRECT STAFF ACROSS

30 STATES AND PROVINCES

13 COUNTRIES

PARTNER REPRESENTATION ON 6 CONTINENTS

APPLICATION LABORATORIES 5

THE BEST SOLUTIONS STEM FROM THE TOUGHEST PROBLEMS

We approach your technical semiconductor cleaning problems with a thoughtful and well-rounded vantage point. Others may know that you need a copper-safe cleaning agent, but we also know:

- **Why you need it**
- **How it needs to work within your limitations**
- **Where the process problems are occurring**
- **How to match the agent to the flux residue and cleaning tool**
- **How to achieve stable cleaning quality with low cost of ownership**

THIS KIND OF IN-DEPTH KNOWLEDGE OF YOUR TECHNICAL AND MANUFACTURING NEEDS IS ONLY ATTAINED WHEN SCIENCE AND CARE CONVERGE.

OUR HIGHLY CONFIDENTIAL TECHNICAL SUPPORT IS AVAILABLE ANY TIME, ANYWHERE TO ADDRESS YOUR PROBLEMS BEFORE THEY SLOW DOWN PRODUCTION.

CLEANING SOLUTIONS FOR ADVANCED PACKAGING AND POWER ELECTRONICS

There are two critical drivers for the increased demand for advanced packaging: high yields and reliability throughout a device's expected lifespan. Flux residue and other sources of ionic contamination can lead to device failures.

Our cleaning technologies and processes match the pace of complex and robust devices to:

- **Remove various ionic flux residues**
- **Clean better on low standoff gap height devices**
- **Maintain compatibility with sensitive metals and other materials**
- **Improve post-soldering process quality**
- **Guarantee product lifetime reliability**

Whether you're working with a chip scale package (CSP), flip chip package, wafer level CSP (WLCSP), system in package (SiP) or 3-dimensional package (3DIC), KYZEN has you covered.

FREE EXPERT TECHNICAL HELP IS AT YOUR FINGERTIPS

Our experts are on standby to help answer your flip chip, back-end wafer and wire bonding cleaning questions at no cost. Contact your local KYZEN technical team to let us know how we can help.

CONTACT:
Tech_Help@kyzen.com

PROCESS CONTROL & OPTIMIZATION

PROCESS CONTROL PRODUCTS

KYZEN PCS

The KYZEN PCS is a true process control system that monitors and automatically reacts to the dynamic changes that occur in wash bath concentration. The PCS will maintain your cleaning system set process parameters and optimize your chemical usage.

KYZEN ANALYST²

The KYZEN ANALYST² builds on the success of 250+ installations and integrates customer feedback for better on-device data analysis. It uses advanced sonic velocity technology to measure concentration in real-time. It provides more precise measurements compared with other sonic velocity instruments that rely on reflection rather than direct measurement.

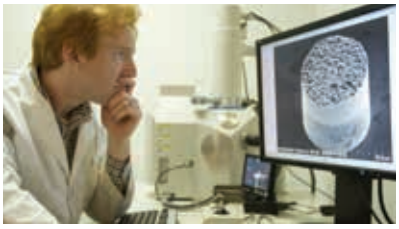
KYZEN DEMISTER

The KYZEN Demister significantly reduces the chemical consumption and emissions from your cleaning process. The Demister is specifically designed to combat evacuation and recover the lost cleaning solution, protecting the environment and reducing consumption.

KYZEN CHEMTROLLER

A reliable and simple to use automated chemical control system that works on a special water-driven proportioning pump. Easy to install, the KYZEN Chemtroller requires no electricity or compressed air connections as the incoming water pressure powers the positive displacement pump. The Chemtroller is a high-quality stainless steel chemical proportioner that is compatible with all KYZEN chemistries.

PROCESS OPTIMIZATION SERVICES



WASH BATH ANALYSIS / PROFILE

A single test or a 6-sample profile kit. Understanding the changes your wash bath goes through over its life cycle allows for greater predictability and routine maintenance scheduling, saving both time and money.

