



HydroMark 531

Water-Soluble Solder Paste

Product Description

Kester **HydroMark 531** is an 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 repeatable 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 PCB's and Ag/Pd 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.

- HM531 provides 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 150mm/sec (6in/sec)**
- **Excellent solderability** to a wide variety of metallizations, including Palladium, leaving bright, shiny joints
- **Residues easily removed** with hot DI water, even up to **48 hours** after soldering
- **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

- 90% Metal – Stencil Printing
- 90% Metal – Enclosed Head Printing

Physical Properties

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

Viscosity (typical): 1800 poise

Malcom viscometer @ 10rpm 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 2.3.32

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	HM531
Day 1	$1.9 \times 10^{10} \Omega$	$1.4 \times 10^8 \Omega$
Day 4	$1.1 \times 10^{10} \Omega$	$2.0 \times 10^8 \Omega$
Day 7	$8.3 \times 10^9 \Omega$	$8.3 \times 10^9 \Omega$

Application Notes

Availability:

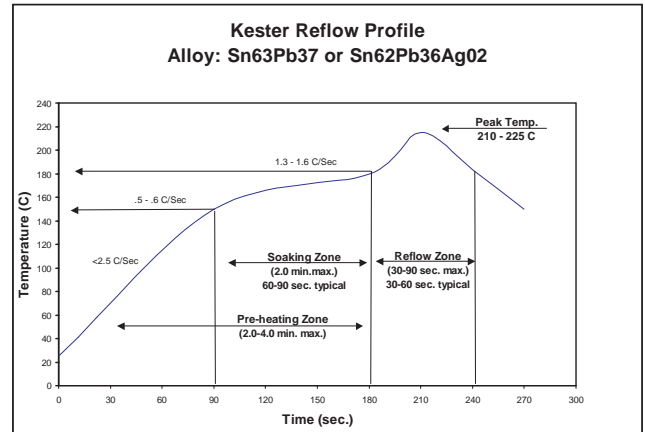
HydroMark 531 is commonly available in the Sn63Pb37 and Sn62Pb36Ag02 alloys. Type 3 powder mesh is recommended, but different powder particle size distributions are available for standard and fine pitch applications. For specific packaging information see Kester's Solder Paste Packaging Chart for available sizes. The appropriate combination depends on process variables and the specific application.

Printing Parameters:

Squeegee Blade	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 21-25°C (70-77°F) and 30-70% 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. Your optimal profile may be different from the one shown based on your oven, board and mix of defects. Please contact Kester if you need additional profiling advice.



Cleaning:

HM531 residues are best removed using automated cleaning equipment (in-line or batch) within 168 hours of soldering. De-ionized water is recommended for the final rinse. Water temperatures should be 49–60°C (120-140°F). Kester's 5768 Bio-Kleen[®] saponifier can also be used in a 1-2% ratio for aqueous cleaning systems.

Storage, Handling, and Shelf Life:

Refrigeration is the recommended optimum storage condition for solderpaste to maintain consistent viscosity, reflow characteristics and overall performance. HM531 should be stabilized at room temperature prior to printing. HM531 should be kept at standard refrigeration conditions, 0-10°C (32-50°F). Please contact Kester if you require additional advice with regard storage and handling of this material. Shelf life is 6 months from date of manufacture when handled properly and held at 0-10°C (32-50°F).

Health & Safety:

This product, during handling or use, may be hazardous to health or the environment. Read the Material Safety Data Sheet and warning label before using this product.

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