

ALPHA[®] OM-100 SnCX[®] 07 SOLDER PASTE

Lead-Free, No-Clean, Silver-free Solder Paste

DESCRIPTION

ALPHA OM-100 SnCX 07 is a lead-free, no-clean solder paste designed for a broad range of applications ranging from white goods to smart home electronics applications. This paste is engineered to reduce the material TCO by up to 30% as compared to SAC305 based solder pastes, while significantly improving drop and mechanical shock performance. The product is designed for the wide processability window with a best-in-class low defect rate providing excellent first-pass yield on ICT/pin testing and in-use stencil life for up to 16 hours. **ALPHA OM-100 SnCX 07** also yields excellent print capability performance across various board designs, particularly fine feature repeatability and high-throughput applications.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- Improved drop shock and vibration performance by up to 50% as compared to SAC305
- Comparable thermal cycling performance as SAC305 between -20 °C to 100 °C
- Significant reduction in material TCO without compromising on thermomechanical reliability
- Excellent print consistency with a high process capability index across all board designs
- Print speeds of up to 150 mm/s (6 in/s), enabling a fast print cycle time and 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 solder balling levels, minimizing rework, and increased first-time yield
- Meets highest IPC-7095 voiding performance classification of Class 3
- Compatible with either nitrogen or air reflow
- Zero-halogen (No halogen intentionally added to the formulation)

PRODUCT INFORMATION

Alloys: SnCX 07
Powder Size: Type 4
Packaging Sizes: 500-gram jars, 6 & 12-inch cartridges
Lead-Free: Complies with RoHS Directive EU/2015/863; amending Annex II of 2011/65/EU

HALOGEN STATUS

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

TECHNICAL DATA

Category	Results	Procedures/Remarks
Chemical Properties		
Flux Classification	ROL0	IPC J-STD-004B
Halide Content	Halide-free (by titration). Passes Ag Chromate Test	IPC J-STD-004B
Halogen Content	Pass, Zero Halogen - No halogen intentionally added	EN14582
Copper Mirror	Pass, Low activity, no breakthrough	IPC J-STD-004B

Category	Results	Procedures/Remarks
Copper Corrosion Test	Pass, Low activity, no corrosion	IPC J-STD-004B
Electrical Properties		
SIR (IPC 7 days @ 40 °C/90% RH)	Pass, $\geq 10^8$ ohms for 7 days	IPC J-STD-004B
SIR (IPC 7 days @ 85 °C/85% RH)	Pass, $\geq 10^8$ ohms for 7 days	IPC J-STD-004C
Physical Properties		
Color	Clear, Colorless Flux Residue	
Tack Life	Pass, Change of $< 1 \text{ g/mm}^2$ over 24 hrs @ $25 \pm 2 \text{ °C}$ and $50 \pm 10\%$ Relative Humidity	IPC J-STD-005 TM-650 2.4.44
Solder Ball	Acceptable	IPC J-STD-005
Stencil Life	16 hours	@ 50% RH, 25 °C (74 °F)
Cold Slump (25 °C /50% RH)	Pass, no bridging at 0.20 mm gap & above	IPC J-STD-005A
	Pass, no bridging at 0.20 mm gap & above	JIS Z 3284:1994 Annex 7
Hot Slump (150 °C/10 min)	Pass, no bridging at 0.25 mm gap & above	IPC J-STD-005A
	Pass, no bridging at 0.30 mm gap & above	JIS Z 3284:1994 Annex 8

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 assembly 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-100 SnCX 07 solder paste may be printed using various aperture designs. AR $\geq$ 0.59 or greater is optimal for printing.

Squeegee: Recommend Metal Squeegee angle 60°, 45°

Speed: Formulated for stencil printing at speeds between 50 mm/s (2.0 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.

Passes DEK ProFlow® compatibility test.

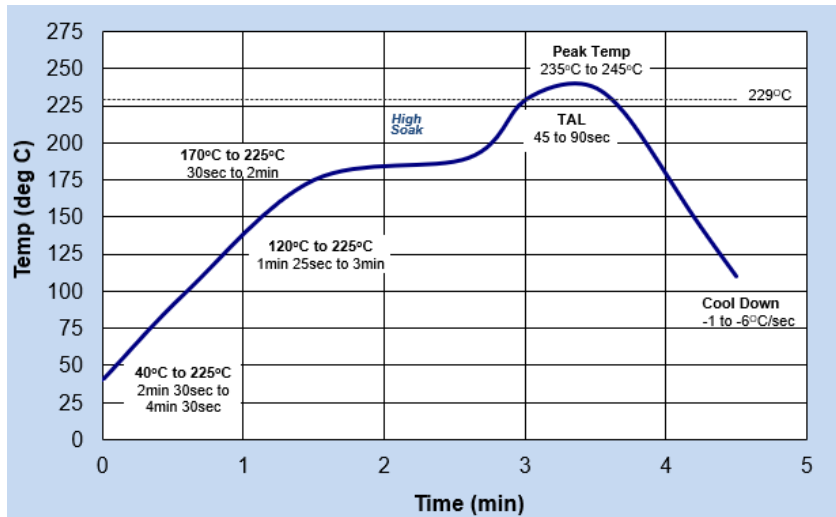
Storage & Handling: Refrigerate to guarantee stability at 10 °C (32 to 50 °F). When stored under these conditions, the shelf life of ALPHA OM-100 SnCX 07 is 6 months. When refrigerated, warm up the paste container to room temperature for up to 4 hours. The paste must be $\geq$ 19 °C (66 °F) before processing. It is recommended to verify paste temperature with a thermometer to ensure the paste is at 19 °C (66 °F) or greater before use on a printer.

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

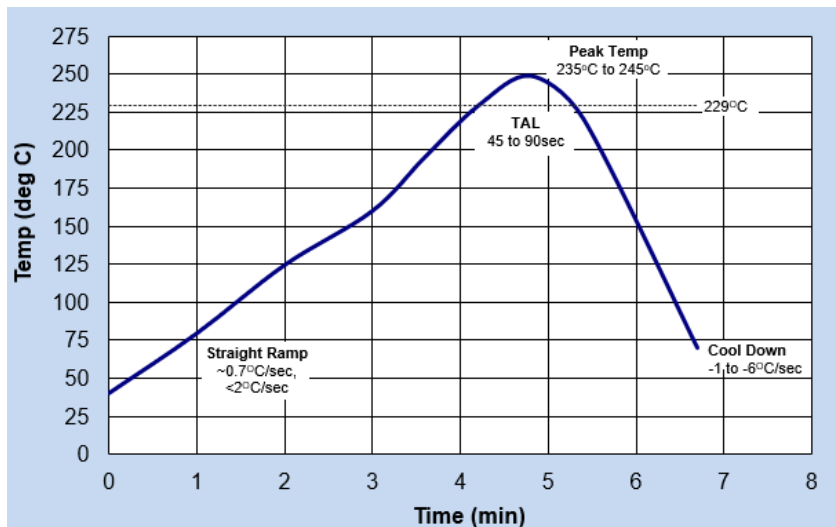
REFLOW PROFILES

ALPHA OM-100 SnCX 07 Typical Reflow Profile Recommendation

Soak Profile:



Straight Ramp:



The processing guidelines are recommendations based on best practice and typical reflow profiles presented were tested in the lab with acceptable performance. Optimization of each board application should still be carried out by users to ensure the 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.



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

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