

# ALPHA<sup>®</sup> OM-347 Solder Paste

Ultra-Cleanable, No-Clean, Lead-Free, Zero-Halogen, Ultra-Fine Feature Printing & Reflow Capable

## DESCRIPTION

**ALPHA OM-347** is designed for print and reflow with Type 4 and Type 5 powder for applications requiring ultra-fine feature performance. It has been formulated to enable excellent cleaning of residues after PCBs have been reflowed. Residues can be cleaned with industry leading cleaning chemistries and in a static bath using nPB solvents.

**ALPHA OM-347** has an outstanding reflow process window that delivers good soldering on CuOSP with excellent coalescence on a broad range of deposit sizes, excellent random solder ball and mid-chip solder ball resistance.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

## FEATURES & BENEFITS

- **No-Clean & Ultra-Clean:** ALPHA OM-347 is a no-clean solder paste; residue resulted after the reflow process can be safely left on board. If needed, the residue can be very easy cleaned with Aquanox A4241, ALPHA BC-3350, or nPB based solvents.
- **HIP performance:** very good HIP performance, comparable with ALPHA OM-340
- **High Tack Force Life:** ensures high pick-and-place yields, good self-alignment
- **Long Stencil Life:** engineered for consistent performance, reducing variations in print performance and paste dry-out
- **Wide Reflow Profile Window:** enables quality soldering of complex, high density PCB assemblies in both air and N<sub>2</sub>
- **Excellent Coalescence and Wetting Performance:** coalesces well for down to 100 $\mu$  using 50 $\mu$  stencil, N<sub>2</sub> reflow low soak profile environment
- **Excellent Solder Joint and Flux Residue Cosmetics:** residue does not char or burn after reflow soldering, even when using long/high thermal soaking
- **Excellent Voiding Performance:** Pass IPC-7095 Class 3 requirement for BGA.
- **Halogen Content:** Zero-Halogen
- **Safe and Environmentally Friendly:** Materials comply with ROHS, TOSCA, EINECS and Zero-Halogen requirements

**PRODUCT INFORMATION**

<u>Alloys:</u>	SAC305 & Sn96Ag4, other alloys available on request
<u>Powder Size:</u>	IPC Type 4 & Type 5
<u>Packaging Sizes:</u>	500 gram jars, 6in & 12in cartridges
<u>Flux Gel:</u>	ALPHA OM-347 Flux
<u>Lead Free:</u>	RoHS Directive EU/2015/863; amending Annex II of 2011/65/EU.

