ALPHA® OM-340 UV Solder Paste

Fine Feature, Lead-Free, No-Clean

DESCRIPTION

ALPHA OM-340 UV is a lead-free, no-clean solder paste designed for a broad range of applications. **ALPHA OM-340 UV**'s broad processing window is designed to minimize transition concerns from tin/lead to lead free solder paste. This material is engineered to deliver comparable performance to a tin lead process*. **ALPHA OM-340 UV** yields excellent print capability performance across various board designs, particularly with ultra-fine feature repeatability (11 mil squares) and high "through-put" applications.

Outstanding reflow process window delivers superior soldering on CuOSP with excellent coalescence on a broad range of deposit sizes, excellent random solder ball resistance and mid-chip solder ball performance. **ALPHA OM-340 UV** is formulated to deliver excellent visual joint cosmetics. Additionally, **ALPHA OM-340 UV**'s capability of IPC Class III for voiding and ROL0 IPC classifications ensures maximum long-term product reliability.

ALPHA OM-340 UV is identical to **ALPHA OM-340**, with the addition of a trace amount of UV activated dye, designed to convert UV light to visible light, allowing for visual detection of reflowed flux.

**Although the appearance of these lead-free alloys will be different to that of tin-lead, with mechanical reliability equal to or greater than with that of tin-lead or tin-lead-silver.*

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- Maximizes reflow yield for lead-free processing, allowing full alloy coalescence at circular dimensions as small as 0.275mm (0.011") with 0.100mm (4mil) thick stencils
- Excellent print consistency with high process capability index across all board designs
- Print speeds of up to 150mm/s (6in/s), enabling a fast print cycle time and a high throughput
- Wide reflow profile window with good solderability on various board / component finishes
- Excellent solder and flux cosmetics after reflow soldering
- Reduction in random solderballing levels, minimizing rework and increasing first time yield
- Meets highest IPC 7095 voiding performance classification of Class III
- Excellent reliability properties, halide-free material
- Compatible with either nitrogen or air reflow
- Halogen-free

PRODUCT INFORMATION

Alloys:	SAC305
Powder Size:	Type 4
Packaging Sizes:	500 gram jars
Lead Free:	RoHS Directive EU/2015/863; amending Annex II of 2011/65/EU

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 0.18 to 0.27 kg/cm of blade (1.0 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.

TECHNICAL DATA

Category	Results	Procedures/Remarks
Chemical Properties		
Activity Level	ROL-0 = J-STD Classification	IPC J-STD-004A
Halide Content	Halide free (by titration) Passes Ag Chromate Test	IPC J-STD-004A
Copper Mirror Test	**Pass**	IPC J-STD-004A
Copper Corrosion Test	**Pass** (No evidence of Corrosion)	IPC J-STD-004A
Electrical Properties		
SIR (IPC 7 days @ 85 °C /85% RH)	**Pass**, 8.6 x 10^9 ohms	IPC J-STD-004 A {Pass ≥ 1 x 10^8 ohm}
SIR (Bellcore 96 hours @ 35 °C /85%RH)	**Pass**, 2.1 x 10^{11} ohms	Bellcore GR78-CORE {Pass ≥ 1 x 10^{11} ohm}
Electromigration (Bellcore 96 hours @ 65 °C /85%RH 10V 500 hours)	**Pass**, Initial = 3.9 x 10^8 ohms Final = 1.9 x 10^9 ohms	Bellcore GR78-CORE {Pass=final > initial/10)
Physical Properties		
Color	Clear, Colorless Flux Residue	

Category	Results	Procedures/Remarks
Tack Force vs. Humidity (t=8 hours)	**Pass** -Change of <1 g/mm^2 over 24 hours at 25% and 75% Relative Humidity	IPC J-STD-005
	Pass -Change of <10% when stored at 25±2 °C and 50±10% relative humidity.	JIS Z 3284 Annex 9
Viscosity	88.5% metal load designated M18 for printing. Type 4 powder,	Malcom Spiral Viscometer; J-STD-005
Solderball	Acceptable	IPC J-STD-005
	Pass, Class I - 1 hour and 72 hours	DIN Standard 32 513, 4.4
Stencil Life	> 8 hours	@ 50%RH, 23 °C (74 °F)
Spread	**Pass**	JIS Z 3197: 1999 8.3.1.1
Slump	**Pass**	IPC J-STD-005 (10 min 150 °C)
	No bridging 0.2 mm gap & above	DIN Standard 32 513, 5.3
	No bridging 0.3 mm gap & above	JIS Z 3284:1994 Annex 8

