

## ALPHA<sup>®</sup> OM-340SL Solder Paste

No-Clean, Lead-Free, Zero-Halogen, Low Voiding, Fine-Feature Capable, Excellent Pin Testability, SAC305 & Low-Ag Capable

### DESCRIPTION

**ALPHA OM-340SL** is a lead-free, zero-halogen no-clean solder paste designed for applications where residue with excellent pin testing property and ability to pass JIS Copper Corrosion test are required.

This product is also designed to enable consistent fine pitch printing capability, down to 180µm circle printed with 100µm thickness stencil. Its excellent print volume deposit repeatability also provides value by reducing defects associated with print process variability. Additionally, **ALPHA OM-340SL** achieves IPC7095 Class III voiding performance.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

### FEATURES AND BENEFITS

- **Long Stencil Life:** consistent performance for at least 8 hours of continuous printing without addition of new paste
- **Long, High Tack Force Life:** ensures high pick-and-place yields, good self-alignment
- **Wide Reflow Profile Window:** allows best quality solderability of complicated, high density PWB assemblies in both air and nitrogen reflow, using ramp and soak profiles, as high as 175 to 185 °C
- **Reduced Random Solder Ball Levels:** minimizes rework and increases first time yield
- **Excellent Coalescence and Wetting Performance:** coalesced 180µm circle deposit, even at high soak profile environment
- **Excellent Solder Joint and Flux Residue Cosmetics:** after reflow soldering, even using long/high thermal soaking, without charring or burning
- **Excellent Voiding Performance:** Meets IPC7095 Class III Requirement
- **Halogen Content:** Zero Halogen, no halogen intentionally added
- **Residue:** Excellent Pin Testing property and Pass JIS Copper Corrosion Test
- **Safe and Environmentally Friendly:** Materials comply with RoHS and Halogen-free requirements (see table below), as well as TSCA & EINECS

**PRODUCT INFORMATION**

Alloys:	SAC305
Powder Size:	Type 4 (20 to 38µm per IPC J-STD-005) Packaging Sizes:500 gram jars, 6in & 12in cartridges
Flux Gel:	Flux gel is available in 10 and 30 cc syringes for rework applications
Lead Free:	Complies with RoHS Directive EU/2015/863

**APPLICATION GUIDELINES**

Formulated for both standard and fine pitch stencil printing, at print speeds of between 25mm/s (1in/s) and 150mm/s (6in/s), with stencil thickness of 0.100mm (0.004in) to 0.150mm (0.006in), particularly when used in conjunction with ALPHA Stencils. Blade pressures should be 0.21 to 0.36 kg/cm of blade (1.25 to 1.5 lbs/inch), depending upon the print speed. The higher the print speed employed, the higher the blade pressure that is required. The reflow process window will give high soldering yield with good cosmetics and minimized rework.

**HALOGEN STATUS**

ALPHA OM-340SL is a zero-halogen product and passes the standards listed in the Table below:

Halogen Standards			
Standard	Requirement	Test Method	Status
<b>JEITA ET-7304</b> <i>Definition of Halogen Free Soldering Materials</i>	< 1000 ppm Br, Cl, F in solder material solids	<b>TM EN 14582</b>	Pass
<b>IEC 612249-2-21</b>	Post Soldering Residues contain < 900 ppm each or total of < 1500 ppm Br or Cl from flame retardant source		Pass
<b>JEDEC</b> <i>A Guideline for Defining "Low Halogen" Electronics</i>	Post soldering residues contain < 1000 ppm Br or Cl from flame retardant source		Pass
<b>Zero Halogen:</b> No halogenated compounds have been intentionally added to this product			

**TECHNICAL DATA**

Category	Results	Procedure/Remarks
<b>Chemical Properties</b>		
Activity Level	ROL0	IPC J-STD-004B
Halide Content	Halide free (by titration)	IPC J-STD-004B
Fluoride Spot Test	<b>Pass</b>	JIS Z 3197:1999 8.1.4.2.4
Halogen Test	<b>Pass</b> , Zero Halogen - No halogen intentionally added	EN14582, by oxygen bomb combustion, Non-detectable (ND) at < 50 ppm
Ag Chromate Test	<b>Pass</b>	IPC J-STD-004B
	<b>Pass</b>	JIS Z 3197:1999 8.1.4.2.3
Copper Mirror Test	<b>Pass</b>	IPC J-STD-004B
	<b>Pass</b>	JIS Z 3197:1999 8.4.2
Copper Corrosion Test	<b>Pass</b> (No evidence of Corrosion)	IPC J-STD-004B
	<b>Pass</b> (No evidence of Corrosion)	JIS Z 3197: 1999 8.4.1
<b>Electrical Properties</b>		
Water Extract Resistivity	13,400 ohm-cm	JIS Z 3197: 1999 8.1.1
SIR (7 days, 40 °C/90%RH, 12 V bias)	<b>Pass</b>	IPC J-STD-004B TM-650 2.6.3.7 (Pass $\geq 1 \times 10^8$ ohm)
Electromigration (Bellcore 500 hours @ 65 °C/85% RH 10V)	<b>Pass</b>	Bellcore GR78-CORE (Pass=final > initial/10)
JIS Electromigration (1000 hours @ 85 °C/85%RH 48V)	<b>Pass</b>	JIS Z 3197:1999 8.5.4
<b>Physical Properties</b>		
Color	Clear, Colorless Flux Residue	
Tack Force vs. Humidity	<b>Pass</b> , > 100gf over 24 hours at 25%, 50% and 75 % Relative Humidity	JIS Z 3284: 1994, Annex 9
	<b>Pass</b> , Change of <1g/mm <sup>2</sup> over 24 hours at 25% and 75 % Relative Humidity	IPC J-STD-005 TM-650 2.4.44

