



979VT Soldering Flux

VOC-free No-Clean Low Solids Liquid Flux for Lead-bearing and Lead-free Applications

Product Description

Kester 979VT is a VOC-free, no-clean flux formulation for high quality, low-defect soldering of lead-free 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. 979VT also reduces micro-solderballing on glossy and matte laminates and between connector pins. 979VT will not attack properly cured solder masks or FR-4 Epoxy-Glass laminate. It has been specially formulated to accommodate needs of single sided board assemblers. 979VT leaves no haze or visible residue behind, including the white powdery residue associated with use of earlier no-clean formulas.

Performance Characteristics:

- Biodegradable at pH of 2.0 or greater
- Chemically compatible with most solder masks and board laminates
- No surface insulation degradation
- No offensive odors
- Bright, shiny solder connections
- Compliant to Bellcore GR-78
- Classified as ORL0 under IPC JSTD-004 and ORM0 under IPC JSTD-004B

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: 1.014 ± 0.005
Anton Paar DMA 35 @ 25°C

Percent Solids (typical): 5%
Tested to J-STD-004, IPC-TM-650, Method 2.3.34

Acid Number: 43.0 ± 3.5mg KOH/g of flux
Tested to J-STD-004, IPC-TM-650, Method 2.3.13

pH (5% solution, typical): 3.2
Mettler-Toledo MA235 pH/Ions Analyzer @ 25°C

Reliability Properties

Copper Mirror Corrosion:
No Breakthrough "L"
IPC J-STD-004B, IPC-TM-650, Method 2.3.32

Corrosion Test:
No Corrosion "L"
IPC J-STD-004, IPC-TM-650, Method 2.6.15B

Minor Corrosion "M"
IPC J-STD-004B, IPC-TM-650, Method 2.6.15C

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

Chloride and Bromides: 0%
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),
IPC (typical):** Pass
Tested to J-STD-004, IPC-TM-650, Method 2.6.3.3

**Surface Insulation Resistivity (SIR),
Bellcore (typical):** Pass
Tested to Bellcore GR-78-Core

	Blank	979VT PU	979VT PD
Day 1	1.7*10 ¹⁰ Ω	5.0*10 ⁹ Ω	1.7*10 ⁹ Ω
Day 4	1.9*10 ¹⁰ Ω	1.1*10 ¹⁰ Ω	1.9*10 ⁹ Ω
Day 7	1.8*10 ¹⁰ Ω	1.1*10 ¹⁰ Ω	3.8*10 ⁹ Ω

Flux Application

979VT can be applied to circuit boards by a spray or dip process. It is not designed for a foam application. Flux deposition should be 120-240 µgr of solids/cm² (750-1500 µgr of solids/in²).

Process Considerations

The optimum preheat temperature for most circuit assemblies is 110-155°C (230-311°F), as measured on the top or component side of the assembly. Dwell time in the wave is typically 3-5 seconds for Sn63Pb37 and 4-8 seconds for lead-free alloys. The wave soldering conveyor speed should be adjusted to accomplish proper contact time for the alloy in the solder pot then the heaters in the preheat section adjusted to meet the requirements for the top side circuit board temperature.

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 Kester. The thinner for this flux is DI water.

Cleaning

979VT flux residues are non-conductive and do not require removal in most applications. If residue removal is required, plain DI water at 43-54°C (110-130°F) may be used.

Storage and Shelf Life

Because this formulation is water-based, it is subject to freezing. A minimum storage temperature of 4°C (40°F) is recommended. If frozen, 979VT is easily reconstituted by stirring at room temperature. Shelf life is 1 year from the date of manufacture when handled properly and held at 4-25°C (40-77°F). 979VT will sometimes exhibit fluid darkening while in storage in its original container 8-12 weeks or longer after manufacture date. This flux in the container may change from a clear fluid to a light brown fluid. This is a normal change and does not affect the performance of 979VT.

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.