CLEANLINESS TESTING SERVICES

Surface Insulation Resistance (SIR) Testing, Ion Chromatography (IC) Testing, SEM Scanning Electron Microscope and standard R.O.S.E. testing available in the KYZEN lab by experts in cleaning.

CONTRACT CLEANING

Expert cleaning services for unexpected production increases, new product implementation, or when you just don't have a cleaning process in place.

ON-SITE PROCESS AUDITS

We come to you and review your cleaning process from start to finish. During an On-Site Process Audit, KYZEN's engineering and field support team will come to your facility and review chemistry usage, rinse water quality, nozzle pressures and alignment, exhaust balancing, amperage draw for motors and blowers and more.

RISK-FREE TRIALS

Let our process engineers determine the best process parameters and chemistry to help achieve desired results.

AQUEOUS CLEANERS	SEGMENT				SOILS REMOVED			PROCESS		
	FLIP CHIP	CU LEAD FRAME / IGBT	CAMERA MODULE	SiP / PLP / WAFER LEVEL PACKAGING	OA / WATER SOLUBLE	NO CLEAN	RMA / RA	IMMERSION / ULTRASONIC	SPRAY (IN-LINE)	CENTRIFUGAL
MICRONOX® MX2708	•			•	•				•	•
MICRONOX® MX2120-LF		•				•	•		•	
MICRONOX® MX2123		•				•	•	•	•	
MICRONOX® MX2127		•	•			•	•	•	•	
AQUANOX® A4727DT	•			•		•	•		•	

AQUEOUS CLEANERS

MICRONOX® MX2708 *(Organic Acid Residue Cleaning Agent)*

MICRONOX MX2708 is a single-phase cleaning agent formulated for the demanding cleaning challenges presented within advanced packaging devices such as low standoff gaps and fine pitches of Cu pillar flip chips, 2.5D/3D ICs, SiP and wafer level packaging. MX2708 completely removes all types of water soluble (OA) flux residues at low operation concentrations while having no effect on exposed metal and intermetallic alloys, including Cu, Al, Sn, Pb, Ni, Ag and Au finishes.

MICRONOX® MX2120-LF *(Multi-Metal Safe Power Module Cleaner)*

MICRONOX MX2120-LF is a single-phase cleaning agent designed to remove No-Clean flux residue from all types of DBC-based power modules, including Ni and most Cu substrates. MX2120-LF has a well-balanced formula that provides outstanding cleaning performance and compatibility on OSP and metals as well as long bath life and low foaming along with production.

MICRONOX® MX2123 *(Multi-Process Power Module Cleaner)*

MICRONOX MX2123 is an aqueous, multi-phase and well-balanced chemistry designed to remove flux residues from all types of IGBT module devices that utilize a mix of copper, silver and nickel DBC as substrates, as well as PCBs. With well-balanced formula, MX2123 leaves great surface conditions and removes slight metal oxidation from base metals for post wire bond and potting processes. It is effective at low temperature, low concentration and easily monitored in in-line SIA cleaning system or Ultrasonic Immersion cleaning system.

MICRONOX® MX2127 *(Universal IGBT Module Cleaner)*

MICRONOX MX2127 is an aqueous, single-phase and well-balanced chemistry designed to remove flux residues from all types of IGBT module devices that utilize copper and nickel DBC as substrates. With well-balanced formula, MX2127 leaves great surface conditions for post wire bond and potting processes after cleaning. It is effective at low temperature, low concentration and easily monitored in in-line SIA cleaning system.

AQUANOX® A4727DT *(Enhanced Aqueous Advanced Packaging Cleaner)*

AQUANOX A4727DT is a two-phase cleaning agent designed to remove difficult No-Clean flux residues for all types of advanced packaging. With outstanding buffer technology, A4727DT is effective at low concentrations and offers a stable pH throughout its long bath life. Its gentle formula also provides great compatibility with sensitive metals that are applied on advanced packaging devices, such as flip chip, SiP and PLP. AQUANOX A4727DT rinses easily, even in fine pitch or small form factor devices.