Category	Results	Procedure/Remarks
Tack Force at 32 °C/35%RH, measured after 0, 1, 2, 3 & 4 hours print duration	> 100gf	JIS Z 3284:1994, Annex 9
Viscosity	Designated M17 or M20 for printing: Viscosity (Typical) 1700 poise or 2000 poise at 10 rpm	Malcom Spiral Viscometer
Coalescence Test	Able to reflow at < 200 µm Cu pad circle size	Internal
Solder Ball	Preferred	IPC J-STD-005 TM-650 2.4.43
Wetting Time	Pass 0.34 second	Rhesca Test, Test Time T2, 3 seconds
Spread	80%	JIS Z 3197:1999 8.3.1.1
Stencil Life	>8 hours	@ 50% RH 23 °C (74 °C)
Cold Slump	No bridge for 0.2 mm space	JIS Z 3284:1994 Annex 7
	Not tested	IPC J-STD-005 TM-650 2.4.35
Hot Slump	No bridge for 0.4 mm space	JIS Z 3284:1994 Annex 8
	Pass	IPC J-STD-005 TM-650 2.4.35
Dryness Test (Talc)	Pass	JIS Z 3197:1999 8.5.1

**PROCESSING GUIDELINES**

Storage & Handling	Printing	Reflow	Cleaning
<ul style="list-style-type: none"> <li>Refrigerate to guarantee stability</li> <li>@ 1 to 10 °C, (34 to 50 °F). When stored under these conditions, the shelf life of OM-340SL is 6 months from the manufacturing date.</li> <li>Paste can be stored for 2 weeks at room temperatures up to 25 °C (77 °F) prior to use.</li> <li>When refrigerated, warm-up of paste container to room temperature for up to 4 hours. Paste must be <math>\geq 19</math> °C (66 °F) before processing. Verify paste temperature with a thermometer to ensure paste is at 19 °C (66 °F) or greater before setup of printer.</li> <li>Do not remove worked paste from stencil and mix with unused paste in jar. This will alter rheology of unused paste.</li> <li>These are starting recommendations and all process settings should be reviewed independently.</li> </ul>	<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 (0.016inch or 0.020inch) pitch.</p> <p>Stencil design is subject to many process variables. Contact your local <b>ALPHA</b> 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 length (1.25 to 2.0 lbs/inch)</p> <p><b>SPEED:</b> 25 to 150mm 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 1cm (0.4inch) diameter (min). Max roll size will depend upon blade.</p> <p><b>STENCIL RELEASE SPEED:</b> 1 to 5 mm/s</p> <p><b>LIFT HEIGHT:</b> 8 to 14MM (0.31 to 0.55inch)</p>	<p><b>ATMOSPHERE:</b> Clean-dry air or nitrogen atmosphere.</p> <p><b>PROFILE (SAC Alloys):</b> <u>Straight Ramp:</u> 0.7 °C/sec and 1.3 °C/sec ramp profiles, 45 to 60 TAL. <u>Soak:</u> 155 to 175 °C, 60 to 100sec soak profiles have been determined to give optimal results. If required, good results are also achievable with high soak temperature profiles of 175 to 185 °C for 60sec. Typical peak temperature is 235 to 245 °C.</p> <p>Note 1: Keeping the peak temperature below 241 °C may reduce the number and size of BGA and QFN voids.</p> <p>Note 2: Refer to component and board supplier data for thermal properties at elevated temperatures. Lower peak temperatures require longer TAL for improved joint cosmetics.</p>	<p><b>ALPHA OM-340SL</b> residue is designed to remain on the board after reflow. If reflowed residue cleaning is required, Vigon A201 (In-line Cleaning), Vigon A250 (Batch Cleaning), Vigon US (Ultrasonic Cleaning) are recommended. Vigon is a registered trademark of Zestron.</p> <p>Misprints and stencil cleaning may be done with IPA, <b>ALPHA SM-110E</b>, and <b>ALPHA SM-440</b>.</p>

