**NP545 Solder Paste**  
Zero-Halogen, Lead-Free, No-Clean

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**Product Description**

Kester NP545 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 per IPC J-STD-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

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**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](https://www.kester.com/downloads/environmental).

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**Physical Properties**

Based on SAC305, Type 3 and 4

**Initial Tackiness (typical):** 30 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

**Viscosity (typical):** 1450 poise  
Malcom Viscometer @ 10 rpm and 25°C

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**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

**Surface Insulation Resistance (SIR):**  
Pass  
Tested to J-STD-004B, IPC-TM-650, Method 2.6.3.7

**Surface Insulation Resistance (SIR):**  
Pass  
Tested to J-STD-004A, IPC-TM-650, Method 2.6.3.3

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

**Electro Chemical Migration (ECM):** Pass  
**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 Kester’s Solder Paste Packaging Chart 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](https://www.kester.com/products/product/np545-solder-paste) for more information.

**Printing Parameters**

<table>
<thead>
<tr>
<th>Performance Attribute</th>
<th>NP545 Capability</th>
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<tbody>
<tr>
<td>Print Definition</td>
<td>Consistent fine feature print volumes, reaching area ration of 0.55 with standard print set-up. Able to reduce AR with advanced printing technology.</td>
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<tr>
<td>Print Durability</td>
<td>No significant paste degradation after 8 hours printing.</td>
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<tr>
<td>(Stencil Life)</td>
<td>2nd board recovery after 16 hour abandon time.</td>
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<tr>
<td>Print Temperature</td>
<td>Consistent printing performance at the temperature of 20-25°C and the 30-60%RH.</td>
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<tr>
<td>Window</td>
<td>Stainless steel preferred; 80-90 durometer or polyurethane could also be used</td>
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<tr>
<td>Print Abandon Time</td>
<td>Fine pitch release remains consistent from speeds of 25mm/sec-200mm/sec (1-8 in/sec)</td>
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<tr>
<td>Squeegee Blade</td>
<td>Stainless Steel, Molybdenum, Nickel Plated or Brass</td>
</tr>
<tr>
<td>Print Speed Range</td>
<td>Temperature &amp; RH</td>
</tr>
</tbody>
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**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.
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 0-10°C (32-50°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 https://www.kester.com/downloads/sds.