

SMT Detergent Corp.

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Made in U.S.A.



TECHNICAL PRODUCT DATA

440-R® SMT Detergent

Electronics Industry (SMT)

June 1, 2005

DESCRIPTION

EPA Verified 440-R SMT Detergent is a mild alkaline formulation designed to remove RA, RMA, No Clean, Water Washable (OA) and Lead Free solder pastes from screens, stencils and misprinted PCBs at temperatures between ambient and 110°F (43°C). 440-R SMT Detergent is also very effective in removing wet SMD adhesives from stencils and misprinted substrates and removing post solder flux residues from pallets, oven radiators and other tooling. It contains no CFCs, VOCs, terpenes, alcohol or other hazardous ingredients and performs in ultrasonic, spray or manual cleaning applications. When used in spray equipment, a Defoamer should be used as directed.

440-R SMT Detergent was certified by the California Environmental Protection Agency (1999) and verified for specific parameters of environmental safety, user safety and cleaning efficiency by the U.S. Environmental Protection Agency (EPA). It has also been certified as a "Clean Air Solvent" by the South Coast Air Quality Management District's (AQMD) CAS Program (1997) and is RoHS Compliant.

PHYSICAL PROPERTIES

Appearance: Clear Purple Liquid
Odor: Mild, pleasant
PH (10% solution): 11.9 – 12.0
Flash Point: None
Foaming: Medium
Rinsing: Complete
Hard Water Stability: 500 ppm
Biodegradable: Yes
Hazardous Ingredients: None

APPLICATION

Spray Applications
RMA Solder Paste
No-clean Solder Paste
AP-4000 and Synthetic
Water Washable
Solder Paste (OA)
Flux Residue
SMD Adhesives
Lead Free Solder Paste

Concentration in Plain or DI Water

10% - 15% ambient - 110°F (43°C)
10% - 15% ambient - 110°F (43°C)
10% - 15% ambient - 110°F (43°C)
10% - 15% at 95° - 110°F (35 - 43°C)
1 - 5% ambient - 110°F (43°C)
10% - 15% at 95° - 120°F (35 - 49°C)
10% - 15% at 95° - 110°F (35 - 43°C)
10% - 15% ambient - 110°F (43°C)

440-R SMT Detergent is not consumed during the solder paste cleaning process. After the initial charge, no addition of make-up chemistry is required until the wash water is changed. The wash water should be changed, for preventative maintenance purposes, every 1 - 3 months to prevent potential contamination and unpleasant odors. For applications other than cleaning solder paste, wash water maintenance will depend on volume, contaminant and filtration system.

440-R SMT Detergent rinses thoroughly with small amounts of clean ambient water. Cleaning applications, other than solder paste, may require a filtration system to reduce "loading" of the bath. Consult factory.

While 440-R SMT Detergent will perform well in "hard water" (500 ppm), it is recommended that either soft or DI water be used in order to prevent mineral deposits (water spots) on stencils and ionic contamination on PCBs.

PRODUCT SAFETY

Materials: Safe on all metals, plastics and ceramics when used as directed.

Environmental: Certified safe and effective by the California Environmental Protection Agency (1999) and verified by the U.S. EPA. 440-R SMT Detergent was also certified as a "Clean Air Solvent" by the South Coast Air Quality Management District's (AQMD) CAS Program (1997). For more information, visit the following Web Sites: <http://www.epa.gov/etv/verifications/vcenter6-10.html> and <http://www.calepa.ca.gov/CalCert/CertifiedTech/SmartSon.htm>

Personnel: Contains no hazardous ingredients. Consult MSDS for complete safety details.

Shelf Life: The recommended shelf life is two-years for unopened containers that are stored at temperatures between 40 – 110 degrees F. (5 – 38 degrees C.) and one-year for open containers.

440-R SMT Detergent

The most important factor of any cleaning process is always the chemistry. The chemistry will dictate the wetting or solubility of the contaminant, user exposure to health and safety hazards, operational cost, environmental impact, odors, hot water vapor, cycle times, ability to clean different solder pastes, energy use for those chemistries requiring elevated temperatures, maintenance schedules, storage and transportation requirements, waste management procedures, and exhaust or other special installation requirements – especially if the chemistry is a low flash point solvent such as alcohol that requires complete isolation from other machines.

