

# NP545 Solder Paste

Zero-Halogen, Lead-Free, No-Clean

---

## Product Description

Kester NP545 Solder Paste is a zero-halogen, lead-free, no-clean solder paste formula designed for consistency and repeatability. NP545 is extremely stable and has an unrefrigerated shelf life of 12 months with no print or solderability degradation. NP545 consistently delivers paste transfer efficiencies of 0.55 to 0.5AR. The paste is also fully capable of printing and reflowing 01005 components, even in air reflow, with minimal graping behavior. NP545 is classified as ROL0 under IPC JSTD-004 and ROM0 under IPC JSTD-004B. For a list of compatible products, visit Kester's website or contact Kester Technical Support.

## Performance Characteristics:

- Zero-Halogen (none intentionally added)
- Consistent print performance to 0.5AR
- Low QFN/BGA voiding
- Excellent shelf life, 1 year in both refrigerated and room temperature
- Exceptional printing relax & recovery, and printer friendly
- Reflowable in air and nitrogen conditions
- Wide reflow profile window with good solderability on various PCB surface finishes
- Excellent cosmetics and a clear residue

## 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

(Based on SAC305)

**Viscosity (typical):** 1450 poise

Malcom Viscometer @ 10 rpm and 25 °C

**Tack Life:** Pass

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:** No Breakthrough "L"

Tested to J-STD-004B, IPC-TM-650, Method 2.3.32

**Corrosion Test:**

No Corrosion "L"

Tested to J-STD-004, IPC-TM-650, Method 2.6.15B

Minor Corrosion "M"

Tested to J-STD-004B, IPC-TM-650, Method 2.6.15C

**Halogen Content:** None Detected

Tested to J-STD-004B, IPC-TM-650, Method 2.3.41 (Ref. EN 14582)

**Electrochemical Migration (ECM):** Pass

Tested to J-STD-004B, IPC-TM-650, Method 2.6.14.1

Test Conditions: 65 °C/149 °F, 85% RH, 25 days, 100V

**Surface Insulation Resistance (SIR):** Pass

Tested to J-STD-004B, IPC-TM-650, Method 2.6.3.7

Test Conditions: 40 °C/104 °F, 90% RH, 7 days, 12.5V

**Surface Insulation Resistance (SIR):** Pass up to 100 µm spacing and on MLF

Tested to J-STD-004B, IPC-TM-650, Method 2.6.3.7

Test Conditions: 40 °C/104 °F, 90% RH, 7 days, 12V

**Surface Insulation Resistance (SIR):** Pass

Tested to J-STD-004A, IPC-TM-650, Method 2.6.3.3

Test Conditions: 85 °C/185 °F, 85% RH, 7 days, 100V

**Surface Insulation Resistance (SIR):** Pass up to 100 µm spacing

Tested to J-STD-004A, IPC-TM-650, Method 2.6.3.3

Test Conditions: 85 °C/185 °F, 85% RH, 7 days, 10V

### Availability

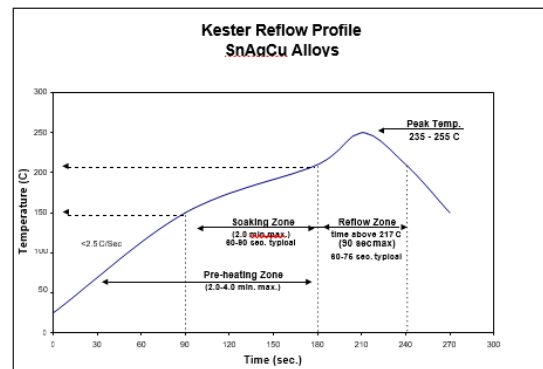
NP545 is available in the Sn96.5Ag3Cu0.5 alloy with a Type 3 (T3), Type 4 (T4) and Type 5 (T5) powder mesh. Type 5 mesh size is recommended for ultra-fine pitch applications. NP545 is also compatible with other SnAgCu alloys in similar melting range to the listed alloys. For specific packaging information refer to this product's Product Offerings tab at kester.com for available sizes. The appropriate combination depends on process variables and the specific application. NP545 is also available with SnPb alloys with Type 3 and 4 powder mesh. Visit <https://www.kester.com/products/product/np545-solder-paste> for more information.

