

2164

VOC-Free Organic Water-Soluble Liquid Flux

Halide Free

Product Description

Kester 2164 is a water-based, 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. A new activator system provides increased activity compared to other halide-free flux formulations. The water based solvent system eliminates the need for thinner additions to replace evaporated solvent. A greatly improved surfactant system minimizes or eliminates soldering problems often encountered with water based fluxes. Kester 2164 contains no chlorides or bromides which may be detrimental to component reliability.

X-ray analysis of non-hermetic, plastic packages have shown that the trim and form operation creates internal cracks in the package which might allow flux or other contaminants to seep inside because of the thermal expansion stresses encountered during solder. Further research has shown that halide residues from organic halide fluxes in the presence of moisture can migrate along the interface between the molding compound and the leadframe surface to corrode the wire bonding pads. Kester 2164 will not cause this type of corrosive effect.

Performance Characteristics:

- High activity
- Improves soldering performance
- Classified as ORH0 per J-STD-004

Physical Properties

Specific Gravity (typical): 1.142 ± 0.005
Anton Paar DMA 35 @ 25°C

Percent Solids (typical): 40
Tested to J-STD-004, IPC-TM-650, Method 2.3.34

pH (typical): 3.15
Mettler-Toledo MA235 pH/Ions Analyzer

Halide Content: < 10 ppm

Phosphate Content: None Detected

Application Notes

Flux Application:

Kester 2164 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 104-116°C (220-240°F) as measured on the component leads. Sufficient preheating is needed after fluxing to evaporate the water, 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:

Specific gravity is normally the most reliable method to control the flux concentration. To check concentration, a hydrometer should be used. Deionized water can be used to replace evaporative losses.

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 and Shelf Life:

Because this flux is water-based, it is subject to freezing. A minimum storage temperature of 4°C (40°F) is recommended. If frozen, Kester 2164 can be reconstituted by stirring at room temperature. Shelf life is 1 year 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.

World Headquarters: 515 E. Touhy Avenue. Des Plaines, Illinois, 60018 USA

Phone: (+1) 847-297-1600 • **Email:** customerservice@kester.com • **Website:** www.kester.com

Asia Pacific Headquarters

500 Chai Chee Lane
Singapore 469024
(+65) 6449-1133
customerservice@kester.com.sg

European Headquarters

Ganghoferstrasse 45
D-82216 Germlinden
Germany
(+49) 8142-47850
customerservice@kester-eu.com

Japanese Headquarters

20-11 Yokokawa 2-Chome
Sumida-Ku
Tokyo 130 Japan
(+81) 3-3624-5351
jpsales@kester.com.sg

The data recommendations presented are based on tests, which we considered reliable. Because Kester has no control over the conditions of use, we disclaim any responsibility connected with the use of any of our products or the information presented. We advise that all chemical products are to be used only by or under the direction of technically qualified personnel who are aware of the potential hazards involved and the necessity for reasonable care in their handling. The technical information contained herein is consistent with the properties of this material but should not be used in the preparation of specification as it is intended for reference only. For assistance in preparing specifications, please contact your local Kester office for details.