ALPHA® OM-372 SOLDER PASTE

Advanced Electrochemical Reliability, Ultra-Fine Feature Printing, Low Residue, Zero-Halogen, No-Clean Solder Paste

DESCRIPTION

ALPHA OM-372 is a lead-free, no-clean solder paste designed to provide ultra-high electrochemical reliability on fine pitched, low standoff components. **ALPHA OM-372** is formulated to deliver low post reflow residue and >1.66Cpk transfer efficiency process control on fine feature pads, as low as 80x130µm (008004). A combination of these best-in-class features, as well as excellent HiP and NWO performance, makes **ALPHA OM-372** ideal for a broad range of high board density applications requiring smaller, thinner, and lighter form factor components.

ALPHA OM-372 is designed for superior performance on assemblies with ultra-fine pitch components requiring excellent stencil transfer efficiency and high electrical reliability. **ALPHA OM-372** requires nitrogen reflow and is available specifically for applications requiring T5 and T6 powder.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

Features	Benefits
Flexible Printed Circuit Capable	Flux chemistry does not attack solder mask, low post reflow residue, solder paste does not slump after printing
Best-in-class electrochemical reliability	≥10^7 Ohms for 7 days on 100µm spaced, glass covered combs to ensure electrical reliability & functionality of fine-pitched low stand-off packages
Ultra-fine feature printing & reflow capability	>1.66 Cpk print performance down to 008004(M0201) feature sizes to ensure print volume consistency on complex PCB designs
Minimum post reflow residue	Designed for residue containment on high density PCB designs
Excellent HIP/NWO Performance	Ensures excellent first pass yield on high I/O count, pine-pitched packages
Zero-halogen (no halogens intentionally added)	Ensures ROHS compliance for a safe and environmentally friendly assembly process.

PRODUCT INFORMATION

Alloy:	SAC305
Powder Size:	Type 5, Type 6
Packaging Size:	500 gram jar, 600 gram cartridge
Lead-Free:	Complies with RoHS Directive EU/2015/863
Halogen Content:	Zero-halogen

TECHNICAL DATA

ALPHA OM-372		
Category	**Results**	**Procedures/Remarks**
Chemical Properties		
Activity Level	ROL0	IPC J-STD-004B
Fluoride Spot Test	No fluoride present	IPC J-STD-004B
Halogen Content Test	No halogens detected	BS EN 14582(2016)
Ag Chromate Test	No halides present	JIS Z 3197
Copper Mirror test	Low activity, no breakthrough	JIS Z 3197 & IPC J-STD-004B
Copper Corrosion Test	Low activity, no corrosion	JIS Z 3197 & IPC J-STD-004B
Electrical Properties		
Advanced SIR (85°C/85%RH)	Pass, $\geq 10^7$ Ohms for 7 days	Alpha Advanced SIR, covered glass, 100um gap
SIR (7 days, 40°C/90%RH)	Pass, $\geq 10^8$ Ohms for 7 days	JIS Z 3197 & IPC J-STD-004B
SIR (7days, 85°C/85%RH)	Pass, $\geq 10^8$ Ohms for 7 days	JIS Z 3197
Electrochemical Migration	Pass, no visual evidence of corrosion, discoloration or electromigration for 596 hrs	IPC J-STD-004B
Physical Properties		
Residue Color	Clear & light amber flux residue	
Tack Life	Pass, tack force ≥100gf for minimum 24 hrs	JIS Z 3284:1994, Annex 9

ALPHA OM-372		
Category	**Results**	**Procedures/Remarks**
Tack Life	Pass, tack life within 80% peak for minimum 24 hrs	IPC J-STD-004B
Spread Rate	Average spread between 88 to 90%	JIS Z 3197
Stencil Life	> 8hrs consistent transfer efficiency	@25 °C/30%RH
Cold Slump (25°C /50% RH)	Pass, no bridging above 0.20mm	IPC J-STD-005A
Hot Slump (150 °C/10min)	Pass, no bridging above 0.25mm	IPC J-STD-005A
Dryness Test (Talc)	Pass, non-sticky post reflow residue	JIS Z 3197

HALOGEN STATUS

Halogen Standards			
Standard	**Requirement**	**Test Method**	**Status**
BS EN 14582:2016	Zero-halogen (Not intentionally added)	SGS Halogen Cl, Br - BS EN14582(2016)/ Combustion	Not Detected
RoHS	Directive EU/2015/863 Permissible Limit ⩽1000mg/kg & ≤100mg/kg for cadmium and cadmium compounds)	IEC 62321: 2013 & IEC 62321:2008	Pass
REACH	Concentrations of tested SVHC are ⩽ 0.1%(w/w)	SGS In-House Method	Pass

APPLICATION GUIDELINES

The following process settings are offered as a process window guideline based on typical SMT assembly. Due to the variation in the industry, the optimum process setting will need to be developed for each process.

