952-S
Low-Solids No-Clean Flux

Product Description

Kester 952-S is a halide-free, non-rosin organic flux designed for wave soldering of conventional and surface mount circuit board assemblies. The extremely low solids content (2.0%) and nature of the activator system results in practically **no residue** left on the assembly after soldering. Boards are dry and cosmetically clean as they exit the wave solder machine. There are no residues to interfere with electrical testing, and the expense of cleaning is eliminated.

Kester 952-S exhibits improved soldering performance to minimize solder bridges (shorts) during rework operations. This non-corrosive and non-conductive flux meets the strictest requirements of of Bellcore GR-78 specifications. This flux is suitable for solar, automotive, computer, telecommunications and other applications where reliability considerations are critical. The surface insulation resistance on soldered boards is higher than that provided by typical organic water-soluble fluxes.

Kester 952-S is classified as Type L flux under the J-STD-004 specification and passes the surface insulation resistance requirements for high reliability products.

Performance Characteristics:

- Halide-free
- Eliminates the need and expense of cleaning
- Good cosmetic appearance
- Non-corrosive and non-conductive
- No surface insulation resistance degradation
- Uniform, stable foam head in foam fluxing
- Suitable for leaded and lead-free applications
- Classified as ORL0 per J-STD-004
- Conforms to Bellcore GR-78

Physical Properties

Specific Gravity: 0.803
Antoine Paar DMA 35 @ 25°C

Percent Solids (theoretical): 2.0

Acid Number (typical): 15.0 mg KOH/g of flux
Tested by potentiometric titration

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: 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	952S
Day 1	$1.0 \times 10^9\ \Omega$	$1.2 \times 10^9\ \Omega$
Day 4	$1.7 \times 10^9\ \Omega$	$1.5 \times 10^9\ \Omega$
Day 7	$2.0 \times 10^9\ \Omega$	$1.6 \times 10^9\ \Omega$

Class 3 @ 85°C/85%RH

RoHS Compliance

This product meets the requirements of the RoHS (Restricition of Hazardous Substances) Directive, 2002/95/EC Article 4 for the stated banned substances.

Application Notes

Flux Application:
Kester 952-S is specially designed for spray fluxing. Flux desposition should be 90-190μg of solids/cm² (600-1200 μg of solids/in²). 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 93-110°C (199-230°F) as measured on the top or component side of the assembly. The optimum preheat temperature for most circuit assemblies is 113-150°C (235-302°F) as measured at the bottom or component side of the assembly. It is still important to note that the optimum preheat temperature for a given assembly will depend on the circuit board design, board thickness, length of contact time with molten solder, solder wave shape, speed of solder flow and preheating time.

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 0.8 - 1.2 m/min (2.6 - 3.9 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. The solderpot temperature is recommeded to be 245° - 255°C (473° - 491°F) for Sn63Pb37 alloy. Above information is a guideline and it is advisable to note that the optimum settings for a given assembly may vary and this is dependent on the circuit board design, board thickness, components used and equipment used. A design of experiment is recommended to optimize the soldering process.

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. Kester PS-22 Test Kit method gives a more accurate procedure than the use of auto-density controller in the determination of flux concentruation. Control of the flux in 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 108-S Thinner be used to replace evaporative losses. When excessive debris from circuit boards, such as board fibers, and other debris 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. Incoming solderability inspection of circuit boards and components is advisable as part of process control to maintain consistent soldering results.

Cleaning:
Kester 952-S 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 952-S 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 & 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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