YOUR CLEANING PROBLEM IS OUR CLEANING PROBLEM

WE DON'T QUIT UNTIL WE'VE DELIVERED THE PERFECT CLEANING SOLUTION FOR YOUR SPECIFIC NEEDS AND SITUATION. FOR OVER 30 YEARS, OUR CLIENTS HAVE BENEFITED FROM THE CARE THAT GOES INTO ALL OUR CLEANING SOLUTIONS.

SEMI-AQUEOUS CLEANERS	SEGMENT				SOILS REMOVED			PROCESS		
	WAFER BUMPING	POWER IC / IGBT	CAMERA MODULE	HIGH-POWERED LED	OA / WATER SOLUBLE	NO CLEAN	RMA / RA	IMMERSION / ULTRASONIC	SINGLE WAFER TOOLS	CENTRIFUGAL
MICRONOX® MX2302	•			•		•	•	•	•	•
MICRONOX® MX2322	•		•	•	•	•	•	•	•	•
MICRONOX® MX2376		•		•	•	•	•	•		•
IONOX® FCR		•		•	•	•	•	•		•

SEMI-AQUEOUS CLEANERS

MICRONOX® MX2302 *(Semiconductor Grade Cleaning Solutions)*

MICRONOX MX2302 is an industrial proven, engineered, semi-aqueous solvent blend designed to remove all types of difficult flux residues from wafer bumping, power LEDs and emerging packaging devices. MX2302 provides stable cleaning performance and long bath life as well as excellent compatibility on all sensitive metals in wafer form and ultrasonic cleaners.

MICRONOX® MX2322 *(Semiconductor & Advanced Packaging Solutions)*

MICRONOX MX2322 is a non-THFA semiconductor grade semi-aqueous solvent designed to remove all types of flux residues from all kinds of semiconductor devices. MX2322 provides a wide cleaning process window, is effective at 50°C and has high water content tolerance. With its long bath life, MICRONOX MX2322 demonstrates excellent cleaning performance and metal compatibility on sensitive metals in wafer form and all types of immersion cleaning systems.

MICRONOX® MX2376 *(Power Electronics Cleaner)*

MICRONOX MX2376 is a semi-aqueous solvent blend cleaning agent that is designed to remove tough No-clean/RMA flux residues. It provides excellent compatibility on sensitive metals such as Cu, Ag and high Pb alloys from power electronics including PMICs, discretes and power modules. MX2376 is effective in ultrasonic immersion cleaning systems and reserves superior Cu leadframe or Cu DBC surface for post wire bonding and molding processes.

IONOX® FCR *(High-Strength Power Electronic Cleaner)*

IONOX FCR is a high-strength, concentrated cleaning agent designed to remove both high Pb and lead-free flux residues in all types of immersion or centrifugal systems. Industrial proven, FCR offers excellent metal compatibility on leadframe and DBC-based power electronics devices and leaves a good metal surface for post-wire bonding and EMC processes.

MAINTENANCE CLEANING	SOILS REMOVED			PROCESS		
	UNCURED ADHESIVE	TAPE RESIDUE	FINGERPRINT PARTICLE	IMMERSION / ULTRASONIC	SPRAY	MANUAL
CYBERSOLV® C8449	•			•		
CYBERSOLV® C8882	•			•		
CYBERSOLV® 141-K			•			•
MICRONOX® MX2180		•		•	•	

MAINTENANCE CLEANING

CYBERSOLV® C8449 *(Adhesive and Coating Stripper)*

CYBERSOLV C8449 is a full-strength solvent cleaning agent designed to be effective on many types of uncured epoxy, silicone, glue and coatings used in manufacturing operations. C8449 is engineered to dissolve both polar and non-polar compounds. Effective in ultrasonic or agitated immersion processes, CYBERSOLV C8449 is designed to be a safer alternative to traditional strippers.

