In A Class By Itself

Kester's EnviroMark® 828 Lead-Free Water-Soluble Paste

Best in class features:

- Ultra Low BGA Voiding
- Excellent Solderability
- Easy Residue Removal
- Excellent Printability
- Minimizes Slump Defects

kester®

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EM828 Product Benefits

Kester's EnviroMark® 828 lead-free water-soluble solder paste represents a break-through in water-soluble technology with the combination of low voiding, excellent wetting behavior, and ease of cleaning. Backed by our world renowned customer service, technical service expertise, and 100 plus years of experience in soldering technology, EnviroMark® 828 is the only lead-free water-soluble solder paste that satisfies all your assembly needs.

Key Characteristics:

- **Ultra Low BGA Voiding:** Best in class BGA voiding performance...period! Low void performance is a must for most assemblies today reducing rework costs and improving first pass yields.
- **Excellent Solderability:** Best in class solderability, joint appearance and shininess. The first and only lead free water-soluble solder paste to produce joints that closely resemble those achieved with SnPb solder paste. This characteristic will make the transition to lead-free easier on OEMs and contract manufacturers alike by making the change to lead-free appear seamless.
- **Easy Residue Removal:** Post soldering residues are easily removed in a standard DI aqueous cleaning process. Cleanability demands are more stringent today than ever with higher reflow temperatures and lower profile components. EM828 creates no foam in in-line washers minimizing equipment maintenance and down time.
- **Excellent Printability:** Consistent solder paste volume deposits regardless of idle time, stencil life and print speed. This is the most important characteristic of any solder paste, as print volume inconsistency is the top cause of defects in electronic assembly.
- **Minimizes Slump Defects:** Excellent print definition and bridging prevention due to its non-slumping chemistry. The solder brick maintains its shape without variation over time. This attribute avoids bridging especially in fine-pitch components, saving the customer from wasting time and money on rework.
- **Advanced Technologies:** Offers 0201 print and reflow capabilities with standard type 3 (-325/+500 mesh) powder. Because of print limitations of other lead-free solder pastes on the market, competing products typically require a more costly finer mesh powder size for these miniature components.

Contact Kester today to learn more about EnviroMark® 828 lead-free water-soluble paste.

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EnviroMark™ 828
Low-Voiding Lead-Free Water-Soluble Solder Paste

Product Description

Kester EnviroMark™ 828 is a lead-free, water-soluble solder paste formulated specifically to reduce voiding behavior that is common with lead-free solder paste products. EM828 represents a break-through in water-soluble solder paste technology with the combination of low voiding, excellent wetting behavior and ease of cleaning. Additionally, EM828 is extremely stable in the stencil printing process, regardless of print speed, idle time and throughput. EM828 provides tremendous wetting to a wide variety of board and component finishes in order to simplify your transition to lead-free processes.

- Low-voiding underneath area array components
- Excellent wetting on a variety of metallizations
- Residues are easily removed in hot DI water
- Long stencil life and tack time (process dependent)
- Tremendous brick definition and slump resistance for reduction of bridging defects
- Print speed up to 150 mm/sec (6 in/sec)
- Capable of breaks in printing of up to 60 minutes without any kneading
- Classified as ORH1 per J-STD-004A

Standard Applications

89.5% Metal – Stencil Printing
89.5% Metal – Enclosed Head 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 Sn96.5 Ag3.0 Cu0.5, 89.5% metal, -325+500 mesh)

Viscosity (typical): 1700 poise
Malcom viscometer @ 10rpm and 25°C

Initial Tackiness (typical): 40 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: High
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

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

	Blank	EM828
Day 1	$1.5 \times 10^9\ \Omega$	$9.0 \times 10^8\ \Omega$
Day 4	$1.3 \times 10^9\ \Omega$	$9.8 \times 10^8\ \Omega$
Day 7	$9.5 \times 10^8\ \Omega$	$1.2 \times 10^9\ \Omega$

Application Notes

Availability:

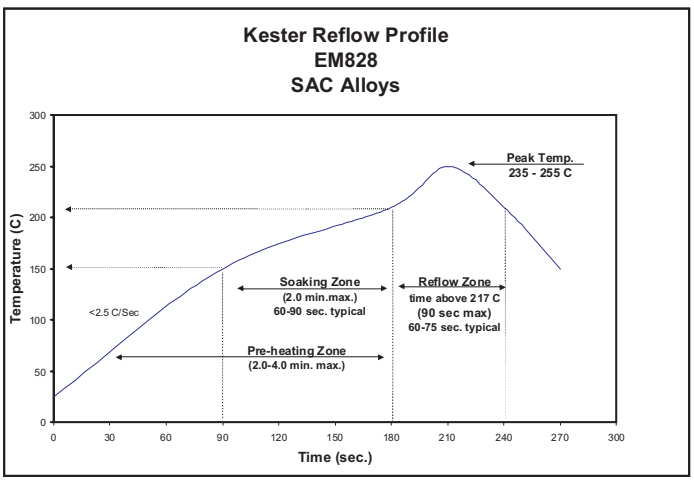
Kester EM828 is available in the Sn96.5Ag3.0Cu0.5 alloy with Type 3 and Type 4 powder. Type 3 powder mesh is recommended, but Type 4 powder is available for finer pitch applications. For specific packaging information see Kester's Solder Paste Packaging Chart for available sizes. The appropriate combination 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 (6 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 EM828 made with SAC alloys is shown here. This profile is simply a guideline. Since EM828 is a highly active solderpaste, it can solder effectively over a wide range of profiles. Your optimal profile may be different from the one shown based on you oven, board and mix of defects. Please contact Kester if you need additional profiling advice.



Cleaning:

EM828 residues are best removed using automated cleaning equipment (in-line or batch) within 48 hours of soldering. De-ionized water is recommended for the final rinse. Water temperatures should be 49-60°C (120-140°F). Kester's 5768 Bio-Kleen® saponifier can also be used in a 1-2% ratio for aqueous cleaning systems.

Storage, Handling, and Shelf Life:

Refrigeration is the recommended optimum storage condition for solder paste to maintain consistent viscosity, reflow characteristics, and overall performance. EM828 should be stabilized at room temperature prior to printing. EM828 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.

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