KESTER® 909HPS SOLDER PASTE

Lead-Free, No-Clean

DESCRIPTION

Kester 909HPS Solder Paste is a lead-free, air and nitrogen reflowable, no-clean solder paste specifically designed for the thermal requirements of lead-free alloys, including the Sn96.5Ag3.0Cu0.5 alloy. The paste flux system allows joint appearances that closely resemble that achieved with SnPb alloys. 909HPS is capable of stencil printing downtimes up to 60 minutes with an effective first print down to 20 mils without any kneading. 909HPS also exhibits excellent continual printability for fine pitch (0.4 mm/16 mils) and is able to print at high speeds up to 6 in/s (150 mm/s). This solder paste also exceeds the reliability standards required by J-STD-004.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- Lead-free joints that closely resemble those achieved with SnPb solder paste
- Excellent solderability to a wide variety of surface metalizations, including NiAu, ImSn and ImAg
- High print speeds up to 150 mm/s
- Capable of 60 minute break times in printing
- Stencil life: 12+ hours (process dependent)
- Stable tack life
- Excellent printing characteristics to 16 to 20 mils pitch
- Excellent print and reflow characteristics for 0201 applications
- Processable by air or nitrogen reflow
- Classified as ROL0 per J-STD-004

STANDARD APPLICATIONS

Stencil Printing – 88.5% Metal

ROHS COMPLIANCE

This product meets the requirements of the Restriction of Hazardous Substances (RoHS) Directive, 2015/863 for the stated banned substances.

TECHNICAL DATA

<table>
<tr><th>Category</th><th>Results</th><th>Procedure/Remarks</th></tr>
<tr><td colspan="3">Physical Properties (Data given for Sn96.5Ag3.0Cu0.5, 88.5% metal, -325+500 mesh)</td></tr>
<tr><td>Viscosity (typical)</td><td>1800 poise</td><td>Malcom Viscometer @ 10 rpm and 25 °C</td></tr>
<tr><td>Initial Tackiness (typical)</td><td>44 grams</td><td>Tested to J-STD-005, IPC-TM-650, Method 2.4.44</td></tr>
<tr><td>Slump Test</td><td>Pass</td><td>Tested to J-STD-005, IPC-TM-650, Method 2.4.35</td></tr>
<tr><td>Solder Ball Test</td><td>Pass</td><td>Tested to J-STD-005, IPC-TM-650, Method 2.4.43</td></tr>
<tr><td>Wetting Test</td><td>Pass</td><td>Tested to J-STD-005, IPC-TM-650, Method 2.4.45</td></tr>
<tr><td colspan="3">Reliability Properties</td></tr>
<tr><td>Copper Mirror Corrosion</td><td>Low</td><td>Tested to J-STD-004, IPC-TM-650, Method 2.3.32</td></tr>
<tr><td>Corrosion Test</td><td>Low</td><td>Tested to J-STD-004, IPC-TM-650, Method 2.6.15</td></tr>
<tr><td>Silver Chromate</td><td>Pass</td><td>Tested to J-STD-004, IPC-TM-650, Method 2.3.33</td></tr>
<tr><td>Chloride and Bromides</td><td>None Detected</td><td>Tested to J-STD-004, IPC-TM-650, Method 2.3.35</td></tr>
<tr><td>Fluorides by Spot Test</td><td>Pass</td><td>Tested to J-STD-004, IPC-TM-650, Method 2.3.35.1</td></tr>
<tr><td rowspan="2">Surface Insulation Resistivity (SIR), IPC (Typical)</td><td>Pass</td><td>Tested to J-STD-004, IPC-TM-650, Method 2.6.3.3</td></tr>
<tr><td colspan="2"><table>
<tr><th></th><th>Blank</th><th>909HPS</th></tr>
<tr><td>Day 1</td><td>$1.1 \times 10^{10}\ \Omega$</td><td>$7.7 \times 10^{8}\ \Omega$</td></tr>
<tr><td>Day 4</td><td>$1.5 \times 10^{10}\ \Omega$</td><td>$1.2 \times 10^{9}\ \Omega$</td></tr>
<tr><td>Day 7</td><td>$1.4 \times 10^{10}\ \Omega$</td><td>$1.4 \times 10^{9}\ \Omega$</td></tr>
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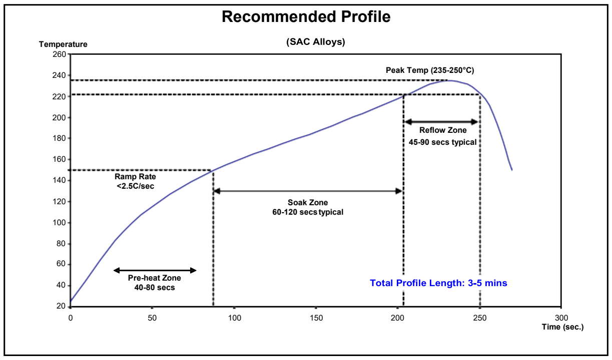
PROCESSING GUIDELINES

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 to 25 °C (70 to 77 °F) and 35 to 65% RH

Recommended Reflow Profile

Full Convection reflow method is most commonly used to reflow the 909HPS formula. The recommended convection reflow profile for 909HPS made with either the Sn96.5Ag3.5 or SnAgCu alloys is shown here.



Cleaning

909HPS is a no-clean formula. The residues do not need to be removed for typical applications. Although 909HPS 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. Call MacDermid Alpha Technical Support for details.

Storage, Handling and Shelf Life

Refrigeration is the recommended optimum storage condition for solder paste to maintain consistent viscosity, reflow characteristics and overall performance. 909HPS should be stabilized at room temperature prior to printing. 909HPS should be kept at standard refrigeration conditions, 0 to 10 °C (32 to 50 °F). Please contact MacDermid Alpha Technical Support if you require additional advice with regard storage and handling of this material. Shelf life is 4 months from date of manufacture when handled properly and held at 0 to 10 °C (32 to 50 °F).

AVAILABILITY

909HPS is available in Sn96.5Ag3.0Cu0.5 and Sn96.5Ag3.5 alloys. Type 3 powder mesh is normally recommended, but type 4 is available for fine pitch applications. 909HPS is also compatible with other SnAgCu alloys in a similar melting range to the listed alloys. For specific packaging information, see Kester's Paste Packaging Chart for available sizes. The appropriate combination depends on process variables and the specific application.

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.

SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available.**

CONTACT INFORMATION

www.macdermidalpha.com

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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

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