EnviroMark™ 919G
Lead-Free No-Clean Solder Paste

Product Description

Kester EM919G is a lead-free, halide-free, air and nitrogen reflowable no-clean solder paste specifically designed for the thermal requirements of lead free alloys, including the Sn95.8Ag3.5Cu0.7 and Sn96.5Ag3.0Cu0.5 alloys. EM919G exhibits continual printability for the fine pitch (0.4mm/16 mils) and is able to print at high speeds up to 6"/s (150mm/s). EM919G offers excellent cosmetic appearance in the reflowed solder joints with smooth solder and light colored residues, closely resembling tin-lead joints. In addition, EM919G produces test probe friendly residues after soldering operations have been completed. EM919G is classified as Type ROL0 flux under IPC ANSI/J-STD-004A Joint Industry Standard.

- Lead free and no clean
- Halogen free and halide free chemistry
- Capable of print speeds up to 150 mm/sec (6 in/sec)
- Extended Stencil Life (process dependent)
- Excellent release from stencil
- Excellent printing characteristics on 0.4mm (16 mil) pitch
- Capable of 60 minutes break time in printing
- Low voiding characteristic
- Probe friendly residues
- Clean cosmetic aesthetics after reflow
- Resistant to slump
- Stable tack life
- Reflowable in air or nitrogen
- Classified as ROL0 per J-STD-004A
- Compliant to Bellcore GR-78-CORE

Standard Applications

88% Metal for mesh -325+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% metal, -325+500 mesh)
Data representative for most SnAgCu compositions

Viscosity (typical) : 1550 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	EM919G
Day 1(24 h)	$8.4 \times 10^{10}\ \Omega$	$1.3 \times 10^{10}\ \Omega$
Day 4(96 h)	$7.6 \times 10^{10}\ \Omega$	$1.4 \times 10^{10}\ \Omega$
Day 7(168 h)	$5.8 \times 10^{10}\ \Omega$	$1.2 \times 10^{10}\ \Omega$

S.I.R., Bellcore (typical): Pass
Tested to Bellcore GR-78-CORE

	Blank	EM919G
Day 1(24 h)	$1.8 \times 10^{12}\ \Omega$	$8.4 \times 10^{11}\ \Omega$
Day 4(96 h)	$9.7 \times 10^{12}\ \Omega$	$7.9 \times 10^{11}\ \Omega$

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

	Blank	EM919G
Day 4 (96h)	$6.4 \times 10^{10}\ \Omega$	$1.8 \times 10^{9}\ \Omega$
Day 21(500h)	$1.3 \times 10^{11}\ \Omega$	$6.7 \times 10^{9}\ \Omega$

Application Notes

Availability:

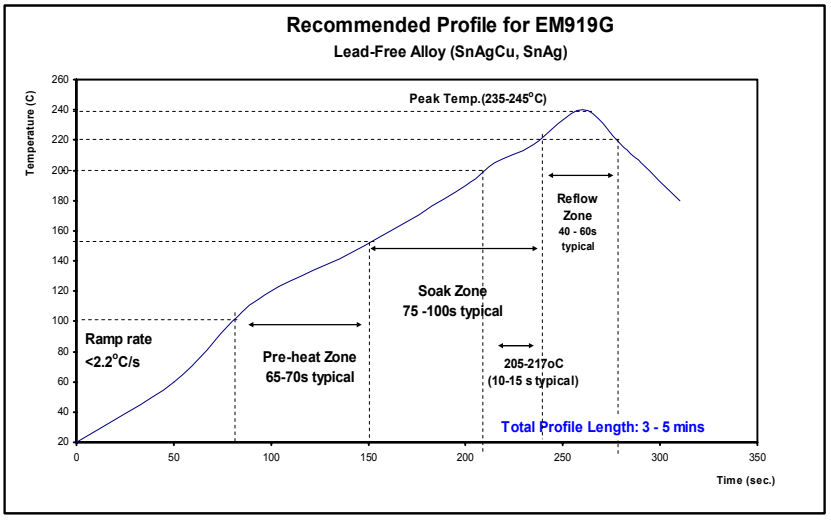
Kester EM919G is available in Sn96.5Ag3.0Cu0.5 alloy with Type 3 or Type 4 powder mesh size for standard and fine pitch applications. EM919G is also compatible with other SnAgCu alloys in a similar melting range to the listed alloys and Sn96.5Ag3.5. For specific packaging information, see Kester's Paste 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	Capable to a maximum speed of 150 mm/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 EM919G made with the SAC alloys is shown here. This profile is simply a guideline. Since EM919G 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:

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. 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. EM919G should be stabilized at room temperature prior to printing. EM919G 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.

World Headquarters: 800 West Thorndale Avenue, Itasca, Illinois, 60143-1341 USA
Phone: (+1) 847-297-1600 • **Email**: customerservice@kester.com • **Website**: www.kester.com

Asia Pacific Headquarters
500 Chai Chee Lane
Singapore 469024
(+65) 6449-1133
customerservice@kester.com.sg

European Headquarters
Ganghoferstrasse 45
D-82216 Gernlinden
Germany
(+49) 8142-47850
customerservice@kester-eu.com

Japanese Headquarters
20-11 Yokokawa 2-Chome
Sumida-Ku
Tokyo 130 Japan
(+81) 3-3624-5351
jpsales@kester.com.sg