PROCESSING GUIDELINES

Storage and Handling	Printing	Reflow (See Fig 1 & 2)	Cleaning
• Refrigerate to guarantee stability @ 0 to 10 °C (32 to 50 °F) • Shelf life of refrigerated paste is 6 months. • Paste can be stored for 2 weeks at room temperatures up to 25 °C (77 °F) prior to use. • When refrigerated, warm-up of 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 setup. Printing can be performed at temperatures up to 32 °C (89 °F). • 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. • Do not remove worked paste from stencil and mix with unused paste in jar. This will alter rheology of unused paste.	**Stencil:** Recommend ALPHA CUT, ALPHA NICKEL-CUT, ALPHA TETRABOND, or ALPHA FORM stencils @ 0.100mm to 0.150 mm (4 to 6 mil) thick for 0.4 to 0.5 mm (0.016 or 0.020in) pitch. Stencil design is subject to many process variables. Contact your local ALPHA Stencil site for advice. **Squeegee:** Metal (recommended) **Paste Roll**: 1.5 to 2.0 cm diameter and make additions when roll reaches 1-cm (0.4”) diameter (min). Max roll size will depend upon blade **Pressure:** 0.45 to 0.7 kg/inch **Speed:** 25 to 150mm per second (1 to 6 inches per second). **Stencil Release Speed:** 3 to 10mm/sec. **Print Pump Head:** Passes DEK ProFlow® compatibility test	**Atmosphere:** Clean-dry air or nitrogen atmosphere. **Profile (SAC Alloys):** Acceptable reflow / coalescence for feature size down to 8 mil (200 µm). IPC Class III voiding obtained for both straight ramp and soak profiles. Compatible with most common surface finishes. (ENTEK HT, ENTEK OM, Alpha Star, ENIG, SACX HASL) Note 1: Refer to component and board supplier data for thermal properties at elevated temperatures. Lower peak temperatures require longer TAL for improved joint cosmetics. Keeping the peak temperature below 240 °C will lower the amount of voiding.	**ALPHA OM-340 UV** residue is designed to remain on the board after reflow. If reflowed residue cleaning is required, the following aqueous cleaners are recommended: In-line or Batch Cleaners - **ALPHA BC-2200** - Zestron Vigon A201 - Zestron Vigon A250 - Zestron Vigon US Manual or solvent cleaning: - **ALPHA SM-110** - **ALPHA SM-110E** Misprints and stencil cleaning may be done with the following cleaners: - **ALPHA SM-110E** **ALPHA SM-440** Zestron Vigon SC200

These are starting recommendations and all process settings should be reviewed independently.

REFLOW PROFILES

Figure 1: Typical Soak Reflow Profile for SAC305 Alloy

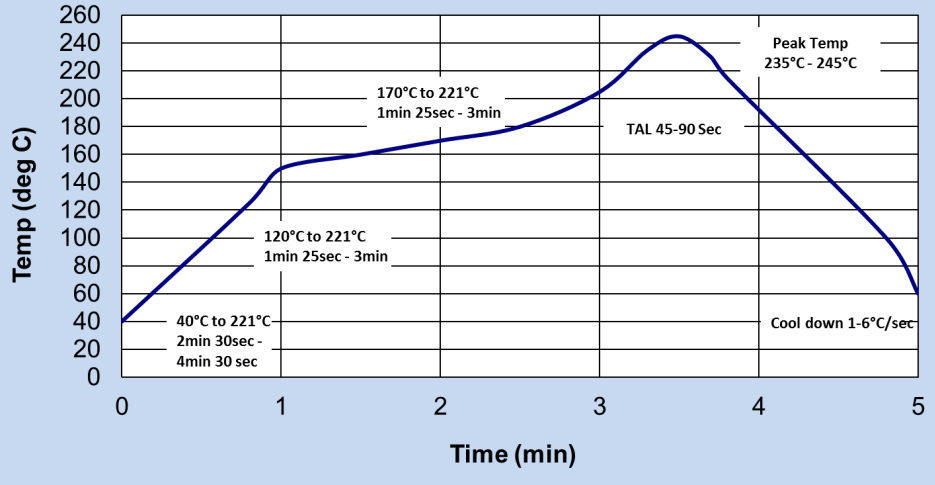
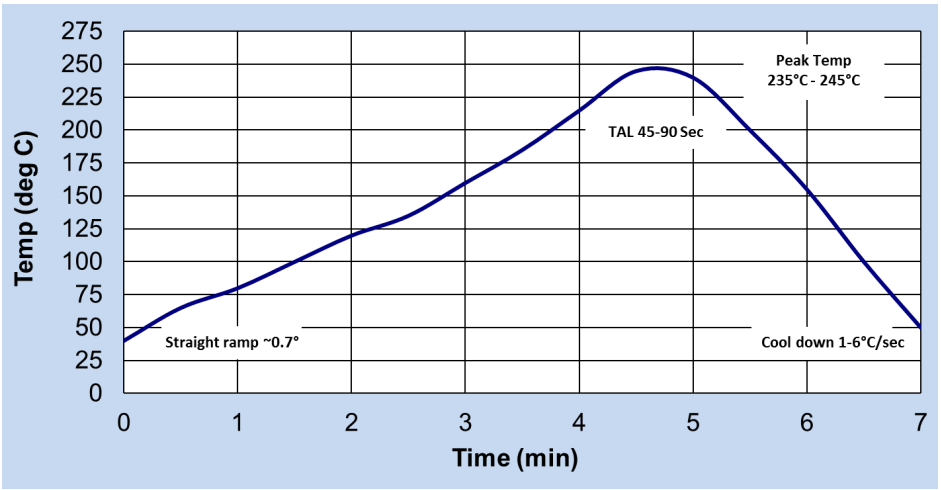


Figure 2: Typical Straight Ramp Reflow Profile for SAC305



Note 2: The processing guidelines recommended and typical reflow profiles presented were tested in the lab with acceptable performance. Optimization to each board application should still be carried out by users to ensure best results.

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.**

CONTACT INFORMATION

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