SPEED: Formulated for standard and ultra-fine pitch stencil printing at speeds between 25 mm/s (1 in/s) and 100 mm/sec (4 in/s) with stencil thickness of 0.060 mm (0.002 in) - 0.100 mm (0.004 in). A stencil with less roughness on the aperture inner walls is recommended (Ra < 1.0 µm) for assemblies with ultra-fine features down to 008004 (M0201).

PRESSURE: Typical blade pressures are between 0.129 N/mm (0.737 lbs./in) to 0.257 N/mm (1.468 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 blade.

SQUEEGEE: Recommend Metal Squeegee 350 mm/angle 55°

STENCIL RELEASE SPEED: 5 to 15 mm/s.

Kneading for 2 to 3 minutes (approximately 10 consecutive prints) at at-least 30 to 35 mm/sec is recommended at the beginning of the printing process or after any pause in manufacturing. The reflow process window enables high first pass soldering yield with good cosmetics and minimized rework.

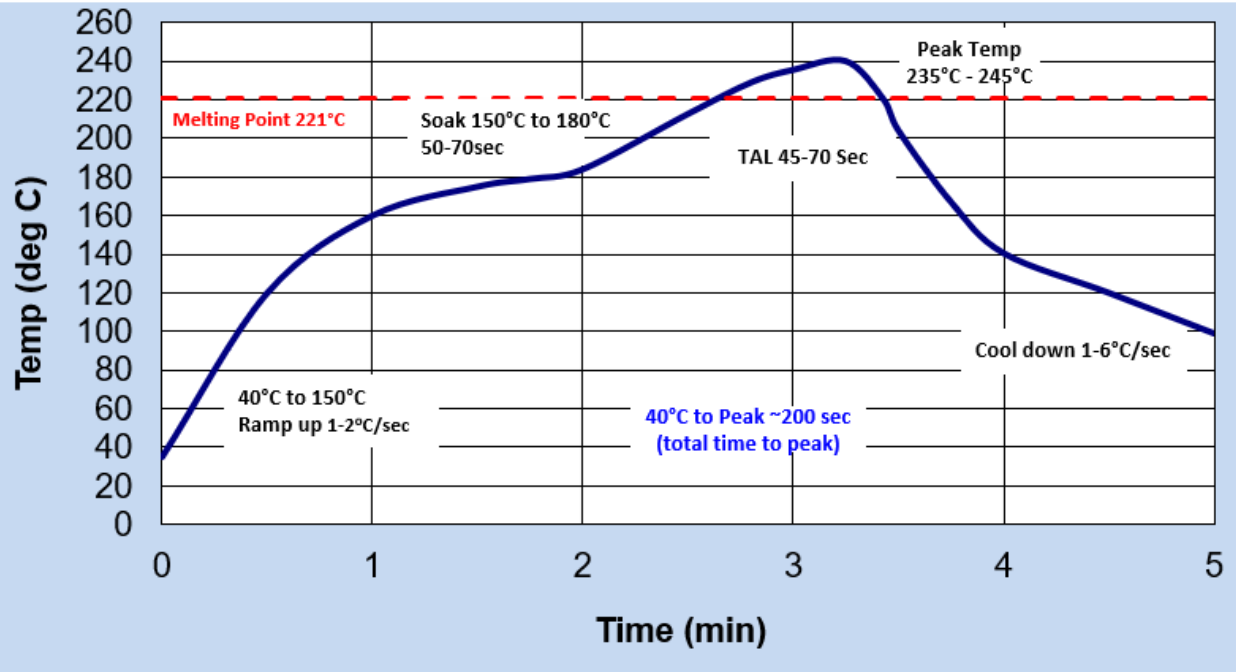
ALPHA OM-372 residue is designed to remain on the board after reflow. Misprint or stencil cleaning may be done with IPA.

REFLOW GUIDELINES

Note: These are only recommendations. Equipment and assembly factors may require adjustments to be made to the reflow profile

ATMOSPHERE: Nitrogen (N2) atmosphere is required, and O_2≤1000ppm is recommended.

Figure – 1 ALPHA OM-372 SAC305 Typical Reflow Profile Recommendation



Note: Nitrogen reflow is required， O2 ≤1000ppm recommended.

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.

STORAGE & HANDLING

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

Refrigerate to guarantee stability @ 0 to 10 °C (32 to 50 °F). When stored under these conditions, the shelf life is 6 months. When refrigerated, warm up the paste container to room temperature for up to 4 hrs. Paste must be 19 °C (66 °F) before processing. Verify paste temperature with a thermometer to ensure the paste is at 19 °C (66 °F) or greater before setting up of printer. The paste can be stored for a maximum of 2 weeks at room temperature up to 25 °C (77 °F) prior to use.

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 the worked paste from the stencil and mix with unused paste in jar. This will alter the rheology of unused paste.

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

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 directory assistance: Chemtrec 1 - 800 - 424 - 9300.

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