



## 988 Soldering Flux

### Low-Solids No-Clean Liquid Flux

### Product Description

Kester 988 flux is a low solids, no-clean flux that is specially designed for excellent solderability and best-in-class through-hole fill in lead-free wave soldering process. The residue left behind is evenly distributed and non-tacky so that boards are cosmetically clean as they exit the wave solder machine. The residue remaining after soldering is non-conductive and can be left on the boards without degrading the reliability of the assembly. 988 is classified as Type ROM0 flux under J-STD-004A specifications.

#### Performance Characteristics:

- Best-in-class through hole-fill
- Provides excellent solderability on surface mount circuit boards for defect-free soldering even after 2x SMT reflow cycles
- Evenly distributed, uniform and tack-free residues on solder mask
- No surface insulation degradation
- Suitable for leaded and lead-free (SnCu and SnAgCu) alloys
- Eliminates the needs and expense of cleaning
- Classified as ROM0 per J-STD-004

### RoHS Compliance

This product meets the requirements of the Restriction of Hazardous Substances (RoHS) Directive, 2015/863 for the stated banned substances.

### Physical Properties

**Specific Gravity:** 0.808  
Anton Paar DMA 35 @ 25°C

**Acid Number (typical):** 30.0 mg  
KOH/g of flux

**Thinner:** 4662

Tested by potentiometric titration

**Percent Solids (theoretical):** 6.0

### Reliability Properties

**Copper Mirror Corrosion:** Moderate  
Tested to J-STD-004A, IPC-TM-650, Method 2.3.32

**Corrosion Test:** Moderate  
Tested to J-STD-004A, IPC-TM-650, Method 2.6.15

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

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

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

**Surface Insulation Resistivity (SIR), (typical):** Pass  
Tested to J-STD-004A, IPC-TM-650, Method 2.6.3.3

	Blank	988 PD	988 PU
Day 1	8.4*10 <sup>10</sup> Ω	1.1*10 <sup>10</sup> Ω	9.9*10 <sup>9</sup> Ω
Day 4	7.6*10 <sup>10</sup> Ω	1.3*10 <sup>10</sup> Ω	2.6*10 <sup>10</sup> Ω
Day 7	5.8*10 <sup>10</sup> Ω	1.5*10 <sup>10</sup> Ω	2.7*10 <sup>10</sup> Ω

**Electromigration, Bellcore (typical):** Pass  
Tested to Bellcore GR-78-CORE

	Blank	988 PD	988PU
Day 4	1.1*10 <sup>11</sup> Ω	6.6*10 <sup>8</sup> Ω	2.4*10 <sup>9</sup> Ω
Day 21	1.9*10 <sup>11</sup> Ω	1.3*10 <sup>10</sup> Ω	7.0*10 <sup>10</sup> Ω

## Flux Application

988 can be applied via foam or spray fluxing. Flux deposition should be 155-310  $\mu\text{g}$  of solids/cm<sup>2</sup> (600-1200  $\mu\text{g}$  of solids/in<sup>2</sup>). An air knife after the flux tank is recommended to remove excess flux from the circuit board and prevent dipping on the preheated surface. For foam, fluxing, the consistency should be maintaining only using Kester 4662 Thinner to compensate for evaporation loss.

## Process Considerations

The optimum preheat temperature for most circuit assemblies is 95-105°C (203-221°F) as measured on the top or component side of the printed circuit board. The bottom of the board will not reach 145°C (293°F). Dwell time in the solder is typically 2-4 seconds for leaded alloys and 4-8 seconds for lead-free alloys. The conveyor speed should be adjusted to accomplish proper board contact time with the solder. Then the preheat temperatures are adjusted to achieve the required preheat top board temperatures. In the event you need further direction on the setup of your wave soldering system, please contact Kester Technical Support.

## Flux Control

Kester PS-20 Test Kit # 53-0000-0200 is available to insure the level of solids in the flux. The instructions of how to use this kit will come with the purchase of the kit. This could be used as an incoming inspection device or if a container had been left open for any period of time allowing the solvents to evaporate. The flux thinner is Kester's 4662.

## Cleaning

988 flux residues are non-conductive, non-corrosive and do not require removal in most applications. If residue removal is required, Kester 5252 Cleaner may be used.

## Storage, Handling and Shelf Life

988 is flammable. Store away from sources of ignition. Shelf life is 1 year from date of manufacture when handled properly and held at 10-25°C (50-77°F).

## Health and Safety

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