kester®

RoHS Ready

EnviroMark™ 923
Lead-Free No-Clean Solder Paste

Product Description

Kester EM923 is a lead-free, halide-free, air and nitrogen reflowable no-clean solder paste, specifically designed for the thermal requirements of lead free SnAgCu alloys. EM923 exhibits continual printability for fine pitch (0.4mm/16 mils) printing requirements and is able to print at high speeds up to 8"/s (200mm/s). EM923 provides users with low voiding performance in area array packages. EM923 also offers excellent cosmetic appearance in the reflowed solder joints with smooth surfaces and light colored clear residues. EM923 is classified as Type ROL0 flux under IPC ANSI/J-STD-004A Joint Industry Standard.

- **Halide-free** (chloride and bromide free)
- **Low voiding** behavior
- **Probe friendly residues**
- **Capable of print speeds up to 200 mm/sec**
- Excellent printing characteristics on 0.4mm (16 mil) pitch QFPs
- Excellent release from stencil
- Long stencil and tack life (process dependent)
- Probe friendly residues
- Capable of 60 minute break times in printing
- Clean cosmetic aesthetics after reflow
- Resistant to slump
- Reflowable in air or nitrogen
- Classified as ROL0 per J-STD-004

Standard Applications

For stencil printing:
88.0% metal for -325+500 mesh
87.5% metals for -400+500 mesh

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 Sn96.5 Ag3.0 Cu0.5, 88% metal, -325+500 mesh)
Data representative for most SnAgCu compositions

Viscosity (typical):
1500 poise (-325+500 mesh)
1550 poise (-400+500 mesh)
Malcom viscometer @ 10rpm and 25°C

Initial Tackiness (typical): 27 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

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

	Blank	EM923
Day 1	$1.1 \times 10^{10}\ \Omega$	$6.9 \times 10^{9}\ \Omega$
Day 4	$1.5 \times 10^{10}\ \Omega$	$1.1 \times 10^{10}\ \Omega$
Day 7	$2.1 \times 10^{10}\ \Omega$	$1.5 \times 10^{10}\ \Omega$

Application Notes

Availability:

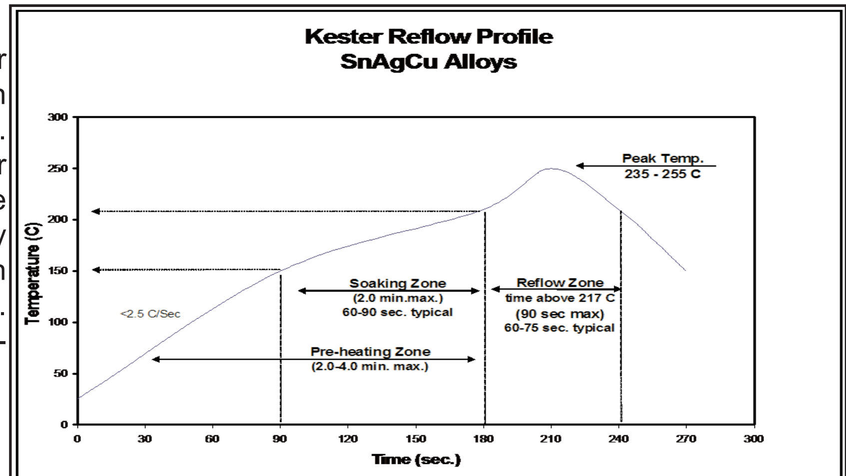
Kester EM923 is available in the Sn96.5Ag3.0Cu0.5 alloy with Type 3 or Type 4 powder mesh for standard and fine pitch applications. EM923 is also compatible with other SnAgCu alloys in a similar melting range to the listed alloys. For specific packaging information, see Kester's Paste Packaging Chart 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 200 mm/sec (8 in/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 EM923 made with the SAC allous is shown here. This profile is simply a guideline. Since EM923 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:

EM923 is a no-clean formula. The residues do not need to be removed for typical applications. Although EM923 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.

Storage, Handling, and Shelf Life:

Refrigeration is the recommended optimum storage condition for solder paste to maintain consistent viscosity, reflow characteristics, and overall performance. EM923 should be stabilized at room temperature prior to printing. EM923 should be kept at standard refrigeration temperatures, 0-10°C (32-50°F). Please contact Kester 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 0-10°C (32-50°F).

Health & Safety:

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

World Headquarters: 800 W. Thorndale Avenue, Itasca, Illinois, 60143 USA
Phone: (+1) 630-616-4000 • **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
Zum Plom 5
08541 Neuensalz
Germany
(+49) 3741 4233-0
customerservice@kester-eu.com

Japanese Headquarters
20-11 Yokokawa 2-Chome
Sumida-Ku
Tokyo 130-0003 Japan
(+81) 3-3624-5351
jpsales@kester.com.sg

The data recommendations presented are based on tests, which we consider reliable. Because Kester has no control over the conditions of use, we disclaim any responsibility connected with the use of any of our products or the information presented. We advise that all chemical products be used only by or under the direction of technically qualified personnel who are aware of the potential hazards involved and the necessity for reasonable care in their handling. The technical information contained herein is consistent with the properties of this material but should not be used in the preparation of specifications as it is intended for reference only. For assistance in preparing specifications, please contact your local Kester office for details.