ALPHA® OM-5200

No-Clean, Tin-Lead Solder Paste

DESCRIPTION

ALPHA OM-5200 is an all-around, no-clean, tin-lead solder paste designed to provide the benefits of increased throughput and yields over a variety of process conditions. This solder paste was engineered to meet the challenging demands of the Asia Pacific market including:

- Demanding IC Components (leadless and/or custom ICs)
- A wide range of end user applications including PCs and PC peripherals, consumer electronics, and portable MP3 players
- Pre-solder applications characterized by an even distribution of solder and smooth appearance
- Manufacturing processes using high soak reflow profiles

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES AND BENEFITS

ALPHA OM-5200 is a solder paste designed for stencil printing in surface mount processes.
Flux system specifically engineered to:

- Improve rolling properties and printability
- Delivers reduced levels of mid-chip solder balls (MCSBs)
- Improve wettability on OSP
- Minimize hot slump even in >170 °C high soaking temperature.
- Enable excellent in-circuit testing with minimal flux residue on the joint surface
- Stable viscosity throughout a 4 month refrigerated shelf life
- Excellent 1 to 2 hour response to pause printing performance
- Consistent component lead solder fillet wetting provides maximum increased solder joint strength
- Reduction of random solderballing levels minimizes rework and increases first time yield.
- Exceeds IPC 7095 Class III voiding performance
- Wide reflow profile window with good solderability enables ALPHA OM-5200 to work with complex PWBA with large Delta T across the board (such as large CPU socket vs. chips)
- Fine feature print performance down to dimensions of 0.3 mm (12 mil) squares and 0.4mm (16 mil) pitch QFPs (rectangles)
- Compatible with either nitrogen or air reflow

PRODUCT INFORMATION

Alloys:	63Sn/37Pb, 62Sn/36Pb/2Ag, NT4S (anti-tomb stoning) alloy
Metal Content:	90% +/-0.5% (M18*) for printing, 87.5% +/- 0.5% (M08) for dispensing
Powder Size:	Type 3, (25 to 45 µm per IPC J-STD-005), Type 4 (20 to 38µm per IPC J-STD-005)
Residues:	Approximately 5% by (w/w)
Packaging Sizes:	500 g jars, 700 g & 1400 g cartridges, 800 g DEK ProFlow Cassettes, and 10cc and 30 cc dispense syringes
Flux Gel:	OM-5200 Flux gel available in 10cc and 30cc syringes for rework applications

Tentative values. Final specification value to be determined after confirmation of batch values over time.

APPLICATION GUIDELINES

Formulated for standard, fine pitch and stepped stencil printing, at print speeds of between 25 to 100mm/sec (1 to 4 inches/sec), with stencil thickness of 0.100 to 0.125mm (0.004 to 0.005”). Recommended blade pressures are 0.17 to 0.31 kg/cm (1.0 to 1.75 lbs/inch). The blade pressures are print speed dependent. The recommended paste roll diameter is 1.5 to 2.0 cm and stay above a minimum of 1.3 cm (0.5 inch).

TECHNICAL DATA

Category	Results	Procedure/Remarks
Chemical Properties		
Activity Level	**ROL0** J-STD Classification	IPC J-STD-004
Halide Content	**Pass,** Ag Chromate Test	Halide free (by titration)
Copper Mirror Corrosion Test	**Pass**	JIS-Z-3197 8.4.2
Corrosion Test (Flux Residue)	**Pass,** No color change	JIS-Z-3284 Appendix 4
Copper plate corrosion test	**Pass**	JIS-Z-3197 8.4.1
Electrical Properties		
SIR (IPC)	**Pass,** 2.5 x $10^{10}\Omega$	IPC-J-STD-004, 7 days @ 85 °C, 85% RH
SIR (Bellcore)	**Pass,** .1.7 x 10^{11} Ω	Bellcore GR78-Core, 96 hours @ 35 °C,85%RH

Category	Results	Procedure/Remarks
SIR (JIS)	**Pass**, >1x10^{12} Ω	7 days, 40 °C, 93% RH
Electromigration (Bellcore)	**Pass,** 6.1 X 10^{10} Ω	96 hours @ 65 °C, 85%RH 10V 500 hours Pass: Final > Initial/10
Electromigration (JIS)	**Pass,** 6.5 x 10^{9} Ω	JIS-Z-3284 Appendix 14 1000 hours, 85 °C, 85% RH, 48 V
Physical Properties		
Color	Clear, Colorless Flux Residue	
Tack Force vs. Time and Humidity	**Pass**	IPC J-STD-005, Pass = Change of <1 g/mm^2 over 8 hours at 25% to 75 % relative humidity
Tack Life	>100 gf @ 24 hours	JIS-Z-3284 Appendix 10
Viscosity	M18 (90% metal load for printing) M08 (87.5% metal load for dispensing)	Malcom @ 25 °C, 10 rpm
Random Solder ball	Preferred	IPC J-STD-005 & JIS-Z-3284 Appendix 11
Stencil Life	8 hours	<15% change in print volume measured over 8 hours to 0.4mm (16 mil pitch) QFPs and 0.3mm (12 mil) squares
Spreading Test	92%	JIS-Z-3284 Appendix 8
Hot Slump test	Pass	IPC J-STD-005 (10 min 150 °C) & JIS-Z-3284 Appendix 8

