



## 2169 Soldering Flux

### Organic Water-Soluble Liquid Flux

#### Product Description

Kester 2169 is a halide-free organic flux that is designed for semiconductor component lead tinning and PCB soldering. This flux provides good activity on metals such as Nickel Iron (Alloy 42), nickel plate and copper alloy. Proper use of 2169 results in a non-porous solder coating in which a continuous, uniform metallurgical bond is formed with the base metal. The unique activity and surface tension properties of the flux minimize soldering defects such as icicles, bridging, excessive solder or white residues in component dipping.

X-ray analysis of non-hermetic, plastic packages have shown that the trim and form operation creates internal hairline cracks in the package which might allow flux or other contamination to seep inside because of the thermal expansion stresses encountered during soldering. Further research has shown the halide residues from organic halide fluxes in the presence of moisture can migrate along the interface between the molding compound and the lead frame surface to corrode the wire bonding pads. 2169 contains no chlorides or bromides, or other additives, which can cause internal package corrosion that is detrimental to component reliability. Therefore, the use of 2169 ensures component reliability.

#### Performance Characteristics:

- High activity
- Halide-free
- Improves soldering performance



#### 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:** 0.919 ± 0.005  
Anton Paar DMA 35 @ 25°C

**pH (10% solution, typical):** 2.8  
Mettler-Toledo MA235 pH/Ions Analyzer

**Thinner:** Kester 4169

**Percent Solids (typical):** 27  
Tested to J-STD-004, IPC-TM-650, Method 2.3.34

**Surface Tension (typical):** 23.0  
dynes/cm  
Kruss Digital Tensometer @ 25°C

**Acid Number (typical):** 122 mg  
KOH/g of flux  
Tested by potentiometric titration

**Halide Content:** None Detected

## Flux Application

2169 is designed for use in high throughput, automated wave or dip soldering operations as well as manual solder dipping. Both plastic and ceramic packages can be solder coated using this flux, especially when minimal splattering is desired.

## Process Considerations

The optimum preheating temperature is 95-105°C (203-221°F), as measured on the component leads. Sufficient preheating is needed after fluxing to evaporate the solvent vehicle, bring the flux to its optimum activation state and prevent thermal shock on components. Lead materials normally become heavily oxidized as a result of heat encountered during the wire bonding and molding operations for plastic packages. Proper precleaning of components prior to soldering is necessary to remove the oxide layer so that soldering defects are minimized and consistent soldering results are obtained. Care should be taken to minimize or prevent water drag-in from the precleaning station as excessive water can be detrimental to the activity and surface tension properties of the flux. Solder temperature of 245-255°C (473-491°F) is generally recommended for Sn63Pb37 alloy.

Above information is a guideline and it is advisable to note that the optimum process parameters depend on soldering equipment design, component fixture design and the type of components to be solder coated. A design of experiment is recommended to be done to optimize the soldering process.

## Flux Control

Measures should be taken to minimize or prevent water drag-in from the precleaning station as excessive water can be detrimental to the activity and surface tension properties of the flux. Checking of the specific gravity at regular intervals is essential and addition of the appropriate amount of Kester 4169 Thinner will assure consistent, controlled soldering results. The use of improper thinner may cause a separation of the constituents or affect other performance properties of the flux.

## Cleaning

No neutralizer, saponifiers or detergents are necessary in the water wash system for complete removal of flux residues. Deionized water may be used for cleaning. It is not recommended to use high mineral content tap water. The optimum water temperature is 49-60°C (120-140°F), although lower temperatures may be sufficient.

## Storage, Handling and Shelf Life

2169 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.