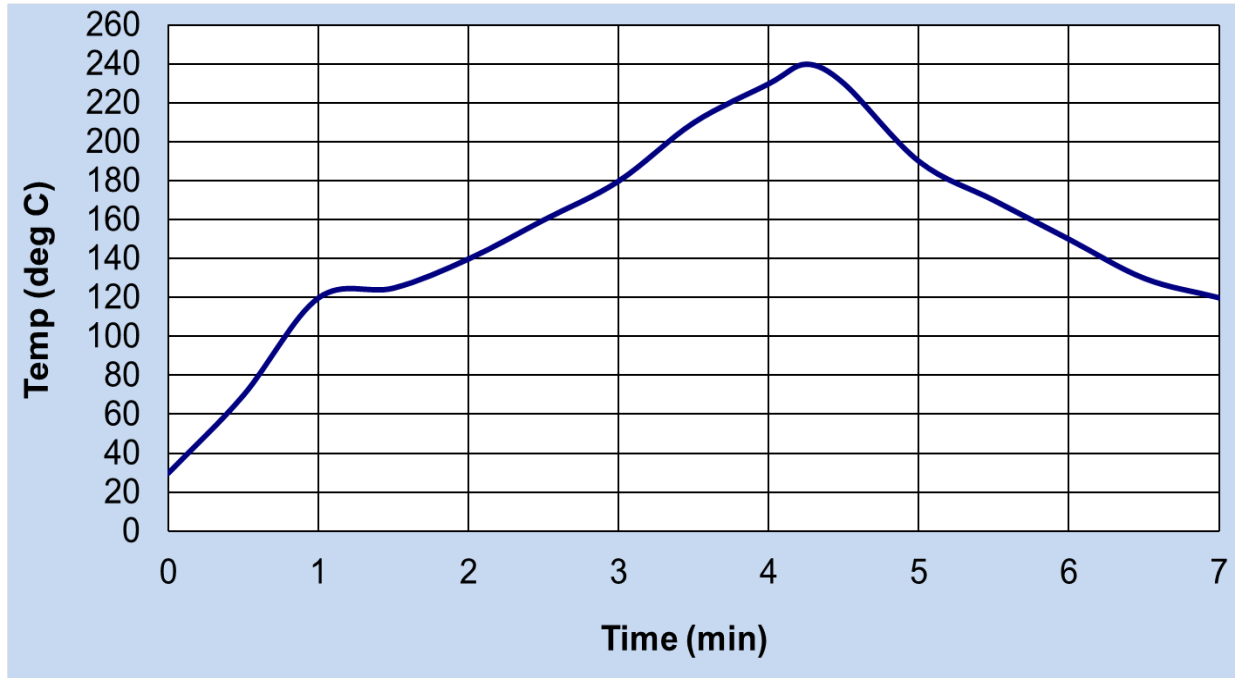
**TECHNICAL DATA**

Category	Results	Procedures/Remarks
<b>Chemical Properties</b>		
Activity Level	ROM0	IPC J-STD-004B
Halide Content	Halide free (by titration), < 0.05%	IPC J-STD-004B
Fluoride Spot Test	Pass	JIS Z 3197:1999 8.1.4.2.4
Halogen Test	Pass, Zero Halogen - No halogen intentionally added	EN14582, by oxygen bomb combustion, Non-detectable (ND) at < 50 ppm
<b>Electrical Properties</b>		
SIR (7 days, 40 °C/90%RH, 12 V bias)	Pass	IPC J-STD-004B TM-650 2.6.3.7 (Pass $\geq 1 \times 10^8$ oh)
<b>Physical Properties</b>		
Color	Clear, Colorless Flux Residue	
Tack Force vs. Humidity	Pass	JIS Z 3284:1994, Annex 9
	Pass	IPC J-STD-005 TM-650 2.4.44
Viscosity Stability at 25 °C for 14 days	Pass	Malcom Spiral Viscometer
Coalescence Test -, 50µm stencil , N <sub>2</sub> reflow low soak profile environment	100 µm	Internal Test Method
Solder Ball	Preferred	IPC J-STD-005B TM-650 2.4.43
Spread	>80%	JIS Z 3198-3
Residue Dryness	Residue is not sticky	Internal Dryness Test
Stencil Life	>8 hours	@ 50% RH 23 °C (74 °C)
Hot Slump	No bridge for 0.2 mm space	IPC J-STD-005 TM-650 2.4.35

**PROCESSING GUIDELINES**

Storage & Handling	Printing	Reflow	Cleaning
<ol style="list-style-type: none"> <li>1. Refrigerate to guarantee stability @ 0 to 10 °C (32 to 50 °F). When stored under these conditions, the shelf life of ALPHA OM-347 is 6 months.</li> <li>2. Paste can be stored for 2 weeks at room temperature up to 25 °C (77 °F) prior to use</li> <li>3. When refrigerated, warm up paste container to room temperature for up to 4 hours. Paste must be 19 °C (66 °F) before processing. Verify paste temperature with a thermometer to ensure paste is at 19 °C (66 °F) or greater before set up of printer.</li> <li>4. Paste can be manually stirred before use. A rotating / Centrifugal force mixing operation is not required. If a rotating/centrifugal force mixing is used, 30 to 60 seconds at 300 RPM is adequate.</li> <li>5. Do not remove worked paste from stencil and mix with unused paste in jar. This will alter the rheology of unused paste.</li> <li>6. These are starting recommendations and all process settings should be reviewed independently.</li> </ol>	<p><b>Stencil:</b> Recommend <b>ALPHA CUT, ALPHA NICKEL-CUT, ALPHA TETRABOND®</b>, or <b>ALPHA FORM</b> stencils @ 0.100 to 0.150 mm (4 to 6 mil) 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 stencil site for advice.</p> <p><b>Squeegee:</b> Metal (recommended)</p> <p><b>Pressure:</b> 0.21 to 0.36 kg/cm of blade (1.25 to 2.0 lbs/inch)</p> <p><b>Speed:</b> 25 to 150 mm per second (1 to 6 inches per second).</p> <p><b>Paste Roll:</b> 1.5 to 2.0 cm diameter and make additions when roll reaches 1 to cm (0.4") diameter (min). Max roll size will depend upon blade.</p> <p><b>Stencil Release Speed:</b> 1 to 5 mm/sec.</p> <p><b>Lift Height:</b> 8 to 14mm (0.31 to 0.55")</p>	<p><b>Atmosphere:</b> Clean-dry air or nitrogen atmosphere.</p> <p><b>Profile:</b></p> <p><b>Soak:</b> 130 to 200 °C 90 to 110 sec soak, 240 °C Peak, 60Sec TAL profiles have been determined to give optimal results</p> <p><u>Note 1:</u> This is a suggested reflow profile. Desired results may be achieved using other profiles.</p>	<p><b>ALPHA OM-347</b> residue is designed to remain on the board after reflow. If post reflow residue cleaning is required a broad range of cleaners may be used. Alpha recommends ALPHA BC-3350, Aquanox A4241 &amp; nPB based solvents.</p> <p>For best cleaning results, Alpha suggests using some agitation (mechanical stirring, ultrasonic bath, etc.) to clean ALPHA OM-347 residue reflowed in air.</p>

**REFLOW PROFILES**



**Fig 1: Suggested Soak 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](http://MacDermidAlpha.com/assembly-solutions/knowledge-base).**

**CONTACT INFORMATION**

**To confirm this document is the most recent version, please contact [Assembly@MacDermidAlpha.com](mailto:Assembly@MacDermidAlpha.com)**

[www.macdermidalpha.com](http://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

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