CYBERSOLV® C8882 *(Understencil Wipe Stencil Cleaning Solvent)*

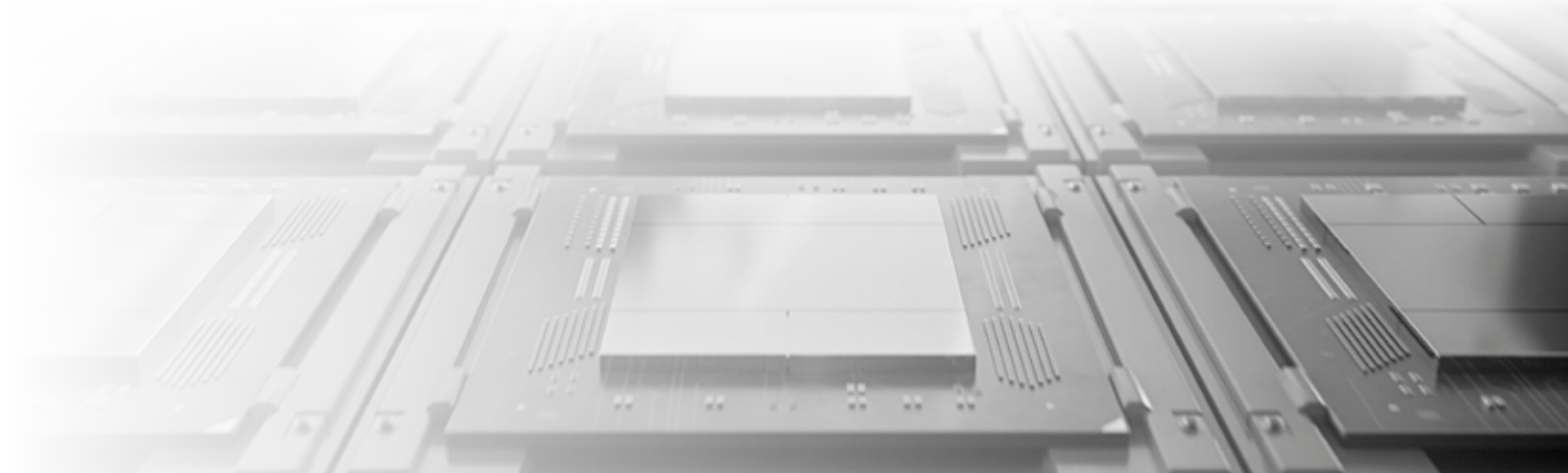
CYBERSOLV C8882 is a fast-acting stencil cleaning solvent designed for the understencil wipe process. C8882 instantly dissolves all flux types within the solder paste, including water soluble, rosin and low residue no-clean fluxes.

