MacDermid Alpha ELECTRONICS SOLUTIONS

TECHNICAL DATA SHEET

KESTER® EM918 SOLDER PASTE

Lead-Free, No-Clean

DESCRIPTION

Kester EM918 Solder Paste 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 (0.4 mm/16 mils) and is able to print at high speeds up to 6 in/s (150 mm/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.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- 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 0.4 mm (16 mil) pitch
- Clean cosmetic aesthetics after reflow
- Resistant to slump
- Stable tack life
- Classified as ROL0 per J-STD-004A

STANDARD APPLICATIONS

Stencil Printing - 88.5% Metal for Mesh -325/+500
Stencil Printing - 88.0% Metal for Mesh -325/+500

ROHS COMPLIANCE

This product meets the requirements of the Restriction of Hazardous Substances (RoHS) Directive, 2011/65/EU for the stated banned substances.

TECHNICAL DATA

Category	Results	Procedure/Remarks
Physical Properties (Data given for Sn96.5Ag3.0Cu0.5, 88.5% metal, -325+500 mesh)		
Viscosity (typical)	1950 poise	Malcom Viscometer @ 10 rpm 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

PROCESSING GUIDELINES

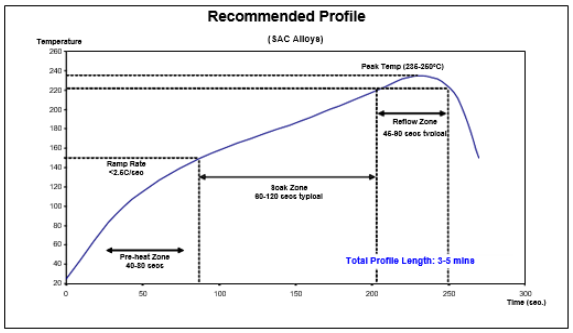
Printing Parameters

Squeegee Blade	80 to 90 durometer polyurethane or stainless steel
Squeegee Speed	40 to 150 mm/sec (1.6 to 6 in/sec) recommended
Stencil Material	Stainless Steel, Molybdenum, Nickel Plated, Brass
Temperature/Humidity	Optimal ranges are 21 to 25 °C (70 to 77 °F) and 35 to 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 MacDermid Alpha 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 MacDermid AlphaTechnical 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 MacDermid Alpha Technical Support for details.

Storage, Handling 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 to 10 °C (32 to 50 °F). Please contact MacDermid Alpha 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 to 10 °C (32 to 50 °F).

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.

RECYCLING SERVICES

We provide safe and efficient recycling services to help companies meet their environmental and legislative requirements and at the same time, maximize the value of their waste streams.

Our service collects solder dross, solder scrap, and various forms of solder paste waste. Please contact your local sales representative for recycling capabilities in your area.

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available.**

CONTACT INFORMATION

www.macdermidalpha.com

North America	**Europe**	**Asia**
140 Centennial Avenue Piscataway, NJ 08854 1.800.367.5460	Unit 2, Genesis Business Park Albert Drive Woking, Surrey, GU21 5RW, UK 44.01483.758400	8/F., Two Sky Parc 51 Hung To Road Kwun Tong, Kowloon, Hong Kong, SAR China 852.2500.5365

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