MacDermid Alpha ELECTRONICS SOLUTIONS

TECHNICAL DATA SHEET

KESTER® WP616 SOLDER PASTE

Lead-Free, Water Soluble, Zero-Halogen

DESCRIPTION

Kester® WP616 Solder Paste is a zero-halogen, lead-free, water soluble solder paste formula for both nitrogen and air reflow applications. WP616 provides a combination of consistent print performance at wide humidity levels, excellent solderability and ease of cleaning, while maintaining a zero-halogen flux formulation. WP616 is a stable water soluble formula, providing consistent stencil life, tack time and print definition. WP616 is classified as ORM0 flux under IPC J-STD-004B.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- Superior reflow characteristics
- Classified as ORM0 per J-STD-004B
- Excellent activity and printability
- Zero-Halogen (none intentionally added)
- Wide reflow profile window with good solderability
- Reflowable in air and nitrogen conditions
- Cleaning can be accomplished with heated deionized water

ROHS COMPLIANCE

This product meets the requirements of the Restriction of Hazardous Substances (RoHS) Directive.

TECHNICAL DATA

Category	Results	Procedure/Remarks
Physical Properties (SAC305 and SnAg T4)		
Viscosity (Typical)	1700 Poise	Malcom Viscometer @ 10 rpm and 25 °C
Slump Test	Pass	J-STD-005, IPC-TM-650, Method 2.4.35

Category	Results	Procedure/Remarks
Solder Ball Test	Pass	J-STD-005, IPC-TM-650, Method 2.4.43
Wetting	Pass	J-STD-005, IPC-TM-650, Method 2.4.45
Reliability Properties		
Copper Mirror	M	J-STD-004B, IPC-TM-650, Method 2.3.32
Copper Corrosion	L	J-STD-004B, IPC-TM-650, Method 2.6.15
Halogen Content	None Detected	J-STD-004B, IPC-TM-650, Method 2.3.41
Electrochemical Migration (ECM)	Pass	J-STD-004B, IPC-TM-650, Method 2.6.14.1
Surface Insulation Resistance (Sir)	Pass	J-STD-004B, IPC-TM-650, Method 2.6.3.7 Test Conditions: 40 °C, 90% RH, 7 days, 12.5V

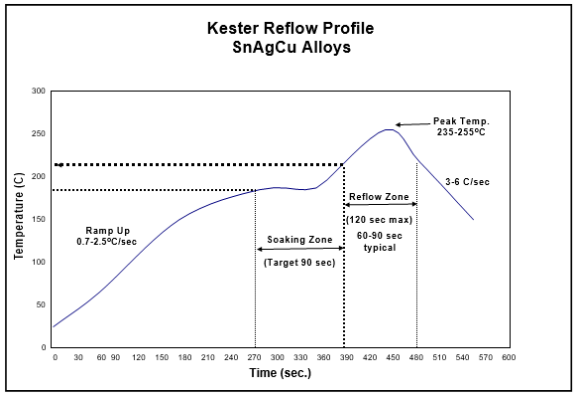
PROCESSING GUIDELINES

Below are process guidelines, and it is advisable to note that the optimum setting for a given assembly may vary and this is dependent on the circuit board design, board thickness, components used, and equipment used. A design of experiments is recommended to be done to optimize the soldering process. In addition, incoming solderability inspection of circuit boards and components is recommended as part of process control to maintain consistent soldering performance and electrical reliability.

Print Temperature Window	20 to 30 °C (68 to 86 °F) / 30 to 65% RH
Squeegee Angle	60° from horizontal
Speed	25 to 200 mm/sec (1 to 8 in/sec)
Pressure[1]	0.18 to 0.27 kg/cm (1 to 1.5 lb/in)
Separation Speed	5 to 20 mm/sec
Stencil life	8 hours at 21 to 24 °C (70 to 75 °F) / 40 to 45% RH

[1] Pressure should be increased with increasing print speed. First set the print speed. Then set the pressure to the minimum required to clean the solder paste off of the stencil.

Recommended Reflow Profile



The recommended reflow profile for formula made with SAC and SnAg alloys is shown here. This profile is simply a guideline. WP616 has excellent solderability and wetting across a wide range of profiles, with similar performance in air and nitrogen. Your optimal profile may be different from the one shown based on your oven, board and mix of defects. Contact Kester Technical Support if you need additional profiling advice.

Cleaning

WP616 is a water soluble formula. Its residues are best removed using automated cleaning equipment (in-line or batch). Deionized water heated to 60 to 75 °C (140 to 165 °F) should be used followed by a final rinse with deionized water. It is recommended to clean the circuit board after each reflow cycle. Commercial cleaning agent can be used. Contact your supplier for recommendations.

Storage, Handling and Shelf Life

WP616 has a six-month shelf life when refrigerated. Refrigeration (0 to 10 °C/32 to 50 °F) is the recommended storage condition for solder paste to maintain consistent viscosity, reflow characteristics and overall performance. WP616 should be stabilized at room temperature prior to printing. Please contact your Technical Support if you require additional advice with regards to handling and storage of this material.

AVAILABILITY

Standard alloy availability for WP616 is Sn96.5Ag3.0Cu0.5 with Type 3 (T3), Type 4 (T4) and Type 5 (T5) powder size distribution. T4 mesh size is recommended for standard and fine pitch applications. T5 is recommended for ultra-fine pitch applications. WP616 is also compatible with other SnAgCu and SnAg alloys in similar melting range to the listed alloy. For specific packaging information, refer to Kester's Solder Paste Packaging Chart for available sizes. The appropriate alloy and powder size combination depends on the process variables and the specific application. If you are looking for alloy or powder sizes currently not listed on Kester's Solder Paste Packaging Chart, please contact your Kester Sales or Technical Representative.

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

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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