



ALPHA[®] OM-372 Solder Paste

High 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 |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Best-in-class electrochemical reliability | $\geq 10^7$ 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

| | |
|-------------------------|------------------------------------------|
| <u>Alloy:</u> | SAC305 |
| <u>Powder Size:</u> | Type 5, Type 6 |
| <u>Packaging Size:</u> | 500 gram jar, 600 gram cartridge |
| <u>Lead-Free:</u> | Complies with RoHS Directive EU/2015/863 |
| <u>Halogen Content:</u> | 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 ≥ 100 gf for minimum 24 hrs | JIS Z 3284:1994, Annex 9 |
| 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 |

| ALPHA OM-372 | | |
|---------------------|--------------------------------------|--------------------|
| Category | Results | Procedures/Remarks |
| 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 $\leq 1000\text{mg/kg}$ & $\leq 100\text{mg/kg}$ for cadmium and cadmium compounds) | IEC 62321: 2013 & IEC 62321:2008 | Pass |
| REACH | Concentrations of tested SVHC are $\leq 0.1\%$ (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 ($R_a < 1.0 \mu\text{m}$) 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 30-35 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.

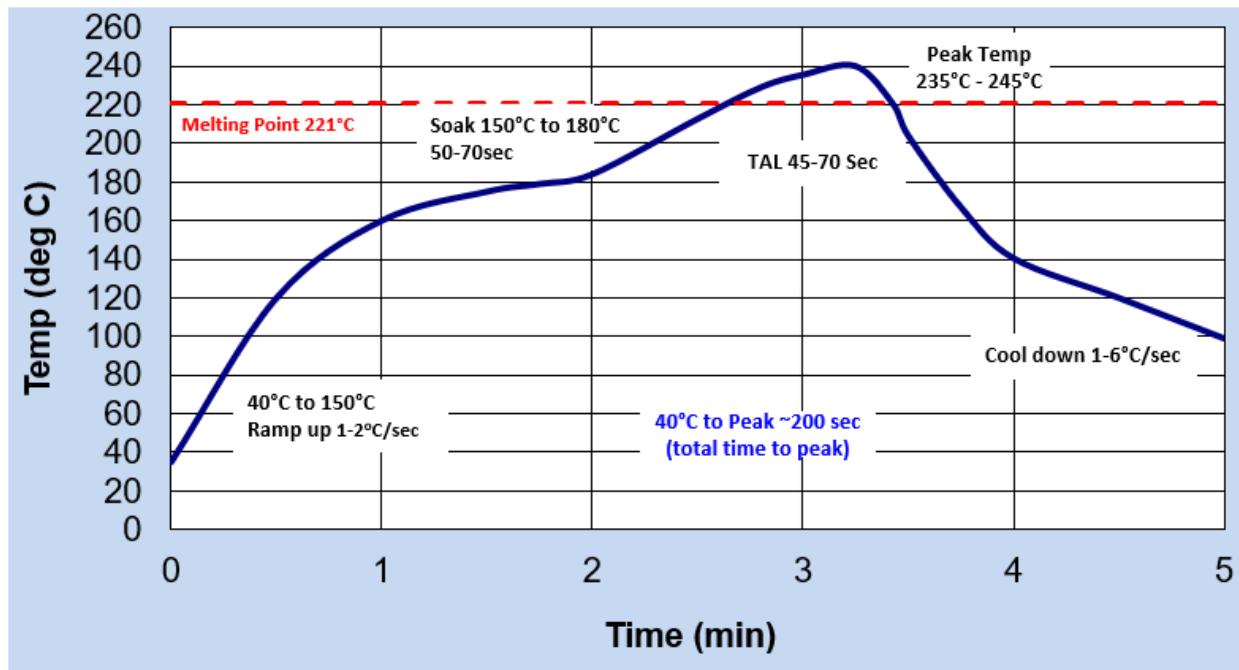
ALPHA OM-372 residue is designed to remain on the board after reflow. Misprint or stencil cleaning may be done with IPA.

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 O₂ ≤ 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, shelf life is 6 months. When refrigerated, warm up 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 paste is at 19 °C (66 °F) or greater before set up of printer. Paste can be stored for maximum 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 worked paste from 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
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| <p>North America 109 Corporate Blvd. South Plainfield, NJ 07080, USA 1.800.367.5460</p> | <p>Europe Unit 2, Genesis Business Park Albert Drive Woking, Surrey, GU21 5RW, UK 44.01483.758400</p> | <p>Asia 8/F., Paul Y. Centre 51 Hung To Road Kwun Tong, Kowloon, Hong Kong 852.3190.3100</p> |
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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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