EnviroMark™ 918
Lead-Free No-Clean Solder Paste

Product Description

Kester EM918 is a lead-free, halide-free, air and nitrogen reflowable ICT pin probeable, no-clean solder paste specifically designed for the thermal requirements of lead free alloys, including the Sn96.5Ag3.0Cu0.5 alloy. EM918 is capable of stencil printing downtimes up to 60 minutes with an effective first print down to 20 mils without kneading. EM918 also exhibits excellent continual printability for the fine pitch (0.4mm/16 mils) and is able to print at high speeds up to 6"/s (150mm/s). EM918 offers excellent cosmetic appearance in the reflowed solder joints with smooth solder and light colored residues, closely resembling tin-lead joints. EM918 is classified as Type ROL0 flux under IPC ANSI/J-STD-004A Joint Industry Standard.

- Lead free and no clean
- Capable of print speeds up to 150 mm/sec (6 in/sec)
- Extended Stencil Life (process dependent)
- Halide free chemistry
- Excellent release from stencil
- Excellent printing characteristics on 0.4mm (16 mil) pitch
- Clean cosmetic aesthetics after reflow
- Resistant to slump
- Stable tack life
- Classified as ROL0 per J-STD-004A

Standard Applications

88.5% Metal for mesh -325+500-- Stencil Printing
88.0% Metal for mesh -400+500-- Stencil 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 Sn96.5Ag3.0Cu0.5, 88.5% metal, -325+500 mesh)

Viscosity (typical) : 1950 poise
Malcom Viscometer PCU-203 @ 10 rpm, 25 °C, measurement after 9 mins

Initial Tackiness (typical) : 33 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-004A, IPC-TM-650, Method 2.3.32

Corrosion Test: Low
Tested to J-STD-004A, IPC-TM-650, Method 2.6.15

Chloride and Bromides: None Detected
Tested to J-STD-004A, IPC-TM-650, Method 2.3.35

Fluorides by Spot Test: Pass
Tested to J-STD-004A, IPC-TM-650, Method 2.3.35.1

S.I.R., IPC (typical): Pass
Tested to J-STD-004A, IPC-TM-650, Method 2.6.3.3

	Blank	EM918
Day 1(24 h)	$6.6 \times 10^9\ \Omega$	$7.1 \times 10^8\ \Omega$
Day 4(96 h)	$5.0 \times 10^9\ \Omega$	$6.3 \times 10^8\ \Omega$
Day 7(168 h)	$3.8 \times 10^9\ \Omega$	$6.2 \times 10^8\ \Omega$

Electromigration, Bellcore (typical): : Pass
Tested to Bellcore GR-78-CORE

	Blank	EM918
Day 4 (96h)	$4.1 \times 10^{10}\ \Omega$	$7.2 \times 10^8\ \Omega$
Day 21(500h)	$7.8 \times 10^{10}\ \Omega$	$6.1 \times 10^8\ \Omega$

Application Notes

Availability:

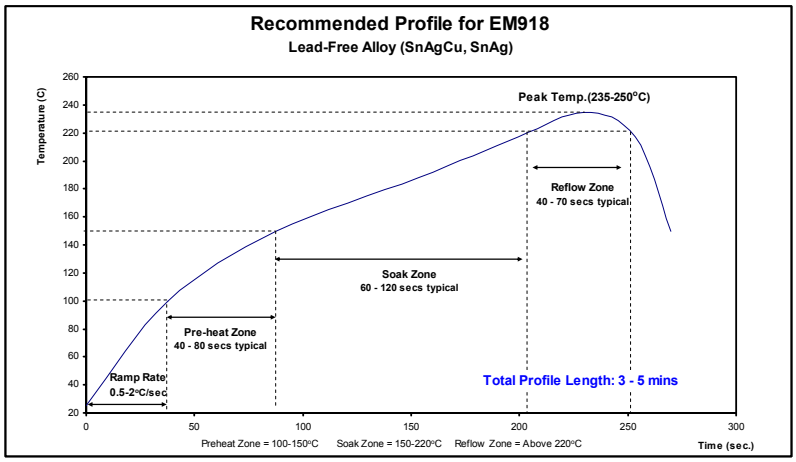
Kester EM918 is available in Sn96.5Ag3.0Cu0.5 alloy. Type 3 mesh is recommended, but different powder particle size distributions are available for standard and fine pitch applications. EM918 is also compatible with other SnAgCu alloys in a similar melting range to the listed alloys and Sn96.5Ag3.5. 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	40 to 150 mm/sec (1.6-6 in/sec) recommended
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 EM918 made with the SAC and SnAg3.5 alloys is shown here. This profile is simply a guideline. Since EM918 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:

EM918 is a no-clean formula. The residues do not need to be removed for typical applications. Although EM918 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. EM918 should be stabilized at room temperature prior to printing. EM918 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 and use, may be hazardous to health or the environment. Read the Material Safety Data Sheet and the label before using this product.

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