MacDermid Alpha ELECTRONICS SOLUTIONS

TECHNICAL DATA SHEET

ALPHA® OM-362 SOLDER PASTE

Ultra-Low Voiding, High-Reliability, RoHS Compliant, Zero-Halogen

DESCRIPTION

ALPHA OM-362 is a lead-free, zero-halogen, no-clean solder paste designed to provide ultra-low voiding performance on all component types including bottom termination components. **ALPHA OM-362** achieves IPC-7095 Class III voiding on BGA components and on average less than 10% voiding on bottom termination components. This paste is designed for ultra-low voiding performance in high-reliability alloys such as Innolot as well as traditional SAC alloys.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

Features	Benefits
Ultra-Low Voiding Performance	Increases process stability, thermal, and electrical performance of the most demanding component applications
Excellent Electromigration characteristics	Passes J-STD-004B & J-STD-004C, IPC-TM-650 2.6.3.7 at 200µm to ensure electrical reliability & functionality of fine-pitched components
Wide Reflow Profile Window	Enables high quality solderability of complicated, high density PCB assemblies using straight ramp and soak profiles, as high as 150 to 200 °C soak
Good Coalescence and Wetting Performance	Coalesces down to 180 µm exhibiting good wetting characteristics and solder joint reliability
Excellent Solder Joint and Flux Residue Cosmetics	Easily penetrable and clear flux residue enables good probe contact during quality inspection
Zero-Halogen, No Halogens Intentionally Added	Ensures RoHS compliance for a safe and environmentally friendly assembly process.

PRODUCT INFORMATION

Alloys:	SAC305 & Innolot Alloys For other alloys, contact your local sales office
Powder Size:	Type 4
Packaging Sizes:	500 gram jar, 6 inch and 12 inch cartridge

HALOGEN STATUS

ALPHA OM-362 is a zero-halogen product. It passes the standard listed in the table below:

Standards			
Standard	**Requirement**	**Test Method**	**Status**
BS EN 14582:2007 Characterization of waste – halogen and sulfur content – Oxygen Combustion in closed systems and determination methods	< 1000 ppm Br, Cl in solder material solids	Halogen CL, BR - DIN EN-14582	Pass
RoHS	RoHS Directive EU/2015/863; amending Annex II of 2011/65/EU. Detection Criteria ≤ 2 to 5mg/kg Permissible Limit ≤ 1000mg/kg	IEC 62321 :2013 & IEC 62321 :2008	Pass

TECHNICAL DATA

ALPHA OM-362		
Category	**Results**	**Procedures/Remarks**
Chemical Properties		
Flux Classification	ROL0	IPC J-STD-004B
Fluoride Spot Test	No fluoride present	IPC J-STD-004B
Copper Mirror Test	Low activity, no breakthrough	IPC J-STD-004B
Copper Corrosion Test	Low activity, no corrosion	IPC J-STD-004B
Electrical Properties		
SIR (7 days, 85 °C/85% RH)	Pass, $\geq 10^8$ Ohms for 7 days down to 200 µm spacing	IPC J-STD-004C, IPC-TM-650 2.6.3.7
SIR (7 days, 40 °C/90% RH)	Pass, $\geq 10^8$ Ohms for 7 days down to 200 µm spacing	IPC J-STD-004B, IPC-TM-650 2.6.3.7
SIR (7 days, 40 °C/93% RH)	Pass, $\geq 10^8$ Ohms for 7 days	JIS Z 3197:1999 (8.5.3)
JIS Electrochemical Migration (1000 hrs, 85 °C/85% RH)	Pass, No visual evidence of corrosion, discoloration or electromigration	JIS Z 3197:1999 (8.5.4)
Physical Properties		
Residue Color	Soft and Clear flux residue	
Tack Force	Pass, 24 hrs at 50% RH	IPC J-STD-005, IPC-TM-650 2.4.44
Stencil Life at Ambient Condition	8-hrs consistent transfer efficiency	@25 °C/50% RH
Stencil Life at Elevated Condition	8-hrs consistent transfer efficiency	@30 °C/65% RH
Cold Slump (25 °C /50% RH)	Pass, no bridging above 0.20 mm	IPC J-STD-005A
Hot Slump (150 °C/10 min)	Pass, no bridging above 0.25 mm	IPC J-STD-005A
Solder Ball	Preferred	IPC J-STD-005 TM-650 2.4.43

