



## 959 Soldering Flux

### Low-Solids, No-Clean Liquid Flux

### Product Description

Kester 959 is a no-clean, non-corrosive, liquid flux that is designed for the wave soldering of conventional and surface mount circuit board assemblies. 959 was developed to minimize the formation of micro-solder balls during wave soldering operations. This flux contains a small percentage of rosin (1%), which improves solder-ability, heat stability and surface insulation resistance. 959 offers the best wetting and the shiniest solder joints of any no-clean, solvent-based chemistry. It is a very good flux that can be used for secondary soldering such as touch up and repair. 959 leaves evenly distributed residues for the best cosmetic appearance.

#### Performance Characteristics:

- Minimize micro-solderballs
- Extremely shiny joints
- No streaky, white residues
- Improves soldering performance
- Eliminates the need and expense of cleaning
- 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, 2015/863 for the stated banned substances.

### Physical Properties

**Specific Gravity:** 0.810 ± 0.005  
Anton Paar DMA 35 @ 25°C

**Percent Solids (typical):** 3.9%  
Tested to J-STD-004, IPC-TM-650, Method 2.3.34

**Acid Number:** 21.8 ± 1.5 mg KOH/g of flux  
Tested to J-STD-004, IPC-TM-650, Method 2.3.13

**pH (10% solution):** 4.6  
Hanna Instruments 8314 @ 25°C

**Thinner:** 4662

### Reliability Properties

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

**Corrosion Test:** Low  
Tested to J-STD-004B, 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

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

	Blank	959 PD	959 PU
Day 1	2.7*10 <sup>10</sup> Ω	2.4*10 <sup>10</sup> Ω	2.4*10 <sup>10</sup> Ω
Day 4	1.5*10 <sup>10</sup> Ω	1.5*10 <sup>10</sup> Ω	1.4*10 <sup>10</sup> Ω
Day 7	1.2*10 <sup>10</sup> Ω	1.2*10 <sup>10</sup> Ω	1.1*10 <sup>10</sup> Ω

## Application

959 can be applied to circuit boards by a spray, foam or dip process. Flux deposition should be 120-240  $\mu\text{g}$  of solids/ $\text{cm}^2$  (750-1500  $\mu\text{g}$  of solids/ $\text{in}^2$ ). An air knife after the flux tank is recommended in a foam and wave application to remove excess flux from the circuit board and prevent dripping on the preheated surface.

## Process Considerations

The optimum preheat temperature for most circuit assemblies is 90-105°C (194-221°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 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

Acid number is normally the most reliable method to control the flux concentration of low solids, no clean fluxes. To check concentration, a simple acid-base titration should be used. PS-20 Test Kit and procedure are available from Kester. Control of the flux in the foam flux tank during use is necessary for assurance of consistent flux distribution on the circuit boards. The complex nature of the solvent system for the flux makes it imperative that Kester 4662 Thinner be used to replace evaporative losses. When excessive debris from circuit boards, such as board fibers and from the air line build-up in the flux tank, these particulates will redeposit on the circuit boards which may create a build-up of residues on probe test pins. It is, therefore, necessary to clean the tank and then replenish it with fresh flux when excessive debris accumulates in the flux tank.

## Cleaning

959 flux residues are non-conductive, non-corrosive and do not require removal in most applications. If residue removal is required, consult Kester Technical Support for further cleaning recommendation.

## Storage and Shelf Life

959 is flammable. Store away from sources of ignition. Shelf life is 2 years from the 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 (SDS) and warning label before using this product.