kester® Technical Data Sheet

EM918 Solder Paste
Lead-Free No-Clean

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.

Performance Characteristics:

- Lead-free
- 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 -325/+500- Stencil Printing

RoHS Compliance

This product meets the requirements of the Restriction of Hazardous Substances (RoHS) Directive, 2011/65/EU 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 @ 10rpm and 25°C

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-004, IPC-TM-650, Method 2.3.32

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

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 Resistivity (SIR), (typical): Pass
Tested to J-STD-004, IPC-TM-650, Method 2.6.3.3

	Blank	EM918
Day 1	$6.6*10^9$ Ω	$7.1*10^8$ Ω
Day 4	$5.0*10^9$ Ω	$6.3*10^8$ Ω
Day 7	$3.8*10^9$ Ω	$6.2*10^8$ Ω

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Application Notes

Availability

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.

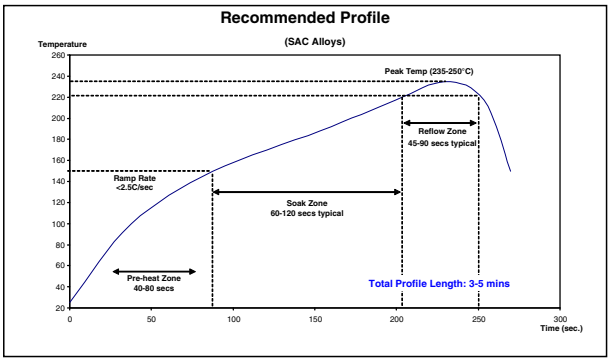
Printing Parameters

Squeegee Blade	80-90 durometer stainless steel or polyurethane
Squeegee Speed	40-150mm/sec (1.6-6in/sec) recommended
Stencil Material	Stainless Steel, Molybdenum, Nickel Plated or Brass
Temperature/Humidity	Optimal ranges are 21-25°C (70-77°F) and 35-65% RH

Optimal printing parameters may be different from recommendations above based on your operating conditions, customer expectations and experience. The ranges above are meant to act as a guideline based on Kester testing.

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 Technical Support 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 and Shelf Life

Refrigeration is the recommended optimum storage condition for solder paste 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 Technical Support if you require additional advice with regard storage and handling of this material. Shelf life is 6 months from date of manufacture when handled properly and held at 0-10°C (32-50°F).

Health and Safety

This product, during handling or use, may be hazardous to your health or the environment. Read the Safety Data Sheet (SDS) and warning label before using this product.

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