



979 Soldering Flux

VOC-free No-Clean

Product Description

Kester 979 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.

Performance Characteristics:

- 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.

Physical Properties

Specific Gravity: 1.020 ± 0.010
Anton Paar DMA 35 @ 25°C

Percent Solids (theoretical): 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

Silver Chromate: Pass
Tested to J-STD-004, IPC-TM-650, Method 2.3.33

Fluorides by Spot Test: Pass
Tested to J-STD-004, IPC-TM-650, Method 2.3.35.1

Corrosion Test: Low
Tested to J-STD-004, IPC-TM-650, Method 2.6.15

Chloride and Bromides: None Detected
Tested to J-STD-004, IPC-TM-650, Method 2.3.35

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

Flux Application

979 can be applied to circuit boards by a spray or dip process. Flux deposition should be 120-240 μgr of solids/cm² (750-1500 μgr of solids/in²). 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.

Process Considerations

The optimum preheat temperature for most circuit assemblies is 95-115°C (203-239°F) as measured on the top or component side of the printed circuit board. Dwell time in the wave is typically 2-4 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 splattering. For best results, speeds of 1.1-1.8 m/min (3½-6 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 0.28-0.85 m³/hr (10-30 ft³/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-20 Test Kit # 53-0000-0200 and procedure are available from Kester. The thinner for this flux is DI water.

Cleaning

979 flux residues are non-conductive, non-corrosive that does not require removal in most applications. If residue removal is required, plain DI water at 43-54°C (110-130°F) with a Saponifier is required.

Storage and Shelf Life

Shelf-life is 1 year from date of manufacture when handled properly and held at 4-25°C (40-77°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.

Health and Safety

This product, during handling or use, may be hazardous to your health or the environment. Read the Safety Data Sheet (SDS) and warning label before using this product.