### Printing Parameters

Performance Attribute	NP545 Capability
Print Definition	Consistent fine feature print volumes, reaching area ration of 0.55 with standard print set-up. Able to reduce AR with advanced printing technology.
Print Durability (Stencil Life)	No significant paste degradation after 8 hours printing.
Print Abandon Time	2nd board recovery after 16-hour abandon time.
Print Temperature Window	Consistent printing performance at the temperature of 20 to 25 °C and the 30 to 60%RH.
Squeegee Blade	Stainless steel preferred; 80 to 90 durometer or polyurethane could also be used
Print Speed Range	Fine pitch release remains consistent from speeds of 25 mm/sec-200 mm/sec (1 to 8 inch/seconds)
Stencil Material	Stainless Steel, Molybdenum, Nickel Plated or Brass
Temperature & Relative Humidity	20 to 25 °C (70 to 77 °F) and 35 to 65%

### Recommended Reflow Profile

The recommended convection reflow profile for NP545 formula made with SAC 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 defects. Contact Kester Technical Support if you need additional profiling advice.



## Cleaning

NP545 is a no-clean formula. The residues do not need to be removed for typical applications. 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.

## Recycling Services

We provide safe and efficient recycling services to help companies meet their environmental and legislative requirements and at the same time, maximize the value of their waste streams.

Our service collects solder dross, solder scrap, and various forms of solder paste waste. Please contact your local sales representative for recycling capabilities in your area or [link here](#).



## Storage, Handling and Shelf Life

NP545 T3 and T4 have a shelf life of 12 months from the date of manufacture when handled properly at 0 to 10 °C (32 to 50 °F) or when handled at room temperature (up to 27 °C/80 °F). NP545 T5 has a refrigerated shelf life of 6 months. 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 information on the storage and handling 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 this [link](#).

## Contact Information

To confirm this document is the most recent version, please contact  
[Assembly@MacDermidAlpha.com](mailto:Assembly@MacDermidAlpha.com)

<b>North America</b> 109 Corporate Blvd. South Plainfield, NJ 07080, USA 1.800.253.7837	<b>Europe</b> Unit 2, Genesis Business Park Albert Drive Woking, Surrey, GU21 5RW, UK 44.01483.758400	<b>Asia Pacific</b> 8/F., Paul Y. Centre 51 Hung To Road Kwun Tong, Kowloon, Hong Kong 852.3190.3100
--	---	--

Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE. Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588

DISCLAIMER: All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. No statement or recommendation shall constitute a representation unless set forth in an agreement signed by officers of seller and manufacturer. NO WARRANTY OF MERCHANTABILITY, WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY IS MADE. The following warranty is made in lieu of such warranties and all other warranties, express, implied, or statutory. Products are warranted to be free from defects in material and workmanship at the time sold. The sole obligation of seller and manufacturer under this warranty shall be to replace any noncompliant product at the time sold. Under no circumstances shall manufacturer or seller be liable for any loss, damage or expense, direct, indirect, incidental or consequential, arising out of the inability to use the product. Notwithstanding the foregoing, if products are supplied in response to a customer request that specifies operating parameters beyond those stated above, or if products are used under conditions exceeding said parameters, the customer by acceptance or use thereof assumes all risk of product failure and of all direct, indirect, incidental and consequential damages that may result from use of the products under such conditions, and agrees to exonerate, indemnify, defend and hold harmless MacDermid, Incorporated and its affiliates therefrom. No suggestion for product use nor anything contained herein shall be construed as a recommendation to use any product in a manner that infringes any patent or other intellectual property rights, and seller and manufacturer assume no responsibility or liability for any such infringement.

© 2019 MacDermid, Inc. and its group of companies. All rights reserved. "R" and "TM" are registered trademarks of MacDermid, Inc. and its group of companies in the United States and/or other countries.