

# HydroMark 531 Water-Soluble Solder Paste

## Product Description

Kester HydroMark 531 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 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 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 150mm/sec (6in/sec)
- Excellent solderability to difficult lead-free metalizations with a leaded paste
- 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:

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 @ 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 2.3.2

**Corrosion Test:** Low  
Tested to J-STD-004, IPC-TM-650, Method 2.3.15

**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 2.3.5

**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*10 <sup>10</sup> Ω	1.4*10 <sup>8</sup> Ω
Day 4	1.1*10 <sup>10</sup> Ω	2.0*10 <sup>8</sup> Ω
Day 7	8.3*10 <sup>9</sup> Ω	8.3*10 <sup>9</sup> Ω

## ✓ Availability

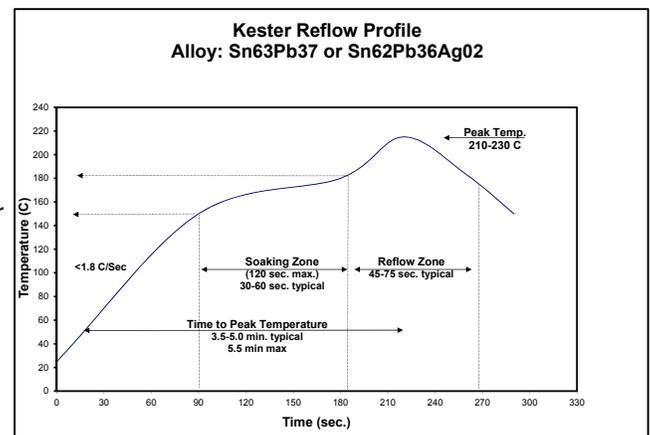
HydroMark 531 is commonly available in the Sn63Pb37 and Sn62Pb36Ag02 alloys. Type 3 powder mesh is recommended, but different powder particle size distributions are available for standard and fine pitch applications. For specific packaging information see Kester's Solder Paste Packaging Chart for available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

## ♻️ Printing Parameters

Squeegee Blade	Stainless Steel or 80-90 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 21-25°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. 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 48 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 if required for low clearance components. 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. HM531 should be kept at standard refrigeration conditions, 0-10°C (32-50°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.