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MacDermid Alpha ELECTRONICS SOLUTIONS

TECHNICAL DATA SHEET

KESTER® 979 SOLDERING FLUX

VOC-free, No-Clean, Liquid Flux

DESCRIPTION

Kester 979 Soldering Flux is a VOC-free, no-clean flux formulation for high quality, low-defect soldering of electronic circuit board assemblies. This flux's finely tuned activation system offers the best wetting available in VOC-free liquid flux technology and the shiniest solder joints. 979 also reduces micro solder balling on glossy laminates and between connector pins. 979 will not attack properly cured solder masks or FR-4 Epoxy-Glass laminate. 979 leaves a minimal amount of residue after soldering. All remaining residues are non-corrosive, non-conductive and do not need to be removed.

Note: Not recommended for use in a soldering process that does not have a preheat cycle associated with it. For example, this will not work well with a soldering iron.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- Biodegradable at pH of 2.0 or greater
- Chemically compatible with most solder masks and board laminates
- Does not degrade Surface Insulation Resistance
- No offensive odors
- Bright, shiny solder connections
- Classified as ORL0 per J-STD-004
- Compliant to Bellcore GR-78

ROHS COMPLIANCE

This product meets the requirements of the Restriction of Hazardous Substances (RoHS) Directive, 2011/65/EU for the stated banned substances.

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TECHNICAL DATA

Category	Results	Procedure/Remarks
Physical Properties		
Specific Gravity	1.020 ± 0.01	Anton Paar DMA 35 @ 25 °C
Percent Solids (typical)	4.5%	Tested to J-STD-004, IPC-TM-650, Method 2.3.34
Acid Number (typical)	40.0 ± 3.0 mg, KOH/g of flux	Tested to J-STD-004, IPC-TM-650, Method 2.3.13
Thinner	DI Water	
Reliability Properties		
Copper Mirror Corrosion	Low	Tested to J-STD-004, IPC-TM-650, Method 2.3.32
Corrosion Test	Pass	Tested to J-STD-004, IPC-TM-650, Method 2.6.15
Silver Chromate	Pass	Tested to J-STD-004, IPC-TM-650, Method 2.3.33
Chloride and Bromides	None Detected	Tested to J-STD-004, IPC-TM-650, Method 2.3.35
Fluorides by Spot Test	Pass	Tested to J-STD-004, IPC-TM-650, Method 2.3.35.1
Surface Insulation Resistivity (SIR)	Pass	Tested to J-STD-004, IPC-TM-650, Method 2.6.3.3

	Blank	979 PD	979 PU
Day 1	$2.8*10^{10}$ Ω	$1.9*10^{10}$ Ω	$2.3*10^{10}$ Ω
Day 4	$1.5*10^{10}$ Ω	$1.1*10^{10}$ Ω	$1.2*10^{10}$ Ω
Day 7	$1.2*10^{10}$ Ω	$9.1*10^{9}$ Ω	$9.6*10^{9}$ Ω

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FLUX APPLICATION

979 can be applied to circuit boards by a spray or dip process. Flux deposition should be 120 to 240 µgr of solids/cm^2 (750 to 1500 µgr of solids/in^2). An air knife after the flux tank in the dip application is recommended to remove excess flux from the circuit board and prevent dripping on the preheated surface.

Note: Will not work in a foam application.

PROCESSING GUIDELINES

The optimum preheat temperature for most circuit assemblies is 95 to 115 °C (203 to 239 °F) as measured on the top or component side of the printed circuit board. Dwell time in the wave is typically 2 to 4 seconds for leaded alloys and 4-8 seconds for lead-free alloys. The wave soldering speed should be adjusted to accomplish proper preheating and evaporate excess water, which could cause spattering. For best results, speeds of 1.1 to 1.8 m/min (3.5 to 6 ft/min) are used. The surface tension has been adjusted to help the flux form a thin film on the board surface allowing rapid water evaporation.

Elimination of Splattering

Since VOC-free fluxes are water-based, splattering can be a problem. Splattering occurs when water comes in contact with molten solder, so it may be necessary to use forced air to drive off the water. Manufacturers have reported that blowing hot air at 0.28 to 0.85 m^3/hr (10 to 30 ft^3/hr) greatly assists in drying the water off the circuit boards. For this reason, it is suggested that 979 be used in a soldering process that has a preheat cycle associated with the soldering application.

Flux Control

Acid number is normally the most reliable method to control the flux concentration of low solids, no-clean fluxes. Evaporative loss is minimal because this flux is water-based. To check concentration, a simple acid-base titration should be used. PS-22 Test Kit and procedure are available from MacDermid Alpha. The thinner for this flux is DI water.

Cleaning

Kester 979 is designed to be a no-clean liquid soldering flux. If cleaning is required, the use of plain DI water at 43 to 54 °C (110 to 130 °F) with a Saponifier is optimal, however, as any residues are readily water soluble, DI water alone may be sufficient. As with all high reliability applications where cleaning is required, testing of the effectiveness of the cleaning process is recommended.

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Storage, Handling and Shelf Life

Shelf-life is 1 year from date of manufacture when handled properly and held at 4 to 25 °C (40 to 77 °F). The appearance will naturally darken over time from clear, colorless to yellow / slight amber color.

Because this formulation is water-based it is subject to freezing. A minimum storage temperature of 4°C (40°F) is recommended. If frozen, 979 is easily reconstituted by stirring at room temperature.

RECYCLING SERVICES

We provide safe and efficient recycling services to help companies meet their environmental and legislative requirements and at the same time, maximize the value of their waste streams.

Our service collects solder dross, solder scrap, and various forms of solder paste waste. Please contact your local sales representative for recycling capabilities in your area.



SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available.**

CONTACT INFORMATION

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Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE. Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588

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