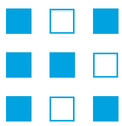


kester®

Technical Data Sheet

909HPS Solder Paste

Lead-Free, No-Clean

Product Description

Kester 909HPS 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 (0.4mm/16 mils) and is able to print at high speeds up to 6”/s (150 mm/s). This solder paste also exceeds the reliability standards required by J-STD-004.

Performance Characteristics:

- 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 16-20 mils pitch
- Excellent print and reflow characteristics for 0201 applications
- Processable by air or nitrogen reflow
- Classified as ROL0 per J-STD-004

RoHS Compliance

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

Physical Properties

(Data given for Sn96.5Ag3.0Cu0.5, 88.5% metal, -325+500 mesh)

Viscosity (typical): 1800 poise
Malcom viscometer @ 10rpm and 25°C

Initial Tackiness (typical): 44 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

Wetting Test: Pass
Tested to J-STD-005, IPC-TM-650, Method 2.4.45

Reliability Properties

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

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

Silver Chromate: Pass
Tested to J-STD-004, IPC-TM-650, Method 2.3.33

Chloride and Bromides: None Detected
Tested to J-STD-004, IPC-TM-650, Method 2.3.35

Fluorides by Spot Test: Pass
Tested to J-STD-004, IPC-TM-650, Method 2.3.35.1

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

	Blank	909HPS
Day 1	1.1×10^{10} Ω	7.7×10^{8} Ω
Day 4	1.5×10^{10} Ω	1.2×10^{9} Ω
Day 7	1.4×10^{10} Ω	1.4×10^{9} Ω

Global Headquarters: 800 West Thorndale Avenue, Itasca, IL USA 60143 ▪ Phone: +1 800.2.KESTER ▪ Fax: +1 630.616.4044
Asia-Pacific Headquarters: 61 Ubi Avenue 1 #06-01 UB Point, Singapore 408941 ▪ Phone: +65 6.449.1133 ▪ Fax: +65 6.242.9036
European Headquarters: Ganghofer Strasse 45, 82216 Gernlinden, Germany ▪ Phone: +49 (0) 8142 4785 0 ▪ Fax: +49 (0) 8142 4785 61
Asia Manufacturing: Hengqiao Road, Wujiang Economic Development Zone ▪ Suzhou, Jiangsu Province, China 215200 ▪ Phone: +86 512.82060807 ▪ Fax: +86 512.8206 0808
▪ Website: www.kester.com ▪

Standard Applications:

88.5% Metal – Stencil Printing

Availability

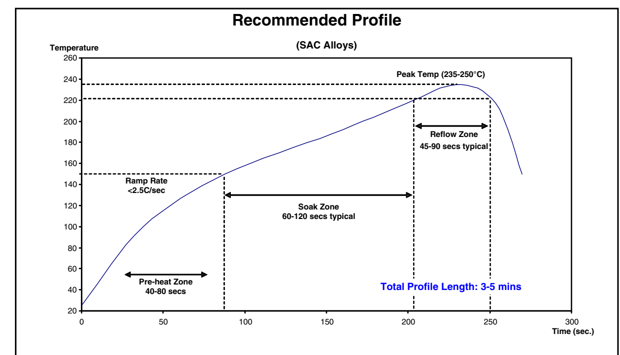
909HPS is available in Sn96.5Ag3.0Cu0.5 and Sn96.5Ag3.5 alloys. Type 3 powder mesh is normally recommended, but type 4 is available for fine pitch applications. 909HPS is also compatible with other SnAgCu alloys in a similar melting range to the listed alloys. For specific packaging information, see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

Printing Parameters

Squeegee Blade	80-90 durometer stainless steel or polyurethane
Squeegee Speed	Capable to a maximum speed of 150 mm/sec (6 in/sec)
Stencil Material	Stainless Steel, Molybdenum, Nickel Plated or Brass
Temperature/Humidity	Optimal ranges are 21-25°C (70-77°F) and 35-65% 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 Kester 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, 0-10°C (32-50°F). Please contact Kester 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 0-10°C (32-50°F).

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.

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