

# 186

## Mildly Activated Rosin Liquid Flux

### Product Description

Kester 186, under MIL-F-14256, was QPL approved as Type RMA. Although the fluxing ability approaches that of Type RA flux, the flux residue after soldering is non-corrosive and non-conductive. Kester 186 rosin flux has been developed for use in critical applications where difficult assemblies are to be soldered, but process requirements stipulate use of Type RMA flux. This flux possess high thermal stability for soldering multi-layer assemblies which require a high preheat temperature. Exposure to high preheat temperatures does not degrade solubility of the residue in normal cleaning solvents. There is no surface insulation resistance degradation caused by the flux residue. The use of a minimum of ionic activating agents and the inactive nature of the residue permits leaving the residue on circuit board assemblies for many applications. The flux residue is also moisture and fungus resistant.

#### Performance Characteristics:

- High thermal stability
- Improves soldering performance
- Eliminates the need and expense of cleaning
- Classified as ROL0 per J-STD-004

### Physical Properties

**Specific Gravity:**  $0.879 \pm 0.003$

Antoine Paar DMA 35 @ 25°C

**Percent Solids (typical):** 36

Tested to J-STD-004, IPC-TM-650, Method 2.3.34

**Acid Number:**  $55.5 \pm 7.8$  mg KOH/g of flux

Tested to J-STD-004, IPC-TM-650, Method 2.3.13

**Flash Point:** 18°C (64°F)

### 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-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:** 0.02%

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	186 PD	186 PU
Day 1	$5.0 \times 10^9 \Omega$	$3.1 \times 10^9 \Omega$	$5.2 \times 10^9 \Omega$
Day 4	$5.8 \times 10^9 \Omega$	$4.9 \times 10^9 \Omega$	$6.8 \times 10^9 \Omega$
Day 7	$6.3 \times 10^9 \Omega$	$5.5 \times 10^9 \Omega$	$7.2 \times 10^9 \Omega$

## Application Notes

### Flux Application:

Kester 186 can be applied to circuit boards by a foam or dip process. An air knife after the flux tank is recommended to remove excess flux from the circuit board and prevent dripping on the preheater 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. The wave soldering speed should be adjusted to accomplish proper preheating and evaporate excess solvent which could cause spattering. 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 solvent evaporation.

### Flux Control:

Specific gravity is normally the most reliable method to control the flux concentration of rosin-based fluxes. To check concentration, a hydrometer should be used. 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 120 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:

Kester 186 flux residues are non-conductive, non-corrosive and do not require removal in most applications. If residue removal is required, call Kester Technical Support.

### Storage and Shelf Life:

Kester 186 is flammable. Store away from sources of ignition. Shelf life is 2 years from date of manufacture when handled properly and held at 10-25°C (50-77°F).

### Health & Safety:

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

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