

NP545 Solder Paste

Zero-Halogen, No-Clean



Product Description

NP545 is a no-clean, zero-halogen solder paste formula designed for consistency and repeatability. NP545 consistently delivers paste transfer efficiencies of 0.55 to 0.50 AR. This paste is also fully capable of printing and reflowing 01005 components, even in air reflow, with minimal graping behavior. NP545 is classified as ROL0 per IPC J-STD-004B. NP545 is has been developed as a SnPb alloy solder paste can used in backward applications and is thus fully compatible for soldering complex lead-free component on SnPb assemblies.

Performance Characteristics:

- ROL0 per J-STD-004B
- Zero-Halogen (none intentionally added)
- Consistent print performance to 0.5AR
- Excellent cosmetics and a clear residue

RoHS Compliance

Kester does not determine any applicable Restriction of Hazardous Substances (RoHS) exemptions for our lead containing products at the user level.

Physical Properties

Based on SnPb / SnPbAg Type 4

Initial Tackiness (typical): 35 grams
Tested to J-STD-005, IPC-TM-650, Method 2.4.44

Viscosity (typical): 1250 poise
Malcom Viscometer @ 10 rpm and 25°C

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

Hot 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

Wetting Test: Pass
Tested per IPC-TM-650, Method 2.4.45

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

Surface Insulation Resistance (SIR): Pass
Tested to J-STD-004B, IPC-TM-650, Method 2.6.3.7 [40°C, 90% RH, 12.5V, 7days]

Electro Chemical Migration (ECM): Pass
Tested to J-STD-004B, IPC-TM-650, Method 2.6.14.1 [65°C, 90% RH, 100V, 25days]

Availability

NP545 is available in Sn63Pb37 / Sn62Pb36Ag1 alloys with type 4 powder mesh (20-38 μ m). Type 4 mesh size is recommended for standard and fine pitch applications. NP545 standard packaging in 500gm jars and 600gm cartridges. The appropriate combination depends on the process variables and the specific application. If other packaging configuration is needed, please contact your Kester representative for additional information. NP545 is also available with SAC alloys with T3 and T4 powder mesh. Please visit www.kester.com for more information.

Process Guidelines

Below information are process guidelines, 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. In addition, incoming solderability inspection of circuit boards and components is recommended as part of process control to maintain consistent soldering performance and electrical reliability.

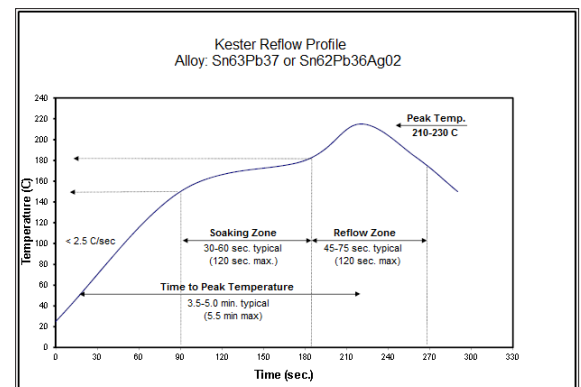
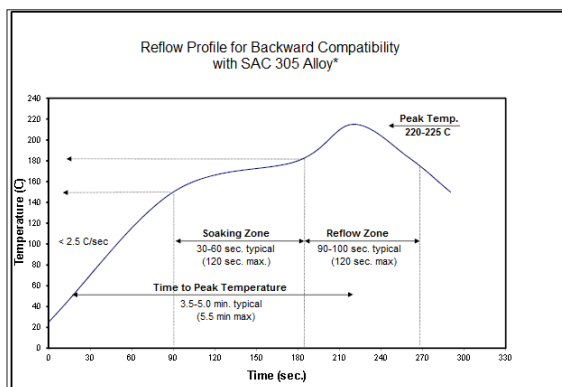
Printing Process Parameter	Recommendations
Solder Paste Bead Size	Initial 2cm (0.75in); Add below 1.4cm (0.5in)
Squeegee Blade	Stainless steel preferred; 80-90 durometer or polyurethane could also be used
Squeegee Angle	60 deg. from horizontal; 45 deg. for pin in paste
Speed	25mm/sec-150mm/sec (1-6in/sec)
Pressure ¹	0.18-0.27 kg/cm (1-1.5 lb/in)
Separation Speed	2-10mm/sec
Stencil Life	8 hours at 20-25°C (70-77°F) and 35-65% RH

¹Pressure should be increased with increasing print speed. First set the print speed. Then set the pressure to the minimum required to clean the solder paste off of the stencil.

²Some cleaning chemistry can interact with the solder paste and can impact print performance.

Recommended Reflow Profile

The recommended reflow profile for NP545 formula made with SnPb / SnPbAg alloys are shown here. This profile is simply a guideline. NP545 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 components. Contact Kester Technical Support if you need additional profiling advice.



* This profile is simply a guideline. For a reliable solder joint the reflow profile must produce a homogenous mixing of the tin lead alloy with the lead-free component sphere. The mixing level between the tin lead and lead-free alloy is a function of reflow peak temperature, time above liquidus, component sphere size and sphere alloy. Your optimal reflow profile may be different from the one shown based on your oven, component sphere size and sphere alloy.

Cleaning

NP545 residues are non-conductive, non-corrosive, and do not require removal. Although NP545 is designed for no-clean applications; its residues can be removed using automated cleaning equipment (in-line or batch) with a variety of readily available cleaning agents.

Storage, Handling and Shelf Life

NP545 has a shelf life of 12 months from the date of manufacture when handled properly at 0-10°C (32-50°F) and a shelf life of 2 months when handled at room temperature (up to 27°C/80°F). Refrigeration is the recommended storage condition for solder paste to maintain consistent viscosity, reflow characteristics and overall performance. If refrigerated, NP545 should be stabilized at room temperature (27°C/80°F) prior to printing. Please contact Kester Technical Support if you require additional advice with regards to handling and storage of this material..

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 www.kester.com/downloads/sds.