R520A
Lead-Free Water-Soluble Solder Paste

Product Description

Kester R520A is a lead free, organic acid, water-soluble solder paste formula specifically designed for use with the higher temperature Pb-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.

- 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

Physical Properties

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

Viscosity (typical): 2150 poise
Malcom viscometer @ 10rpm 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

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	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	$1.31 \times 10^{10}\ \Omega$	$1.27 \times 10^{9}\ \Omega$

Application Notes

Availability:

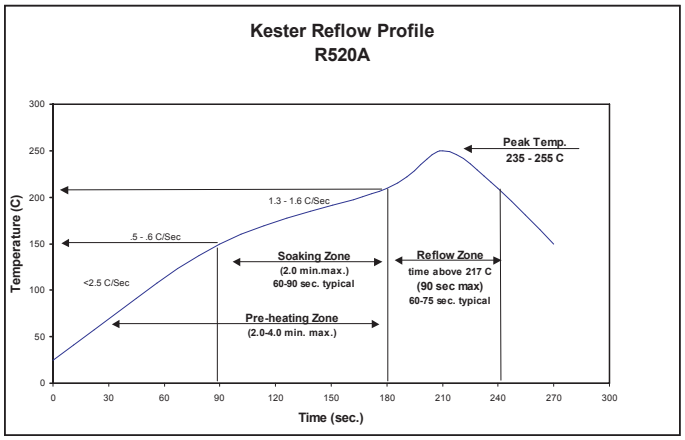
Kester R520A is available in the Sn96.5Ag3.0Cu0.5 alloy with Type 3 powder. Type 3 powder mesh is recommended, but different powder particle size distributions are available for standard and fine pitch applications. For specific packaging information see Kester's Solder Paste Packaging Chart for available sizes. The appropriate combination depends on process variables and the specific application.

Printing Parameters:

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 35-65% 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 solderpaste, it can solder effectively over a wide range of profiles. Your optimal profile may be different from the one shown based on you 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 49-60°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 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, 0-10°C (32-50°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 0-10°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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