ALPHA OM-358 SOLDER PASTE

Ultra-Low Voiding, High-Reliability, Rohs Compliant, Zero-Halogen, Solder Paste.

DESCRIPTION

ALPHA OM-358 is a lead-free, zero-halogen, no-clean solder paste designed to provide ultra-low voiding performance on all component types including bottom termination components.

ALPHA OM-358 achieves IPC7095 Class III voiding on BGA components and less than 10% voiding on bottom termination components. This paste is designed for ultra-low voiding performance with high reliability alloys such as Innolot as well as traditional SAC alloys.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

Features	Benefits
Ultra-Low Voiding Performance	Increases process stability, thermal, and electrical performance of the most demanding component applications.
Excellent Electromigration characteristics	Passes J-STD-004B IPC-TM-650 at 100µm to ensure electrical reliability & functionality of fine-pitched components.
Wide Reflow Profile Window	Enables high quality solderability of complicated, high density. PCB assemblies using straight ramp and soak profiles, as high as 150 to 200°C soak.
Good Random Solder Ball Levels	Minimizes rework and increases first pass yield.
Good Coalescence and Wetting Performance	Coalesces down to 170µm exhibiting good wetting characteristics and solder joint reliability.
Excellent Solder Joint and Flux Residue Cosmetics	Easily penetrable and clear flux residue enables good probe contact during quality inspection.
Long, Stable Tack Force Life	Promotes high pick-and-place yields and good self-alignment to minimize rework prior to reflow.
Zero-Halogen, No Halogens Intentionally Added	Ensures ROHS compliance for a safe and environmentally friendly assembly process.

PRODUCT INFORMATION

Alloys:	SAC305 & Innolot, & MaxRel Plus Alloys For other alloys, contact your local Alpha Sales Office
Powder Size:	Type 4
Packaging Sizes:	500 gram jars, 6" cartridges, ProFlow Cartridge
Flux Gel:	Flux gel is available in 10 and 30 cc syringes for rework applications
Lead Free:	Complies with RoHS Directive 2002/95/EC

APPLICATION GUIDELINES

Formulated for standard and fine pitch stencil printing at speeds between 25 mm/sec (1"/sec) and 100 mm/sec (4"/sec), with stencil thickness of 0.100mm (0.004") to 0.150mm (0.006"). Typical blade pressures are between 0.21 to 0.36 kg/cm of blade (1.25 to 1.5 Ibs/inch of blade), depending upon the print speed and quality of stencil/substrate gasket. The higher the print speed, the higher the blade pressure that is required to achieve a clean stencil surface. The reflow process window enables high first pass soldering yield with good cosmetics and minimized rework.

HALOGEN STATUS

ALPHA OM-358 is a Zero-Halogen product. It passes the standard listed in the Table below:

Standards			
Standard	**Requirement**	**Test Method**	**Status**
BS EN 14582:2007 *Characterization of waste – Halogen and sulfur content – Oxygen Combustion ins closed systems and determination methods"*	< 1000 ppm Br, Cl, F in solder material solids	SGS Halogen CL,BR,I,F- DIN EN-14582	Pass
RoHS	European Directive 2011/65/EU Annex II (RoHS); recasting 2002/95/EC Detection Criteria ≤ 2 to 5mg/kg Permissible Limit ≤ 1000mg/kg	IEC 62321:2013 & IEC 62321:2008	Pass
REACH	Concentrations of tested SVHC are ≤ 0.1% (w/w)	SGS In-House Method	Pass

TECHNICAL DATA

Category	Results	Procedures/Remarks
Chemical Properties		
Activity Level	ROL0	IPC J-STD-004B
Halide Content	Pass	IPC J-STD-004B
Halogen Test	Pass	EN14582, by oxygen bomb combustion, Non-detectable (ND) at < 50 ppm
Copper Mirror Test	Pass	IPC J-STD-004B
Copper Corrosion Test	Pass	IPC J-STD-004B
Electrical Properties		
SIR (7 days, 40 °C/90%RH, 12 V bias)	Pass	IPC J-STD-004B (Pass ≥ 1 x 10^8ohm)
Electromigration (7 days, 85 °C/85%RH,-50V, 100V measure)	Pass	J-STD-004B
Physical Properties		
Color	Clear residue	
Tack Force	Pass, 24 hours at 50% RH	IPC J-STD-005
Solder Ball	Pass	IPC J-STD-005
Spread	Pass	IPC J-STD-005
Stencil Life	8 Hours	@ 24 °C, 22% RH
Cold Slump 25 °C / 50% RH	Pass	IPC J-STD-005
Hot Slump 150 °C / 10min	Pass	IPC J-STD-005
Dryness Test (Talc)	Pass	IPC J-STD-005

PROCESSING 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.