ALPHA OM-362		
Category	**Results**	**Procedures/Remarks**
Spread	~80%	JIS Z 3197:1999 8.3.1.1
Dryness Test (Talc)	Pass	JIS Z 3197:1999 8.5.1

PROCESSING GUIDELINES

The following process settings are offered as a process window guideline based on typical SMT assembly. The optimum process setting will need to be assessed for each individual process due to the variation in assembly processes across the electronics industry.

Stencil: 0.10 mm (4.0 mil) thickness tested internally during product development. Stencil design is subject to many process variables. Contact your local MacDermid Alpha Technical Support for advice.

Aperture Design: ALPHA OM-362 may be printed using various aperture designs. AR ≥ 0.59 is optimal for printing.

Squeegee: Recommend Metal Squeegee angle 60°, 45°

Speed: Formulated for stencil printing at speeds between 25 mm/s (1.0 in/s) and 150 mm/s (6.0 in/s).

Pressure: Typical blade pressures for 30 cm (12 in) blade length are between 0.18 kg/cm (1.0 lbs/in) to 0.29 kg/cm (1.6 lbs/in) depending upon the print speed and quality of stencil/substrate gasket. Higher blade pressure is required to achieve a clean stencil surface for applications requiring higher print speed.

Paste Roll: Paste roll between 1.5 cm (0.60 in) to 2.0 cm (0.80 in) in diameter is recommended for optimum performance with paste additions made when roll reaches 1.0 cm (0.40 in) diameter (Min). Max roll size will depend upon the blade.

Stencil Release Speed: >5.0 mm/s preferred.

ALPHA OM-362 residue is designed to remain on the board after reflow. Misprints and stencil cleaning to be done with IPA. Suitable stencil cleaners can also be used for stencil underwipe or offline stencil cleaning.

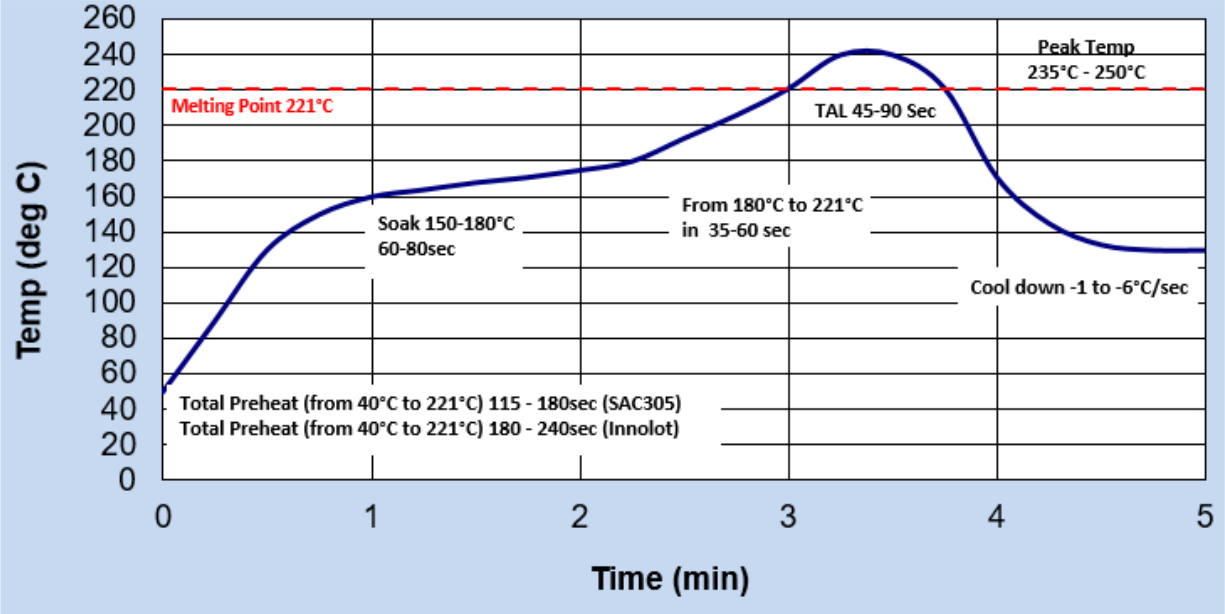
Storage & Handling: Refrigerate to guarantee stability from 0 °C to 10 °C (32 °F to 50 °F). When stored under these conditions, shelf life of ALPHA OM-362 is 4 months. When refrigerated, warm up paste container to room temperature for up to 4 hours. Paste must be ≥19 °C (66 °F) before processing. It is recommended to verify paste temperature with a thermometer to ensure paste is at 19 °C (66 °F) or greater before use on a printer.

