

## R520A Solder Paste

Lead-Free, Water Soluble

---

### Product Description

Kester R520A Solder Paste is a lead-free, organic acid, water soluble solder paste formula specifically designed for use with the higher temperature lead-free alternative soldering alloys such as Sn96.5Ag3.0Cu0.5 (SAC Alloys). The solder paste exhibits long stencil life and tack time, while still delivering exceptional solderability to a wide variety of metallic substrates. R520A was formulated to release consistently from the stencil for those critical fine pitch applications (0.5 mm/20 mils) with anti-slump characteristics and preferred solder deposit definition. The activator package in this formula is extremely aggressive, providing superior wetting to OSP coated and Immersion Gold over Electroless Nickel (ENIG) boards. R520A is an extremely stable water soluble formula.

### Performance Characteristics:

- Lead-free and water soluble
- Print speed up to 150 mm/sec (6 in/sec)
- Stable tack life to long stencil life
- Consistent printing over a range of temperatures and humidities
- Excellent wetting onto Ag/Pd leaded components
- Reduces scrap due to less paste dry out
- Residues easily removed with hot DI water
- Classified as ORH0 per J-STD-004

### Standard Applications

- 89.5% Metal – Stencil Printing
- 89.9% Metal – Enclosed Head Printing

### RoHS Compliance

This product meets the requirements of the RoHS (Restriction of Hazardous Substances) Directive, 2002/95/EC Article 4 for the stated banned substances.

### Physical Properties

(Data given for Sn96.5 Ag3.0 Cu0.5, 89.5% metal, -325+500 mesh)

**Viscosity (typical):** 2150 poise

Malcom Viscometer @ 10 rpm and 25 °C

**Initial Tackiness (typical):** 30 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:** High

Tested to J-STD-004, IPC-TM-650, Method 2.3.32

**Copper 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

**Surface Insulation Resistance (SIR) IPC (Typical):** Pass

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

	Blank	R520A
Day 1	$2.75 \times 10^{10} \Omega$	$1.66 \times 10^8 \Omega$
Day 4	$1.52 \times 10^{10} \Omega$	$6.60 \times 10^8 \Omega$
Day 7	$1.31 \times 10^{10} \Omega$	$1.27 \times 10^9 \Omega$

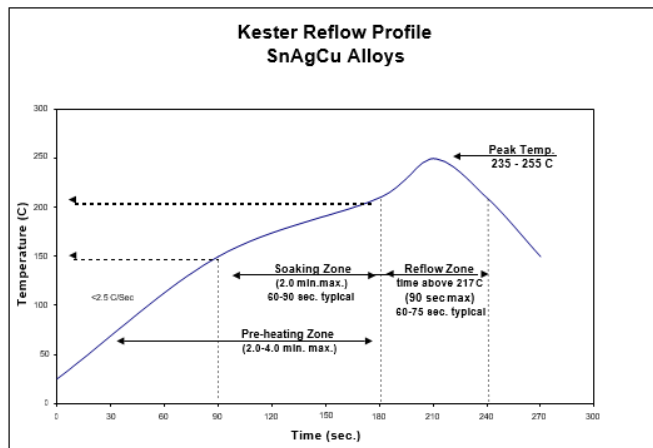
## Availability

Kester R520A is available in the Sn96.5Ag3.0Cu0.5 alloy with Type 3 powder. 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

<b>Squeegee Blade</b>	80 to 90 durometer polyurethane or stainless steel
<b>Squeegee Speed</b>	Capable to a maximum speed of 150 mm/sec (6 in/sec)
<b>Stencil Material</b>	Stainless Steel, Molybdenum, Nickel Plated, Brass
<b>Temperature/Humidity</b>	Optimal ranges are 21 to 25 °C (70 to 77 °F) and 35 to 65% RH

## Recommended Reflow Profile



The recommended reflow profile for R520A made with SAC alloys is shown here. This profile is simply a guideline. Since R520A is a highly active 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

R520A residues are best removed using automated cleaning equipment (in-line or batch) within 24 hours of soldering. 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<sup>®</sup> saponifier can also be used in a 1 to 2% ratio for aqueous cleaning systems.

## Storage, Handling and Shelf Life

Refrigeration is the recommended optimum storage condition for solder paste to maintain consistent viscosity, reflow characteristics, and overall performance. R520A should be stabilized at room temperature prior to printing. R520A should be kept at standard refrigeration temperatures, 0 to 10 °C (32 to 50 °F). Please contact Kester if you require additional advice with regard to storage and handling of this material. Shelf life is 4 months from date of manufacture and held at 0 to 10 °C (32 to 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. Safety Data Sheets are available at <https://www.kester.com/downloads/sds>.

## Contact Information

To confirm this document is the most recent version, please contact [Assembly@MacDermidAlpha.com](mailto:Assembly@MacDermidAlpha.com)

<b>North America</b> 800 West Thorndale Avenue Itasca, IL USA 60143  Phone: +1 800.2.KESTER	<b>Asia Pacific</b> 8/F., Paul Y. Centre 51 Hung To Road Kwun Tong, Kowloon, Hong Kong  Phone: +852.3190.3100	<b>Europe</b> Ganghofer Strasse 45 82216 Gernlinden, Germany  Phone: +49 (0) 8142 4785 0
---	--	--

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

DISCLAIMER: All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. No statement or recommendation shall constitute a representation unless set forth in an agreement signed by officers of seller and manufacturer. NO WARRANTY OF MERCHANTABILITY, WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY IS MADE. The following warranty is made in lieu of such warranties and all other warranties, express, implied, or statutory. Products are warranted to be free from defects in material and workmanship at the time sold. The sole obligation of seller and manufacturer under this warranty shall be to replace any noncompliant product at the time sold. Under no circumstances shall manufacturer or seller be liable for any loss, damage or expense, direct, indirect, incidental or consequential, arising out of the inability to use the product. Notwithstanding the foregoing, if products are supplied in response to a customer request that specifies operating parameters beyond those stated above, or if products are used under conditions exceeding said parameters, the customer by acceptance or use thereof assumes all risk of product failure and of all direct, indirect, incidental and consequential damages that may result from use of the products under such conditions, and agrees to exonerate, indemnify, defend and hold harmless MacDermid, Incorporated and its affiliates therefrom. No suggestion for product use nor anything contained herein shall be construed as a recommendation to use any product in a manner that infringes any patent or other intellectual property rights, and seller and manufacturer assume no responsibility or liability for any such infringement.

© 2019 MacDermid, Inc. and its group of companies. All rights reserved. "R" and "TM" are registered trademarks of MacDermid, Inc. and its group of companies in the United States and/or other countries.