

ALPHA[®] WS609 SOLDER PASTE

Water Soluble 95Sn 5Sb Alloy

DESCRIPTION

ALPHA WS609 is halide free, neutral pH water soluble solder paste specifically designed for demanding SiP semiconductor applications where stencil printing and post reflow water cleaning is used. It is designed to extend the tack and stencil life properties of water soluble solder paste and is formulated to replace rosin bearing products.

ALPHA WS609's unique activator system and water soluble resin carrier are suitable to replace RMA solder creams. The higher temperature Pb Free eutectic Sn/Sb alloy will not remelt during lower temperature subsequent reflow exposures (For example: MSL 260 3 x reliability testing).

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES AND BENEFITS

- Excellent Wettability
- Halide-free Formulation
- Enhanced Water Only Cleanability
- Excellent tack and stencil life
- High temperature Pb Free eutectic alloy (265 °C)

PRODUCT INFORMATION

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|-------------------------|---|
| <u>Alloys:</u> | 95Sn 5Sb Alloy For other alloys, contact your local Sales Office |
| <u>Powder Size:</u> | Type 3 (25 to 45µm per IPC J-STD-005) Type 4 (20 to 38µm per IPC J-STD-005) - available upon request |
| <u>Packaging Sizes:</u> | 500 gram jars, 6 in & 12 in cartridges (available upon request) |
| <u>Flux Gel:</u> | Flux gel is available in 10 and 30 cc syringes for rework applications |

APPLICATION

Stencil Printing

TECHNICAL DATA

| Category | Results | Procedures/Remarks |
|--|--|---|
| Chemical Properties | | |
| Activity Level (J-STD Classification) | ORH0 | IPC J-STD-004 |
| Halide Content | Halide free (by titration). Passes Ag Chromate Test | IPC TM-650 Test Method 2.3.35 |
| Copper Corrosion Test (After Washing) | Pass, (No evidence of Corrosion) | IPC TM-650 Test Method 2.3.32 |
| pH (5% Solution) | 6 to 8 | IPC-TM-650 pH Meter |
| Electrical Properties | | |
| SIR (IPC 7 days @ 85 °C/85% RH) | Pass, > 10 ⁹ ohms | IPC-TM-650 Method 2.6.3.3 {Pass ≥ 1 x 10 ⁸ ohm min} |
| Physical Properties | | |
| Metal Loading | 88.5 ±1 % | CEAMG STM 0355 |
| Flux Loading | 11.5 ±1 % | CEAMG STM 0355 |
| Viscosity; Malcom Spiral Viscometer (@10 rpm) | 1500 ± 500 Poise (Typical) | ICPH213 |
| Powder Size | Type 3 (25 to 45µm) | IPC J-STD-005 |

PRINTING

Using the number 3 particle size configuration, ALPHA WS609 is suitable for printing through stencil apertures as small as 9 mils in the smallest dimension. Stencil aspect ratio (width of smallest aperture divided by stencil thickness, Wa/Ts) should be 2.0 or greater as an initial parameter.

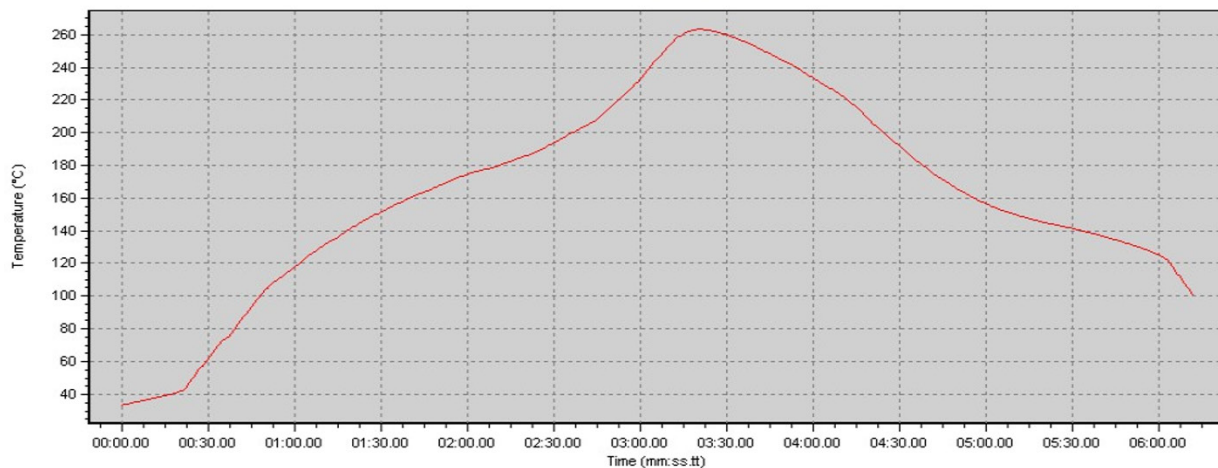
Printing parameters for ALPHA WS609 are similar to previous water soluble formulations and to RMA solder creams. Nominal Squeegee speeds from 20 to 25 mm/second are suitable to begin printing. Roll diameter cross-section should be 1.25 to 1.50 cm.

Stencil life is eight hours while tack life exceeds eight hours at 70 to 80 °F and 30 to 50% RH.

REFLOW

ALPHA WS609 can be successfully reflowed in convection reflow oven systems. The following component-level temperatures are provided as an initial guide to reflow ALPHA WS609 95Sn/5Sb:

ALPHA WS609 95Sn5Sb Typical Reflow Profile (Reference)



| Setting Zone* | Optimal Dwell Period | Extended window |
|---------------------------------|----------------------|---|
| 40 to 245 °C | 2:30 to 4:30 min. | < 5:00 min. |
| 150 to 240 °C | 1:00 to 2:00 min | < 2:30 min. |
| 120 to 245 °C | 2.00 to 4:00 min. | < 5:30 min. |
| TAL (245 °C) | 45 to 80 sec. | Not Recommended |
| Peak temperature | 260 to 270 °C | |
| Joint cooldown rate from 170 °C | < 3 °C/second | Recommended to prevent surface cracking issues. |

RESIDUE REMOVAL

ALPHA WS609 is a halide free flux system designed for complete water cleanability of flux residues after reflow. Water at 140 °F without a saponifier is suitable to achieve excellent cleaning results. Spray pressures of 35 to 65 PSI are sufficient to remove all residues.

Cleaning results using ALPHA WS609 may exceed those achievable using traditional RMA materials. Ionic contamination readings as low as 2.0 µg per in² are possible with this very cleanable flux.

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.**

STORAGE

Storage temperatures of 0 to 10 °C (32 to 50 °F) are sufficient to maintain its nominal shelf-life of 3 months from the manufacturing date. ALPHA WS609 should be allowed to achieve room temperature before unsealing its package. The production environment should be 70 to 80 °F maximum and 30 to 50% RH.

CONTACT INFORMATION

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