



NP505-HR

Zero Halogen, Lead-Free, High Reliability No-Clean Solder Paste

Product Description

Kester NP505-HR is a zero halogen, lead-free no-clean solder paste formula developed specifically for high reliability applications. NP505-HR has been formulated to have reliable residues even in in harsh damp cycling SIR testing. NP505-HR can handle a wide variety of printer variables, including print speed and long idle times with a wide range of temperatures and humidities. Kester NP505-HR is fully capable of printing and reflowing 01005 components, even in air reflow, with minimal graping behavior. Post-soldering, the NP505-HR offers minimized defects, including head-in-pillow and QFN/BGA voiding. This paste is zero halogen, exceeding the IPC definition for halogen-free. NP505-HR is classified as type ROL0 per IPC J-STD-004B.

- Zero Halogen (none intentionally added)
- Reliable residues in harsh modified SIR testing with forced condensation points
- Consistent print performance to 0.55AR
- Low QFN/BGA voiding
- Excellent solderability across wide variety of profiles
- Compatible with most conformal coating materials
- Reflowable in air and nitrogen
- Stable paste properties, with 9 month shelf life

Standard Applications

88.5% Metal – Stencil Printing

Physical Properties

(Data given for Sn96.5Ag3.0Cu0.5, 88.5% metal, Type 4,
Data representative of most SAC compositions)

Viscosity (typical) : 1750 poise
Malcom Viscometer @ 10 rpm and 25°C

Initial Tackiness (typical) : 40 grams
Tested to J-STD-005, IPC-TM-650, Method 2.4.44

Slump Test: Pass
Tested to J-STD-005, IPC-TM-650, Method 2.4.35

Solder Ball Test: Pass
Tested to J-STD-005, IPC-TM-650, Method 2.4.43

Reliability Properties

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

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

Halogen Content: None Detected
Tested to J-STD-004B, IPC-TM-650, Method 2.3.41
(ref. EN 14582)

SIR, IPC (typical): Pass
Tested to J-STD-004B, IPC-TM-650, Method 2.6.3.7

SIR, IPC (typical): Pass
Tested to J-STD-004A, IPC-TM-650, Method 2.6.3.3

RoHS Compliance

This product meets the requirements of the RoHS (Restriction of Hazardous Substances) Directive, 2011/65/EU for the stated banned substances.

Application Notes

Availability:

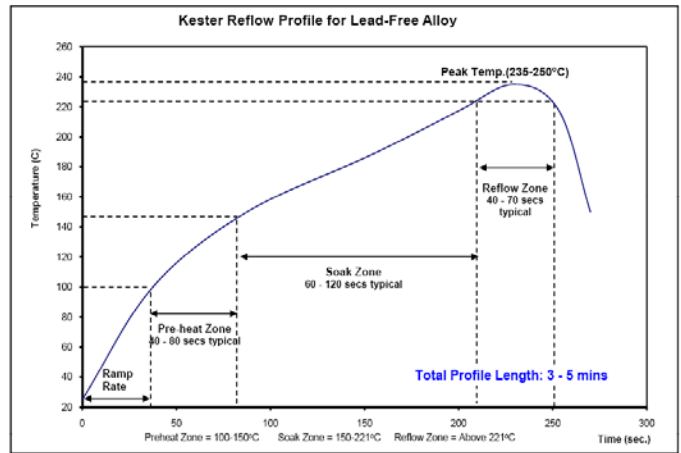
Kester NP505-HR is available in the Sn96.5Ag3Cu0.5 alloy with a type 3 and 4 powder mesh. Type 4 mesh size is recommended for standard and fine pitch applications. NP505-HR is also compatible with other SnAgCu alloys in similar melting range to the listed alloys. For specific packaging information refer to Kester's Solder Paste Packaging Chart for available sizes. The appropriate combination depends on process variables and the specific application.

Printing Parameters:

Squeegee Blade	80 to 90 durometer polyurethane or stainless steel
Squeegee Speed	Capable to a maximum speed of 150 mm/sec (6 in/sec)
Stencil Material	Stainless Steel, Molybdenum, Nickel Plated, Brass
Temperature / Humidity	Optimal ranges are 21-25°C (70-77°F) and 35-65% RH

Recommended Reflow Profile:

The recommended convection reflow profile for NP505-HR formula made with SAC alloys is shown here. This profile is simply a guideline. NP505-HR has excellent solderability and wetting across a wide range of profiles, with similar performance in air and nitrogen. Your optimal profile may be different from the one shown based on your oven, board and mix of defects. Please contact Kester if you need additional profiling advice.



Cleaning:

NP505-HR is a no-clean formula. The residues do not need to be removed for typical applications. Although NP505-HR is designed for no-clean applications; its residues can be easily removed using automated cleaning equipment (in-line or batch) with a variety of readily available cleaning agents.

Storage, Handling and Shelf Life:

Refrigeration is the recommended optimum storage condition for solder paste to maintain consistent viscosity, reflow characteristics and overall performance. NP505-HR should be stabilized at room temperature prior to printing. NP505-HR should be kept at standard refrigeration conditions, 0-10°C (32-50°F). Please contact Kester if you require additional advice with regard storage and handling of this material. Shelf life is 9 months from date of manufacture when handled properly when held at 0-10°C (32-50°F).

Health & Safety:

This product, during handling and use, may be hazardous to health or the environment. Read the Material Safety Data Sheet and the label before using this product.

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