

# KESTER® EM919G SOLDER PASTE

**Lead-Free, No-Clean**

## DESCRIPTION

Kester EM919G Solder Paste is a lead-free, halide-free, no-clean solder paste that is available in Type 3 or 4 powder. EM919G can be reflowed in air or nitrogen and specifically designed for the thermal requirements of lead free alloys, including Sn95.8Ag3.5Cu0.7 and Sn96.5Ag3.0Cu0.5. EM919G exhibits continual printability for fine pitch components (0.4 mm/16 mils) and is able to print at high speeds up to 6 in/sec (150 mm/sec). EM919G offers an excellent cosmetic appearance in the reflowed solder joints with smooth surfaces and light colored residues that closely resemble tin-lead solder joints. In addition, EM919G produces test probe friendly post soldering residues. EM919G is classified as ROL0 under IPC JSTD-004 and ROM0 under IPC JSTD-004B.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

## FEATURES & BENEFITS

- Lead-free
- No-clean
- Halogen and halide-free chemistry
- Extended stencil life (process dependent)
- Excellent release from stencil
- 12+ hours stencil life
- Excellent printing characteristics on 0.4 mm (16 mil) pitch QFPs
- Capable of 60 minute break times in printing
- Low voiding characteristics (process dependent)
- Probe friendly residues
- Clean cosmetic aesthetics after reflow
- Resistant to slump
- Stable tack life
- Classified as ROL0 under IPC JSTD-004 and ROM0 under IPC JSTD-004B

## STANDARD APPLICATIONS

**Stencil Printing: 88% Metal**

**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
<b>Physical Properties (Data given for Sn96.5Ag3.0Cu0.5, 88% metal, -325+500 mesh)</b> <b>Data representative for most AnAgCu compositions</b>		
Viscosity (typical)	1150 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	Pass	Tested to J-STD-005, IPC-TM-650, Method 2.4.45
<b>Reliability Properties</b>		
Copper Mirror Corrosion	No Breakthrough "L"	Tested to J-STD-004B, IPC-TM-650, Method 2.3.32
Corrosion Test	No Corrosion "L"	Tested to J-STD-004, IPC-TM-650, Method 2.6.15B
	Minor Corrosion "M"	Tested to J-STD-004B, IPC-TM-650, Method 2.6.15C
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), IPC (Typical)	Pass	Tested to J-STD-004, IPC-TM-650, Method 2.6.3.3
		<b>Blank</b>
		<b>EM919G</b>
	Day 1	1.1*10 <sup>10</sup> Ω
	Day 4	1.5*10 <sup>10</sup> Ω
		7.7*10 <sup>8</sup> Ω
		1.2*10 <sup>9</sup> Ω

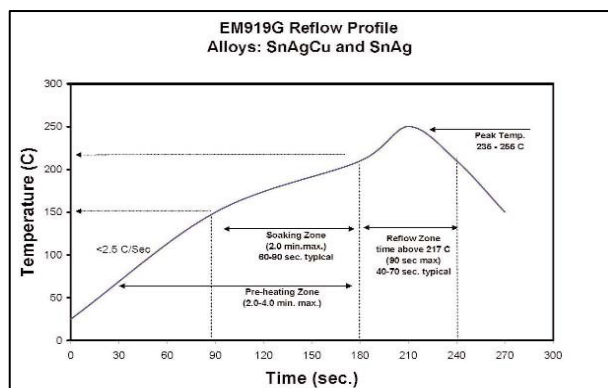
Category	Results	Procedure/Remarks
	Day 7	1.4*10 <sup>10</sup> Ω
		1.4*10 <sup>9</sup> Ω

## PROCESSING GUIDELINES

### 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 to 25 °C (70 to 77 °F) and 35 to 65% RH

### Recommended Reflow Profile



The general recommended convection reflow profile for EM919G formula made with typical lead free alloys is shown here as a starting point. Your final profile will depend on your board mass and component combination. EM919G has excellent solder-ability and wetting capabilities in air or nitrogen reflow atmospheres reflow equipment. Your optimal profile may be different from the basic graph. Please contact MacDermid Alpha Technical Support if you need profiling advice.

### Cleaning

EM919G is a no-clean formula. The residues do not need to be removed for typical applications. Although EM919G 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. If cleaning is required, please call MacDermid Alpha Technical support.

### Storage, Handling and Shelf Life

Refrigeration is the recommended optimum storage condition for solder paste to maintain consistent viscosity, reflow characteristics and overall performance. EM919G should be stabilized at room temperature prior to printing. EM919G should be kept at standard refrigeration temperatures, 0 to 10 °C (32 to 50 °F). Please contact MacDermid Alpha Technical Support if you require additional advice with regard to storage and handling of this material. Shelf life is 6 months from date of manufacture and held at 0 to 10 °C (32 to 50 °F).

## AVAILABILITY

EM919G is available in the SAC305 alloy with Type 3 and 4 powder mesh. Type 3 mesh size is recommended for standard applications and type 4 for fine pitch applications. EM919G is also compatible with other SAC alloys in similar melting range to the listed alloys. For specific packaging information refer to Kester's Solder 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.



## SAFETY & WARNING

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](http://www.macdermidalpha.com)

<b>North America</b> 140 Centennial Avenue Piscataway, NJ 08854 1.800.367.5460	<b>Europe</b> Unit 2, Genesis Business Park Albert Drive Woking, Surrey, GU21 5RW, UK 44.01483.758400	<b>Asia</b> 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

DISCLAIMER: All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. No statement or recommendation shall constitute a representation unless set forth in an agreement signed by officers of seller and manufacturer. NO WARRANTY OF MERCHANTABILITY, WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY IS MADE. The following warranty is made in lieu of such warranties and all other warranties, express, implied, or statutory. Products are warranted to be free from defects in material and workmanship at the time sold. The sole obligation of seller and manufacturer under this warranty shall be to replace any noncompliant product at the time sold. Under no circumstances shall manufacturer or seller be liable for any loss, damage or expense, direct, indirect, incidental or consequential, arising out of the inability to use the product. Notwithstanding the foregoing, if products are supplied in response to a customer request that specifies operating parameters beyond those stated above, or if products are used under conditions exceeding said parameters, the customer by acceptance or use thereof assumes all risk of product failure and of all direct, indirect, incidental and consequential damages that may result from use of the products under such conditions, and agrees to exonerate, indemnify, defend and hold harmless MacDermid, Incorporated and its affiliates therefrom. No suggestion for product use nor anything contained herein shall be construed as a recommendation to use any product in a manner that infringes any patent or other intellectual property rights, and seller and manufacturer assume no responsibility or liability for any such infringement.

© 2019 MacDermid, Inc. and its group of companies. All rights reserved. "(R)" and "TM" are registered trademarks or trademarks of MacDermid, Inc. and its group of companies in the United States and/or other countries.