440-R[®], SMT Detergent is formulated specifically to safely clean all types of solder paste used in SMT assembly. 440-R SMT Detergent eliminates the hazards of alcohol, terpenes and hot/corrosive saponifiers used in other stencil cleaning systems, and replaces them with an environmentally safe, non-hazardous, detergent that cleans effectively *without heat*.

Stencils are heat-sensitive. Stencil manufacturers recommend stencils be cleaned at temperatures less than 110°F (43°C) because the adhesives used to bond the screen to the frame and metal etched foil are heat-cured. Hot wash solutions and/or hot drying air can weaken the bond of the heat-cured adhesive and cause separation of the screen from the frame or foil. Stencils are also made of different metals: an aluminum frame; stainless steel or polyester screen; and a stainless steel, brass or nickel etched foil. If these metals are washed in hot water or dried with hot air, the metals will expand and contract causing distortion of the etched image and screen tension problems. In addition, the water vapor generated from hot wash water or drying operations can be a key contamination source for an SMT assembly area. 440-R SMT Detergent cleans at ambient temperature to assure the integrity of the stencil, prolong stencil life, eliminate potential water vapor contamination, conserve energy and protect users from hot solutions.

440-R SMT Detergent is the only chemistry guaranteed to clean any type of solder paste from any fine-pitch stencil and field tested by over 1000 users worldwide. This is important, if the user decides to incorporate a different brand or type of solder paste, 440-R SMT Detergent will support the change.

Other chemistry suppliers have multiple chemistry formulations that are required to clean various types of solder paste. If the user decides to change solder pastes, a different chemistry may be required to clean it. A different chemistry may necessi-



440-R[®] SMT Detergent is verified by the U.S. EPA's Environmental Technology Verification (ETV) Program[®] as part of the Smart Sonic Stencil Cleaning Process and is guaranteed to clean any type of solder paste from any fine-pitch stencil!*

tate different cleaning parameters such as a change in temperature or long DI water rinses resulting in the need to change or modify expensive cleaning equipment. A different chemistry may introduce odors or vapors or require special transport and storage. A different chemistry will most likely cause a change in the waste management protocol which could trigger unexpected costs, require special permits or additional equipment. When using 440-R SMT Detergent, these concerns and potential problems are eliminated.

Unlike saponifiers that are consumed during the cleaning process and require continuous replenishment, 440-R SMT Detergent is a surfactant (wetting agent) that is not consumed or “loaded” when cleaning solder paste. The initial 10% solution will last for several weeks, no matter if 50 stencils or 500 stencils are cleaned. The cost reduction in chemistry and related waste management alone can often justify the purchase of a Smart Sonic cleaning system.

440-R SMT Detergent has been evaluated by industry experts resulting in the SMT Vision Award, nomination for the Presidential Green Chemistry Challenge Award and officially verified by the Environmental Protection Agency (EPA) for environmental safety, user safety, and cleaning efficiency. Because 440-R SMT Detergent, has no hazardous vapors, no scalding temperatures, and no fire or explosion hazards common with other stencil cleaning chemistries, the user is assured of environmental, health and safety compliance.

440-R SMT Detergent will not only clean any type of solder paste, it will also clean SMD adhesives, hybrid inks and flux residue buildup from pallets, oven radiators and other tooling, and can be used in ultrasonic, spray or manual cleaning applications.

Waste Management...

440-R SMT Detergent has solved the problem of liquid hazardous waste disposal! The wash solution is changed only once per month, independent of the number of stencils cleaned. This significantly limits the amount of wastewater generated. 440-R SMT Detergent can be filtered by conventional means and prepared for drain disposal like other aqueous waste streams. However, most users prefer not to discharge anything to drain because of the associated liabilities. 440-R SMT Detergent provides an alternative. Because 440-R SMT Detergent contains no hazardous ingredients, no VOCs and the pH is mild alkaline, the resulting liquid waste can be safely evaporated to atmosphere in one of the optional wastewater evaporator systems. The non-hazardous liquid is sent to atmosphere reducing everything down to solids for recycling or disposal. The waste solder paste is recycled as a dross or can be melted on site in a wave solder pot. When using an evaporator, **there is no liquid hazardous waste for disposal and no effluent sent to drain**, a “zero discharge” process!

For users having existing in-house filtration systems, the wastewater can be filtered by conventional methods, offering total flexibility.