



## 186 Soldering Flux

### Mildly Activated Rosin Liquid Flux

#### Product Description

Kester 186, under MIL-F-14256, was QPL approved as Type RMA. The flux residue after soldering is non-corrosive and non-conductive. 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 may require a high preheat temperature or longer temperature dwell time. 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

#### 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:** 0.874-0.884  
Anton Paar DMA @ 25°C

**Percent Solids (typical):** 36%  
Tested to J-STD-004, IPC-TM-650, Method 2.3.34

**Acid Number (typical):** 55.5 ± 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

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

	Blank	186 PD	186 PU
Day 1	5.0*10 <sup>9</sup> Ω	3.1*10 <sup>9</sup> Ω	5.2*10 <sup>9</sup> Ω
Day 4	5.8*10 <sup>9</sup> Ω	4.9*10 <sup>9</sup> Ω	6.8*10 <sup>9</sup> Ω
Day 7	6.3*10 <sup>9</sup> Ω	5.5*10 <sup>9</sup> Ω	7.2*10 <sup>9</sup> Ω

## Flux Application

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 preheated surface. A spray application can be used if the spray system can handle a high solids flux (36%).

## Process Considerations

The wave conveyor speed should be adjusted to achieve the contact time. Dwell time for Sn63Pb37 is typically 2-4 seconds. Contact time for lead-free alloys are typically 4-8 seconds. Adjust the preheat settings to achieve the proper preheat temperature. 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. This will be the same for all alloys.

## Flux Control

Specific gravity ( $0.879 \pm 0.005$  Anton Paar DMA @ 25°C) 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

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

## Storage, Handling and Shelf Life

186 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 and warning label before using this product.