Do not remove worked paste from stencil and mix with unused paste in jar. This will alter the rheology of unused paste.

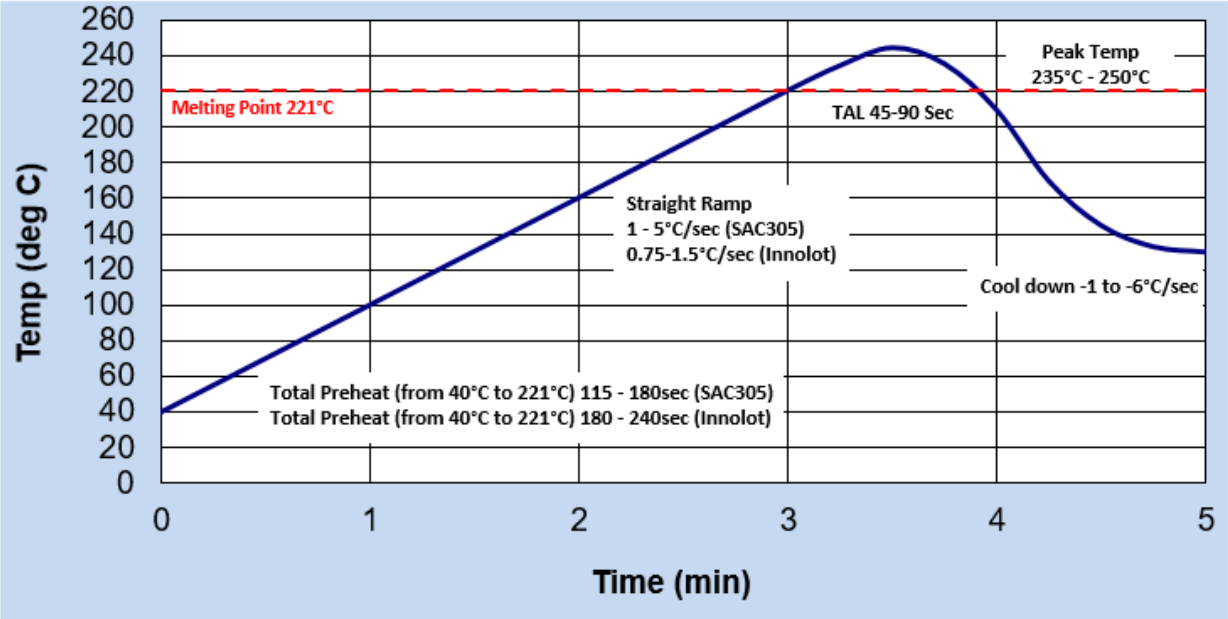
REFLOW PROFILES

Figure 1: OM-362 SAC305 & Innolot General Profile Recommendation

Soak Profile



Straight Ramp



Note: Innolot can be reflowed using a similar profile to SAC305. Some customers' field feedback confirms extended profile will further reduce voiding with the Innolot alloy.

Please note that this is only a recommendation. Equipment and assembly factors may require adjustments to be made to the 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.

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