

NF372-TB Soldering Flux

Zero-Halogen, High-Reliability, No-Clean Liquid Flux



Product Description

Kester NF372-TB is a zero-halogen, no-clean, low solids liquid flux designed to be used in wave and hand soldering processes. It can be used with both leaded and lead-free alloys. One of its best features is its wide processing window for thin boards and thick boards that require short or long dwell times and high preheat temperatures. Sustained activity within the flux allows for good barrel fill in challenging applications, such as reflowed copper OSP boards or with difficult to solder components. NF372-TB residues are minimal, clear and non-tacky for improved cosmetics.

Performance Characteristics:

- Zero-halogen (none intentionally added)
- Provides good solderability under air atmosphere
- Classified as ROL0 per J-STD-004B
- Non-corrosive, non-conductive and non-tacky residues
- Pass SIR in raw state (unheated boards dried at 25°C/50%RH for 24 hours before test)
- Compliant to GR-78-CORE (Telcordia/Bellcore)
- Ability to provide desired hole-fill with preheat temperatures up to 140°C max
- Safe for rework (available in flux-pens)

Advantages:

- Wide process preheat window of 90°C-140°C that accommodates both thin and thick board applications
- High reliability flux that passes both IPC SIR 85/85 and SIR 40/90 and Bono Test for both leaded and lead-free alloys
- Pallet process friendly
 - Extends pallet life and does not attack pallet materials
 - The seepage of the flux between pallets and PCB is safer and does not cause reliability issues in condensing or high humidity environment



RoHS Compliance

This product meets the requirements of the Restriction of Hazardous Substances (RoHS) Directive. Additional RoHS information is located at <https://www.kester.com/downloads/environmental>.



Physical Properties

Acid Number (typical):
16.6 mgKOH/gm

Specific Gravity @ 25°C: 0.793
(typical)

Solids Content (theoretical): 3.90 %



Reliability Properties

Copper Mirror: Low
J-STD-004B, IPC-TM-650, Method 2.3.32

Copper Corrosion: Low
J-STD-004B, IPC-TM-650, Method 2.6.15

Electrochemical Migration (ECM):
Pass
J-STD-004B, IPC-TM-650, Method 2.6.14.1
Conditions: 65°C, 90% RH, 100V, 25days

Surface Insulation Resistivity (SIR):
Pass; [All Readings > 1.0x10⁸ Ω]
J-STD-004B, IPC-TM-650, Method 2.6.3.7
Conditions: 40°C, 90% RH, 12.5V, 7days

Surface Insulation Resistivity (SIR):
Pass
J-STD-004A, IPC-TM-650, Method 2.6.3.3
Conditions: 85°C, 85% RH, 100V, 7days

Halogen Content: None detected
J-STD-004B, IPC-TM-650, Method 2.3.28.1

Bellcore SIR, IPC:
Pass; [All Readings > 2.0x10¹⁰ Ω]
GR-78 13.1.3
Conditions: 35°C, 85% RH, 100V, 4days

Bono Corrosion Test:
Pass; [Fc = 0.5%]
Conditions: 85°C, 85% RH, 12V, 15days

Process Considerations / Recommendations

NF372-TB is designed for spray fluxing. This flux is not designed for foam applications. Below information is a guideline, and it is advisable to note that the optimum setting 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 experiments is recommended to be done to optimize the soldering process.

Process Parameter	62mil Thick Circuit Board	93mil Thick Circuit Board
Flux deposition	600-1200 $\mu\text{g}/\text{in}^2$ (93-217 $\mu\text{g}/\text{cm}^2$) of solids	800-1400 $\mu\text{g}/\text{in}^2$ (124-217 $\mu\text{g}/\text{cm}^2$) of solids
Top side board temperature (bottom preheaters only)	90°C-120°C ^{2,3}	110°C-120°C
Top side board temperature (bottom and top preheaters) ¹	110°C-140°C ^{2,3}	120°C-140°C
Bottom side board temperature	110°C-140°C ³	120°C-140°C
Recommended preheat profile	Straight ramp to top side board temperature	Straight ramp to top side board temperature
Conveyor speed	0.8-1.2 m/min (2.6-3.9 ft/min)	0.5-0.9 m/min (2.6-3.9 ft/min)
Solder contact time	3-7 seconds	4.5-7 seconds
Solder bath temperature	260°C-270°C (500°F-518°F) for SnCu or SAC alloy 245°C-260°C (473°F-500°F) for Sn63Pb37 alloy	

¹ When board is heated from top and bottom, there will be a smaller delta temperature between top and bottom of the board and minimizing the risk of sublimation. The top heater should be set between 10°C-20°C higher the setting bottom heater under it. This will tend to draw the solder up to the top of the board. Caution: Using top and bottom preheaters simultaneously does not insure the center of the board reach proper temperature for soldering.

² Caution: Lower top side board temperature is acceptable only in low thermal areas of an assembly with proper lead/hole clearance.

³ Board temperature should not exceed 140°C.

Flux Control

NF372-TB is designed to be sprayed. Incoming solderability inspection of circuit boards and components is advisable as a part of process control to maintain consistent soldering results.

Cleaning

NF372-TB residues are non-conductive, non-corrosive and do not require removal in most applications. If residue removal is required, it can be removed using commercially available flux residue cleaner. Contact Kester Technical Support for additional assistance..

Compatibility

NF372-TB is compatible with Humiseal conformal coating UV40, 1B31 and UB500.

Storage, Handling and Shelf Life

NF372-TB 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. Safety Data Sheets are available at <https://www.kester.com/downloads/sds>.