PROCESSING GUIDELINES

Storage & Handling	Printing	Reflow	Cleaning
• Refrigerate to guarantee stability @ 0 to 10 °C (32 to 50 °F) • Shelf life of refrigerated paste is six months. • When Refrigerated, allow paste to reach room temperature before use. • Do not remove worked paste from stencil and mix with unused paste in jar. This will alter rheology of unused paste. • These are starting recommendations and all process settings should be reviewed independently	Stencil: Recommend ALPHA CUT Laser Cut Stencil or ALPHA FORM Electroform Stencil @ 0.100 to 0.125 mm (0.004 to 0.005") thick for 0.4 to 0.5 mm (0.016" or 0.020") pitch. Stencil design is subject to many process variables. Contact your local Alpha site for advice. Squeegee: Metal (recommended) Pressure: 1.0 to 1.75 lbs. /inch of squeegee length (0.17 to 0.31 kg/cm). Speed: 25 to100mm per second (1 to 4 inches per second). Paste Roll: 1.5 to 2.0 cm diameter and make additions when roll reaches 1.3-cm (0.5") diameter (min). Max roll size will depend upon blade. Stencil Release: A fast stencil release is recommended, but not required.	Atmosphere: Clean-dry air or nitrogen atmosphere. Profile (Sn/Pb): A soak profile @< 3 °C per second ramp rate from ambient temperature to 140 to 170 °C with a 60 to 120 second soak is permissible. Continue to ramp at <2 °C per second to 210 to 230 °C peak temperature is recommended (>200 °C for 30 to 70 sec or 45 to 90 sec above 183 °C.).	ALPHA OM-5200 residue is designed to remain on the board after reflow. If reflowed residue cleaning is required, a recommendation of agitation for 5 min in either Bioact™ SC-30 or Bioact SC-10/SC-10E cleaners. Misprints and stencil cleaning may be with ALPHA® SM-110/ SM-110E, Bioact™ SC-30, Bioact SC-10/SC-10E cleaners available from Alpha.

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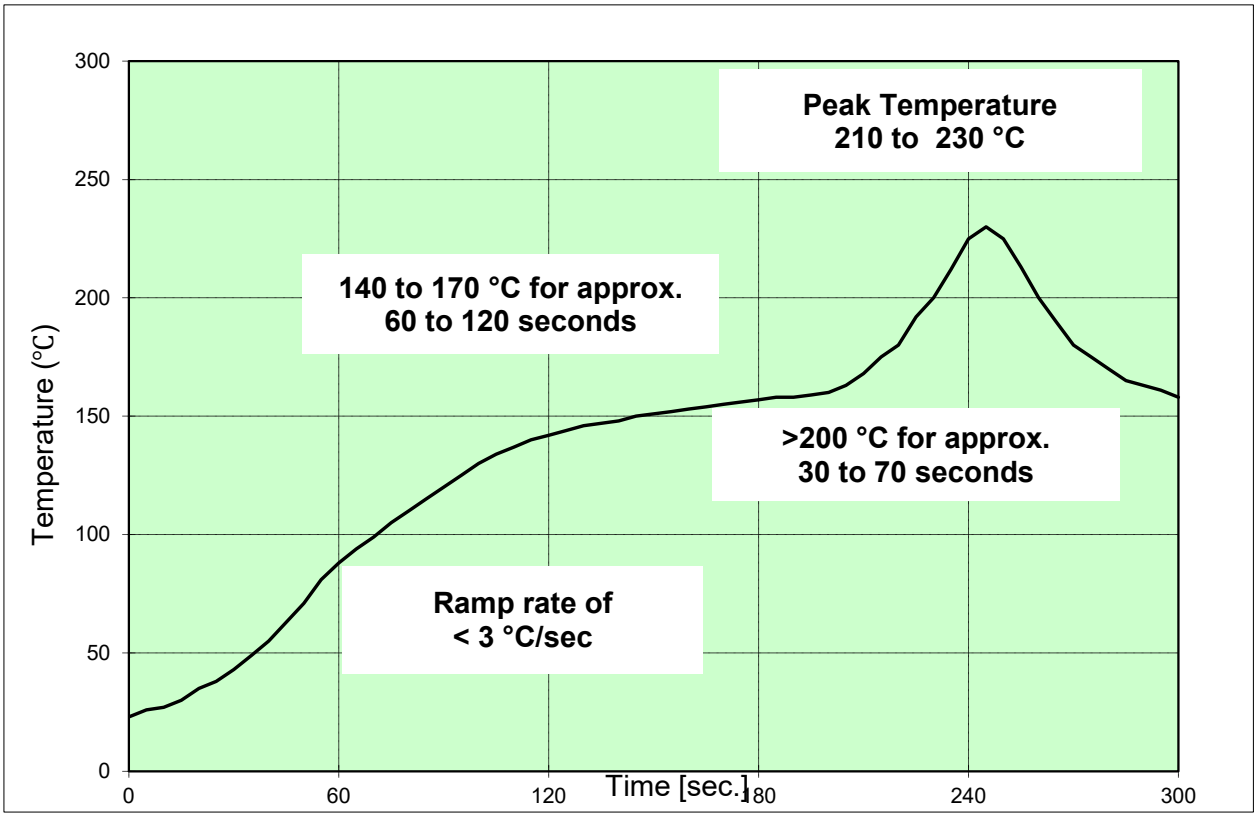
REFLOW PROFILES



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.**

STORAGE

ALPHA OM-5200 should be stored in a refrigerator between 0 to 10 °C upon receipt. It should be permitted to reach room temperature before unsealing its package prior to use (see handling procedures on page 4). This will prevent condensation build-up of moisture on the solder paste.

CONTACT INFORMATION

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

www.macdermidalpha.com

North America	Europe	Asia
109 Corporate Blvd. South Plainfield, NJ 07080, USA 1.800.367.5460	Unit 2, Genesis Business Park Albert Drive Woking, Surrey, GU21 5RW, UK 44.01483.758400	8/F., Paul Y. Centre 51 Hung To Road Kwun Tong, Kowloon, Hong Kong 852.3190.3100

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