

ALPHA[®] WS-815 Solder Paste

Water Soluble Solder Paste

DESCRIPTION

ALPHA WS-815 is a water soluble solder paste offering the ideal combination of printability and reflow profile process window.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- Excellent print volume and print volume repeatability
- Able to spread and wet using straight ramp or soak reflow profiles in air
- High Reflow Yield with IPC Class II Voiding Performance when used to solder BGA components
- Excellent wetting characteristics on all common surface finishes (including Enteck HT OSP). JIS Spread 88.6% on Enteck HT OSP
- Cleanable with water-based cleaning systems

PRODUCT INFORMATION

Alloys:	Sn63Pb37 (Sn63%Pb37%)
Application:	Stencil printing (87.6% Metal Loading, MXX Viscosity)
Powder Size:	Type 3 (> 90% 25 to 45 μ) - Type 4 (> 90% 20 to 38 μ)
RoHS Status:	RoHS Directive EU/2015/863; amending Annex II of 2011/65/EU

APPLICATION GUIDELINES

ALPHA WS-815 was formulated to meet the requirements of water soluble solder applications. ALPHA WS-815 was developed to increase the reflow profile window, while offering exceptional post reflow cleanability and low BGA voiding.

TECHNICAL DATA

Category	Results	Procedure/Remarks
Physical Properties	ALPHA WS-815 Sn63Pb37 88-3-M19 (stencil printing)	
Appearance (flux residues after reflowed)	Light yellowish color (before water washed)	Internal Testing
Metal content (%)	88% -0.4% - +0.2%	Internal Testing
Viscosity (Poise, Malcom spiral viscometer @10rpm)	MXX for stencil printing MXX for dispensing	Internal Testing
Stencil life (50% +/-15%RH, @25 °C)	5 hours	Internal Testing
Printability	Suitable for fine pitch printing applications (Down to 16 mil (0.4mm) pitch QFP components, 12 mil (0.3mm) BGA circles @) up to 100 mm/sec squeegee speed, using 5 mil (125µ) thick laser cut stencil	Internal Testing
Response to pause	0-1 Knead Stroke Required	Internal Testing
Tack	Initial 2.0 g/mm ² ; 1.8 g/mm ² after 4 hours at 25 °C and 50% R.H.	IPC TM-650 2.4.44
Random Solder Balls	Preferred (Both Initial and after 4 hours at 25 °C and 50% R.H.	IPC TM-650 2.4.43
Slump Resistance	Pass	IPC TM-650 2.4.35
Chemical Properties	ALPHA WS-815 Flux System	
Halide content (IPC J-Std-004)	ORH0	
Corrosivity (IPC J-Std-004)	Not applicable for water soluble solder paste	

PROCESSING GUIDELINES

Storage-Handling	Printing / Dispensing	Reflow	Cleaning
<ul style="list-style-type: none"> Refrigerate to guarantee stability @ 32 to 50 °F (0 to 10 °C). Expected shelf life is 6 months from date of manufacture in unopened jars. Warm-up of 500g jar to room temperature (should be ~ 6 hours). Set up printer with room temperature paste. Check paste temperature with a thermometer. Do not remove worked paste from stencil and mix with unused paste in jar. This will alter rheology of unused paste. Do not shake or mix paste using automatic paste shaking equipment prior to opening jar. The plunger insert used may submerge into paste and produce difficulties with plunger removal. Paste is stable for up to two weeks at room temperature (25 °C). 	<p>Stencil: Recommend ALPHA CUT Laser Cut Stencil @ 0.005 inch (5 mil, 127μ) thick for 0.012 inch (.30 mm) pitch QFPs</p> <p>Squeegee: Metal (Recommended)</p> <p>Print Speed: 2.0 to 4.0 in./sec (50 to 100 mm/sec.) 4.0 in/sec. optimal</p> <p>Squeegee: Pressure: 1.5 to 2.0 lbs./ linear in. (0357 Kg/cm)</p> <p>Stencil Release Speed: .02 in/sec (0.5 mm/second)</p>	<p>Atmosphere: Clean-dry air or Nitrogen</p> <p>Profile (Printing): See profiles evaluated in product development below</p> <p>If there is a significant ΔT (>10 °C) between components, a soak profile may be required. (Slow ramp from 120 to 160 °C for 60 to 90 seconds)</p> <p>Ramp @ 0.5 to 2 °C/sec to peak temperature 210 to 225 °C TAL for 40 to 80 seconds.</p> <p>If higher peak is needed, the chemistry can take peaks as high as 250 °C</p> <p>Ramp down to R.T. @ 1 to 3 °C/sec.</p>	<ul style="list-style-type: none"> ALPHA WS-815 is designed to be water rinsed in washing operations. With minimal foaming in recirculating systems. The flux residues from ALPHA WS-815 are completely water soluble. This allows for more flexible washing conditions which can be board design specific. Effective residue cleanability up to 48 hours after reflow. This allows maximum process flexibility. If lower/no foaming is desired in cleaning equipment, ALPHA P-2000 defoamer may be used. Cleaning temperature of 150 °F (65 °C) may cause the undesirable formation of tin salts.

REFLOW PROFILES

Suggested Reflow Profile



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 or [link here](#).



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 at MacDermidAlpha.com/assembly-solutions/knowledge-base.**

CONTACT INFORMATION

To confirm this document is the most recent version, please contact Assembly@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

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