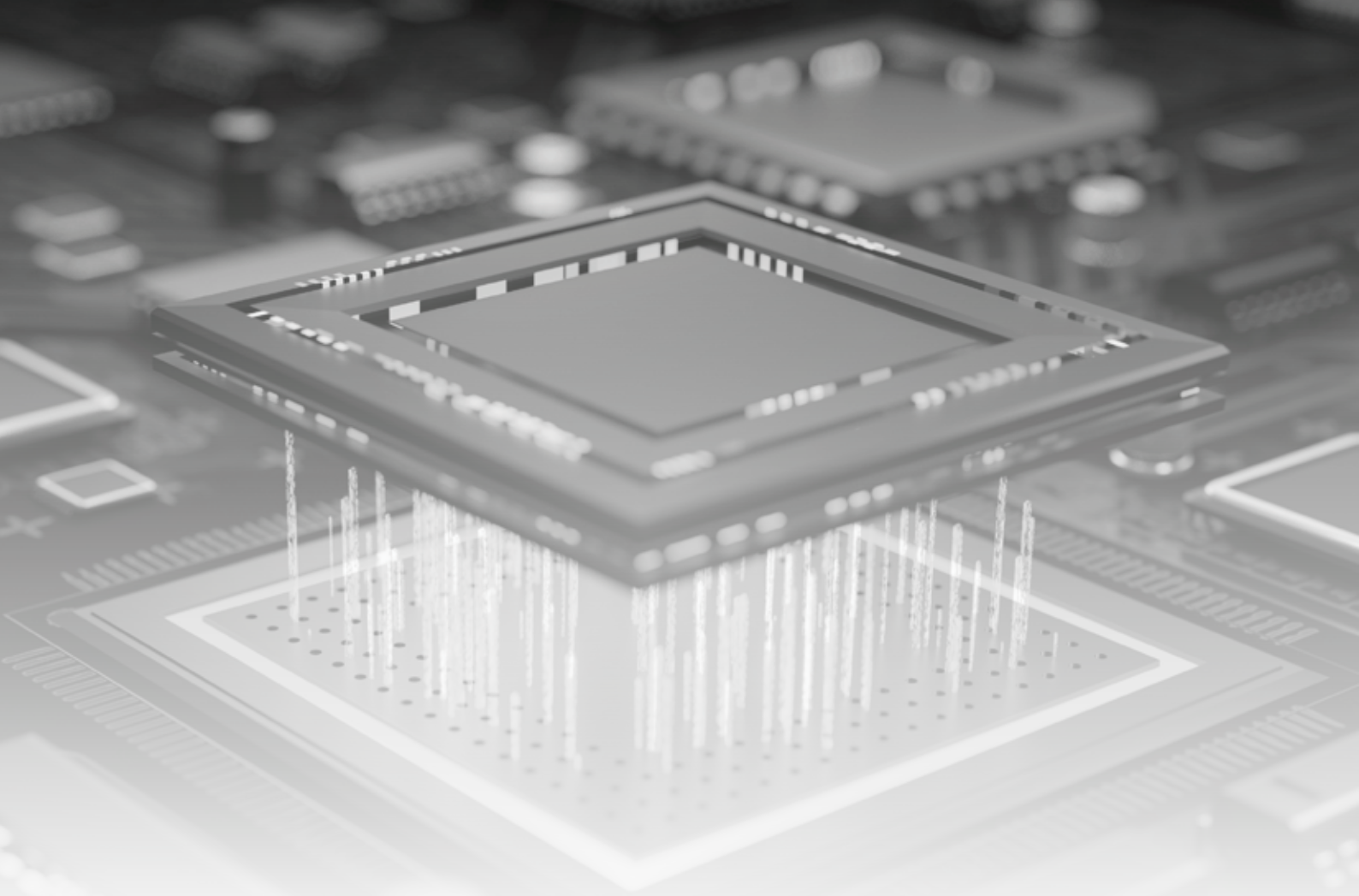
CYBERSOLV® 141-K *(Precision Solvent Bench-Top Cleaner)*

CYBERSOLV 141-K is an engineered blend of organic solvents that is safe and ready to use for bench top electronics cleaning and other applications requiring its unique solvency properties. It is an effective cleaner for a wide variety of fluxes used in electronics assembly, and dilution solvent for adhesives, greases and oils. May be used as an cold cleaner for machined parts.

MICRONOX® MX2180 *(Aqueous Cleaning Agent for Tape Residue)*

MICRONOX MX2180 is designed to remove minor residual pressure-sensitive adhesives (PSA) from UV and blue tapes following wafer grinding and wafer dicing processes. MX2180 is effective in ultrasonic and spray-in-air systems with low concentration. MICRONOX MX2180 provides excellent compatibility with a broad range of materials, such as silicone/glass-based substrates, passivation layers and all types of solder joints.





KYZEN

Where Science and Care Converge.

Because we want you to achieve the highest levels of performance, we connect care with leading science to continuously improve, problem solve and create the most effective cleaning solutions to suit your specific needs.

WORLD HEADQUARTERS (USA)
615-831-0888

EUROPE
+32 503 95374

SOUTHEAST ASIA
+60 4 630 3000

CHINA
+86 21 5998 7189

KYZEN.COM

WORLDWIDE ENVIRONMENTALLY RESPONSIBLE CLEANING TECHNOLOGIES

REVISION: 2 / 26