Storage & Handling	Printing	Reflow (See Fig. 1)	Cleaning
Refrigerate at 0 to 10 °C (32 to 50 °F) to guarantee stability over shelf life. Under these conditions, shelf life is 120 days. Paste can be stored for 2 weeks at room temperature up to 25 °C (77 °F) prior to use. After removing paste from refrigeration, ensure paste is at room temperature before opening to avoid moisture condensing on the paste. Typically, 4 hours is sufficient. Verify paste temperature with a thermometer to ensure paste is at least 19 °C (66 °F) or greater before set up of printer. Do not accelerate warm up by exposing paste to conditions greater than room temperature. Paste can be manually stirred before use. A rotating / centrifugal force mixing operation is not required. If rotating / centrifugal force mixing is used, 30 to 60 seconds at 300 RPM is adequate. Ensure the paste does not exceed greater then room temperature from mixing. Do not remove worked paste from stencil and mix with unused paste in jar. This will alter the rheology of unused paste.	**STENCIL**: Recommend Alpha's ALPHA CUT or ALPHA FORM stencils between 0.100 to 0.150 mm (4 to 6 mil) thick for 0.4 to 0.5 mm (0.016" or 0.020") pitch. Stencil design is subject to many process variables and Circuit Card designs. Contact your local Alpha CTS Engineer for recommendations. **SQUEEGEE:** A Metal blade is recommended **PRESSURE:** 1.25 to 1.5 lb/in depending on blade type and contact angle. **SPEED:** 25 to 100 mm/s depending on board design and process capability. **PASTE ROLL:** 1.5 to 2.0 cm diameter. Additions typically made when roll reaches 1 cm (0.4") diameter (min). Max roll size will depend upon blade and blade holder. **STENCIL RELEASE SPEED:** 7 mm/sec until the paste is fully released from all apertures has shown well defined print deposits. **LIFT HEIGHT:** 8 to 14mm (0.31 to 0.55") depending on type of blade holder.	**ATMOSPHERE:** Clean-dry air or Nitrogen atmosphere. **PROFILE:** (SAC305 & Innolot): Soak profile 150 to 200 °C ~80 seconds, 240 to 245 °C peak. ~45 to 90 seconds TAL. Cool down 1 to 6 °C per second. Note 1: Keeping the peak temperature below 245 ºC may reduce the number and size of process voids for bottom terminated components. 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 Note 3: OM-358 is designed with a wide reflow process window. The optimum profile for your process can be achieved by balancing: - Minimum Delta T's (depending on board mass and thermal oven characteristics) - Maximum Reflow Yield (includes voiding, cosmetics, solder balling, etc.) - Minimum Stress and Overheat for Components and Boards (refer to suppliers' guidelines and specifications. Contact your local Alpha Application Engineer for further details.	**ALPHA OM-358** residue is designed to remain on the board after reflow. Misprints and stencil cleaning may be done with ALPHA SM-110E, ALPHA SM-440, ALPHA BC-2200 cleaners.

REFLOW PROFILES

Alpha OM-358 SAC305 & Innolot Profile Recommendation
High Soak & Straight Ramp

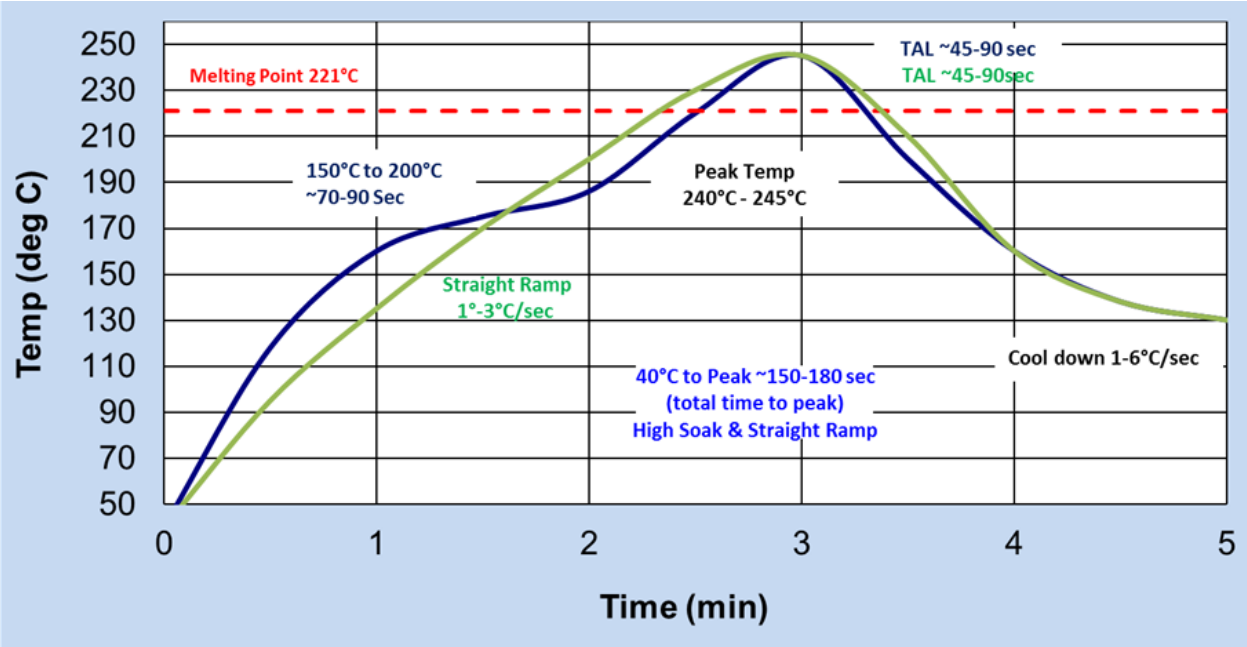

Figure 1 – OM-358 SAC305 & Innolot General Reflow Profile Recommendation

Please note that this is only a recommendation. Equipment and assembly factors may require adjustments to be made to the reflow profile.

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 AlphaAssembly.com**

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.