R905
Lead-Free No-Clean Solder Paste

Product Description

Kester R905 is a lead-free, no-clean solder paste specifically designed for the thermal requirements of lead free alloys, including the Sn96.5Ag3.0Cu0.5 alloy.

R905 is capable of stencil printing downtimes up to 60 minutes with an effective first print down to 20 mils without any kneading. R905 also exhibits excellent print durability for fine pitch (0.4mm / 16 mils) and is able to print at high speeds up to 150 mm/sec (6in/sec). This innovative product allows for air or nitrogen reflow using a halide-free flux system. Kester R905 paste also exceeds the reliability standards required by J-STD-004 and Bellcore.

- Excellent print and reflow properties for **0201 applications** with Type 3 powder
- Capable of 60+ minute idle times in printing
- Capable of print speeds up to 150mm/sec (6 in/sec)
- Excellent printing characteristics to 0.4 mm (16mil) pitch with Type 3 powder
- May be processed in air or nitrogen reflow
- Excellent solderability to a wide variety of metallizations including OSP, Ni/Au, Immersion Sn and Immersion Ag
- 8+ hour stencil life
- 12+ hour tack time
- Classified as ROL0 per J-STD-004
- Compliant to Bellcore GR-78
- Compatible with enclosed print head systems

Standard Applications

89% Metal – Stencil Printing
89% Metal – Enclosed Head Printing

Physical Properties

(Data given for Sn96.5Ag3.0Cu0.5, 89% metal, -325+500 mesh)

Viscosity (typical): 1250 poise
Malcom viscometer @ 10rpm and 25°C

Initial Tackiness (typical): 40 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	R905
Day 1	$1.1 \times 10^{10}\ \Omega$	$2.8 \times 10^{8}\ \Omega$
Day 4	$6.8 \times 10^{9}\ \Omega$	$3.1 \times 10^{8}\ \Omega$
Day 7	$6.4 \times 10^{9}\ \Omega$	$3.5 \times 10^{8}\ \Omega$

Application Notes

Availability:

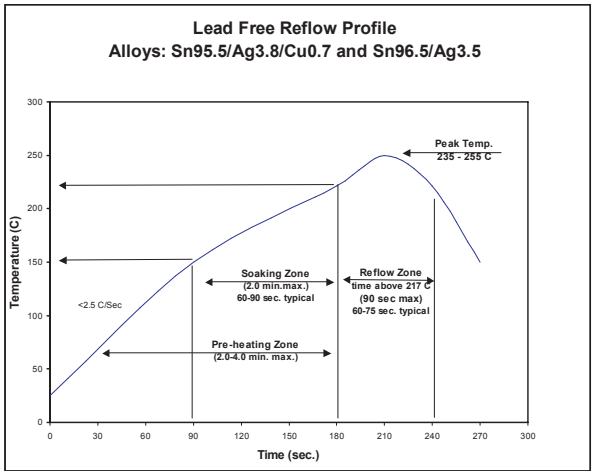
R905 is available in Sn96.5Ag3.0Cu0.5 and Sn96.5Ag3.5 alloys. Type 3 powder mesh is recommended, but different powder particle size distributions are available for standard and fine pitch applications. R905 is also compatible with other SnAgCu alloys in a similar melting range to the listed alloys. For specific packaging information, see Kester's 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 150mm/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 R905 made with SAC alloys is shown here. This profile is simply a guideline. Since R 905 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:

R905 is a no-clean formula. The residues do not need to be removed for typical applications. Although R905 is designed for no-clean applications, its residues can be easily removed using automated cleaning equipment (in-line or batch) with a variety of readily available cleaning agents. Call Kester Technical Support for details.

Storage, Handling, and Shelf Life:

Refrigeration is the recommended optimum storage condition for solderpaste to maintain consistent viscosity, reflow characteristics and overall performance. R905 should be stabilized at room temperature prior to printing. R905 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 4 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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