REFLOW PROFILES

Figure 1: Typical Soak Reflow Profile for SAC Alloys

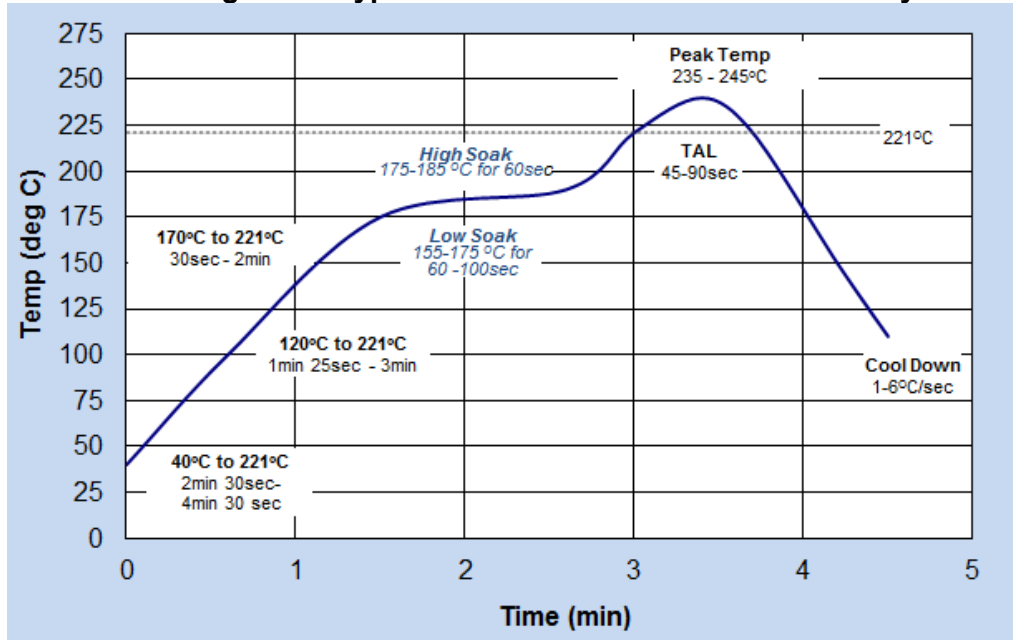
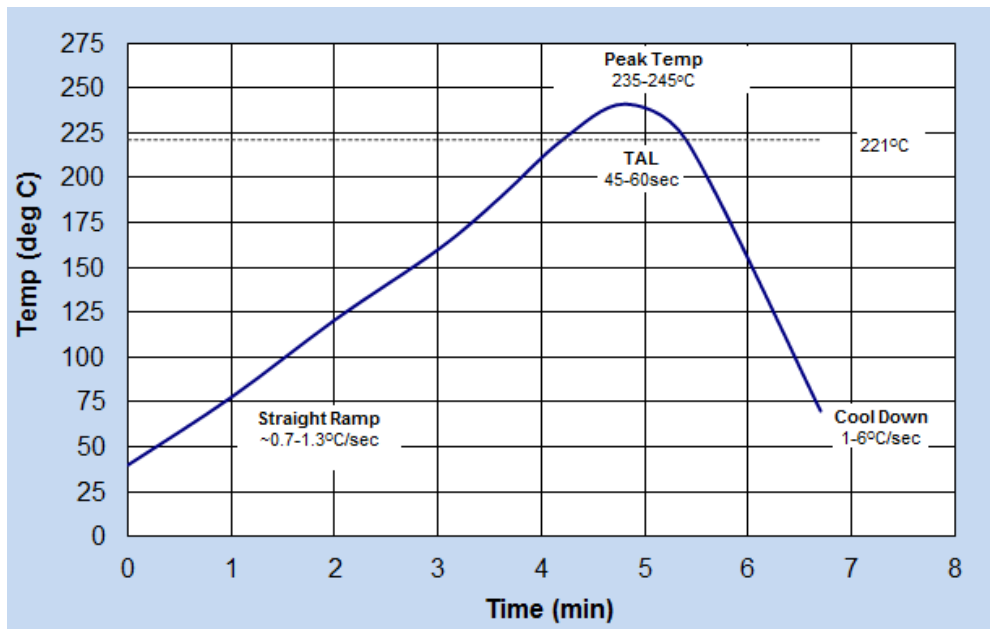


Figure 2: Typical Ramp Reflow Profile for SAC Alloys



**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).**

**STORAGE**

ALPHA OM-340SL should be stored in a refrigerator upon receipt at 0 to 10 °C (32 to 50 °F). ALPHA OM-340SL should be permitted to reach room temperature before unsealing its package prior to use (see handling procedures on page 5). This will prevent moisture condensation build up in the solder paste.

**CONTACT INFORMATION**

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