HM531 Solder Paste

Water Soluble, Halide-Free

Product Description

Kester HM531 is a halide-free, organic acid, water soluble solder paste that provides users with the highest level of consistency and performance. Kester HM531 Solder Paste is a halide-free, organic acid, water soluble solder paste that provides users with the highest level of consistency and performance. Batch after batch, HM531 provides hours of stable stencil life, tack time and repeat- able brick definition. HM531's robust printing characteristics result in consistent solder paste volume regardless of idle time, stencil life and print speed. The activator package in the HM531 is very aggressive and provides superior wetting to OSP-coated PCBs and PdAg components. The outstanding batch consistency, anti-slump chemistry, consistent print volumes, solderability and cleanability make the HM531 an ideal water soluble solder paste for any application.

Performance Characteristics:

- Outstanding batch-to-batch consistency
- Excellent anti-slump characteristics minimizing bridging defects
- Capable of 60+ minute idle times in printing
- Capable of print speeds up to 150 mm/sec (6 in/sec)
- Excellent solderability to difficult lead-free metallization with a leaded paste
- Residues easily removed with hot DI water, even up to 8 hours after soldering as a best process practice
- Minimal foam in wash systems
- 8+ hour stencil life
- Classified as ORM0 per J-STD-004
- Produces minimal voiding underneath BGA components
- Compatible with enclosed print head systems

Standard Applications:

Stencil Printing and Enclosed Head Printing: 90% Metal

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

(Data given for Sn63Pb37, 90% metal, -325+500 mesh)

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

Initial Tackiness (typical): 43 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: Preferred
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 2.3.2

Copper Corrosion Test: Medium
Uncleaned, 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 Bromide: 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

Surface Insulation Resistance (SIR) (typical): Pass

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

	Blank	HM531
Day 1	$1.9*10^{10}$ Ω	$1.4*10^{8}$ Ω
Day 4	$1.1*10^{10}$ Ω	$2.0*10^{8}$ Ω
Day 7	$8.3*10^{9}$ Ω	$8.3*10^{9}$ Ω

Availability

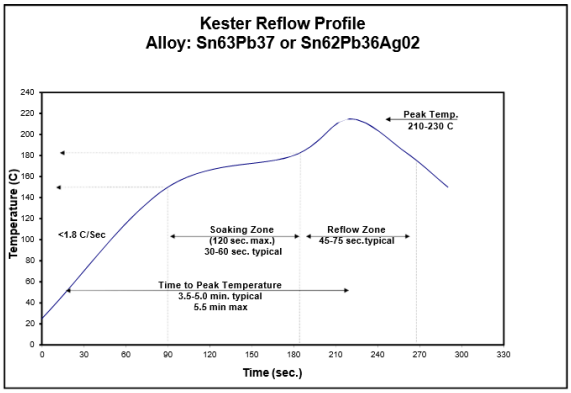
HM531 is commonly available in the Sn63Pb37 and Sn62Pb36Ag02 alloys. Type 3 powder mesh is recommended, but different powder particle size distributions are available for standard and fine pitch applications. For specific pack- aging information see Kester's Solder Paste Packaging Chart for available sizes. The appropriate combination depends on process variables and the specific application.

Printing Parameters

Squeegee Blade	Stainless Steel or 80 to 90 Durometer Polyurethane
Squeegee Speed	Capable to a maximum speed of 150mm/sec (6 in/sec)
Stencil Material	Stainless Steel, Molybdenum, Nickel Plated or Brass
Temperature/Humidity	Optimal ranges are 21 to 25 °C (70 to 77 °F) and 30 to 70% RH

Recommended Reflow Profile

The recommended reflow profile for HM531 made with either the Sn63Pb37 or Sn62Pb36Ag02 is shown here. This profile is simply a guideline. Since HM531 is a highly active, water soluble solder paste, it can solder effectively over a wide range of profiles. HM531 is capable of reflowing at the 235 °C peak temperatures required for fully collapsing lead-free SAC BGA's for maximum reliability and remains easy to clean after these high temperature profiles. Your optimal profile may be different from the one shown based on your oven, board and mix of defects. Please contact Kester Technical Support if you need additional profiling advice.



Cleaning

HM531 residues are best removed using automated cleaning equipment (in-line or batch) within 8 hours of soldering as a best process suggestion. De-ionized water is recommended for the final rinse. Water temperatures should be 49 to 60 °C (120 to 140 °F). Kester's 5768 Bio-Kleen® saponifier can also be used in a 1 to 2% ratio for aqueous cleaning systems if required for low clearance components. Contact Kester Technical Support for details.

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

Refrigeration is the recommended optimum storage condition for solder paste to maintain consistent viscosity, reflow characteristics and overall performance. HM531 should be kept at standard refrigeration conditions, 0 to 10 °C (32 to 50 °F). HM531 should be stabilized at room temperature prior to printing. It is recommended to be removed from refrigeration at least 4 hours prior to being opened and having solder paste placed on the stencil. All containers will have their covers on when material is not being removed from them. Jars will have the inner plunger pushed down to the level of the solder paste and the top screwed tight. Cartridges will have both lids on them and stored with the small tip down or on their sides, never with the large round end down. Contact Kester Technical Support if you require additional advice with regarding storage and handling of this material. Shelf life is 6 months from the date of manufacture when handled properly.

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
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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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