

ALPHA® WS600 / WS600MHV**Water-Soluble Flux for Semiconductor Ball-Attach****DESCRIPTION**

ALPHA WS600 and **ALPHA WS600MHV** water soluble fluxes are engineered to be used in the attachment of SnPb Eutectic or Pb-free spheres onto BGA or CSP components. They are also available with red dye in their composition for ease of pre-flow visual inspection.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES AND BENEFITS

- Excellent wettability: Excellent activity reduces the occurrence of dark balls
- Excellent cleanability: Flux residues are removed easily with water even after the operation of baking at 150 °C
- Long tackiness life

APPLICATION

- Pin Transfer
- Ball Dip
- Screen Print, Metal Mask, or Doctor-blade

PHYSICAL AND CHEMICAL PROPERTIES

ALPHA WS600/WS600MHV Technical Data		
Category	Results	Procedures/Remarks
Chemical Properties		
Activity Level	ORH0	IPC J-STD-004
Halide Content	Halide free (by titration). Passes Ag Chromate Test	IPC J-STD-004
Copper Mirror Test	Pass	IPC J-STD-004
Electrical Properties		
SIR (IPC 7 days @ 85 ° C/85% RH)	Pass , > 1.9×10^{10} ohms	IPC J-STD-004 {Pass $\geq 1 \times 10^8$ ohm min}
Physical Properties		
Appearance	Deep Amber or Red	Visual
Tack Strength (Time-0)	15 g/mm2	JIS Z3284
Viscosity; Malcom Spiral Viscometer (@5 rpm)	WS600 – 650 Poise (typical) WS600MHV – 1050 Poise (typical)	ICPH213

Results listed are typical values. Values are tentative unless specification limits have been statistically established and finalized.

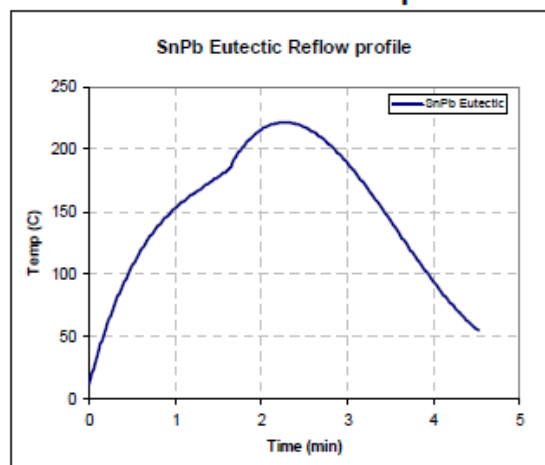
REFLOW

Reflow can be accomplished in air or nitrogen controlled atmosphere. The initial ramp rate should be at 30 to 60 °C per minute. If necessary, a dwell of 30 to 60 seconds at 150 to 160 °C is acceptable. (Because of the uniform furnace load in Flip Chip assembly to Ball Grid Array or Chip Scale Packages versus typical surface mount board assembly applications, equilibrium or dwells at a "preheat" temperature are not usually necessary.) Following this equilibrating period is a ramp of 60 to 120 °C to a peak temperature of up to 220 to 255 °C depending upon alloy. The time over alloy liquidus (183 °C for SnPb Eutectic, 217 to 221 °C for Sn/Ag/Cu alloys) should be 30 to 60 seconds. Cooling rate should be > 3 °C per second to room temperature.

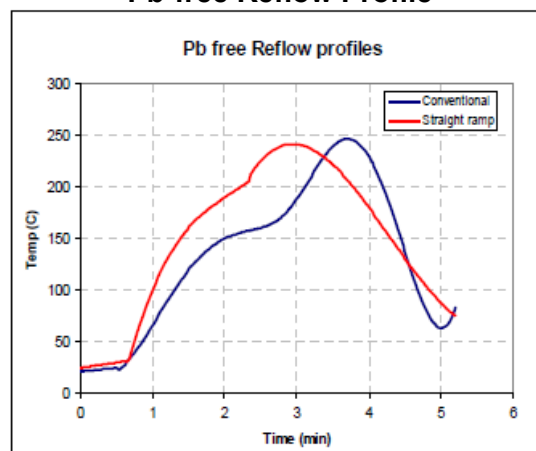
Reflow Parameters (Pb Free)	
Ramp rate (°C/sec)	0.5 to 1
Pre-heat dwell time 150 to 180 °C(sec)	30 to 60
Peak range (°C)	220 to 255
Time above liquidus (sec)	30 to 60
Cool down rate (°C/sec)	> 3.0

Example reflow profiles:

SnPb Eutectic reflow profile



Pb-free Reflow Profile



RESIDUE REMOVAL

Water at less than 60 °C without saponifier is suitable to achieve excellent results. Spray pressures of 35 to 65psi are sufficient to remove all residues. Cleaning results using ALPHA WS600 and ALPHA WS600MHV flux may exceed those achievable using traditional RMA materials.

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

While ALPHA WS600 and ALPHA WS600MHV flux are not considered toxic, their use in typical reflow processes will generate a small amount of decomposition and reaction vapors. These vapors should be adequately exhausted from the work environment and away from personnel. Consult the Material Safety Data Sheet for additional safety information.

CONTACT INFORMATION

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