ALPHA® OM-525

Low Melting Point No-Clean Lead-Free, Halogen-Free Solder Paste for Double-Sided Single Reflow Application

DESCRIPTION

ALPHA OM-525 is a low temperature solder paste technology designed to enable a single reflow application for assembly of double sided board. Its key attribute is excellent no-solder drip phenomena during the reflow process. **ALPHA OM-525** solder paste version with ALPHA SBX02 alloy, melting point below 140oC, has been successfully used with peak reflow profiles between 155 °C and 190 °C. ALPHA SBX02 alloy has improved Mechanical Strength and Drop Shock Resistance than the SnBi0.4Ag alloy. The flux residue from **ALPHA OM-525** provides excellent electrical resistivity, exceeding industry standards.

This product enables the elimination of an extra wave or selective wave soldering process when temperature sensitive through-hole components are used in an assembly. The benefits are increased daily throughput, eliminate the need for managing bar solder and wave soldering flux supplies and eliminate the need for pallets. In addition, it allows the desired obsolescence of an extra SMT process. These eliminations can significantly lower the cost of producing an electronic assembly. The alloys yield very low voiding BGA solder joints, even when a traditional SAC alloy sphere is used.

All components used with **ALPHA OM-525** must be lead-free to eliminate the formation of tin/lead/bismuth phase which has a melting point under 100 °C.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- Enables elimination of a second or third reflow cycle when temperature sensitive components or connectors are used
- Reduces energy consumption in reflow ovens versus standard lead free alloys
- Reduces reflow process cycle time
- Delivers 8+ Hour stencil life
- Potential elimination of bar solder, wave soldering flux and energy costs associated with wave soldering
- Compatible with all commonly used lead free surface finishes (ENTEK HT; Alpha Star Immersion Silver, Immersion Tin, Ni/Au, SACX HASL, etc.)
- Excellent resistance to random solder balling- minimizing rework and increasing first time yield

- Low temperature reflow profiles may enable the use of less expensive printed circuit board substrates
- Delivers very high in-circuit pin test yields, minimizing costly false negative test results
- Compatible with either nitrogen or air reflow
- Possess excellent solder drip resistance during reflow

PRODUCT INFORMATION

Alloys:	SBX02, SnBi0.4Ag
Powder Size:	Type 4
Residues:	Approximately 5% by (w/w)
Packaging Sizes:	500gram jars, 6” & 12”cartridges
Lead Free:	RoHS Directive EU/2015/863; amending Annex II of 2011/65/EU

APPLICATION GUIDELINES

Printing

STENCIL: Recommend ALPHA CUT, ALPHA NICKEL-CUT, ALPHA TETRABOND, or ALPHA FORM stencils @ 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. Contact your local Alpha stencil site for advice.

- SQUEEGEE: Metal recommended
- PRESSURE: 0.21 to 0.36 kg/cm of blade (1.25 to 2.0lbs/inch)
- SPEED: 25 to 100 mm per second (1 – 6 inches per second)
- 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.
- STENCIL RELEASE SPEED: 1 to 5 mm/sec
- LIFT HEIGHT: 8 to 14mm(0.31 to 0.55”)

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 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			

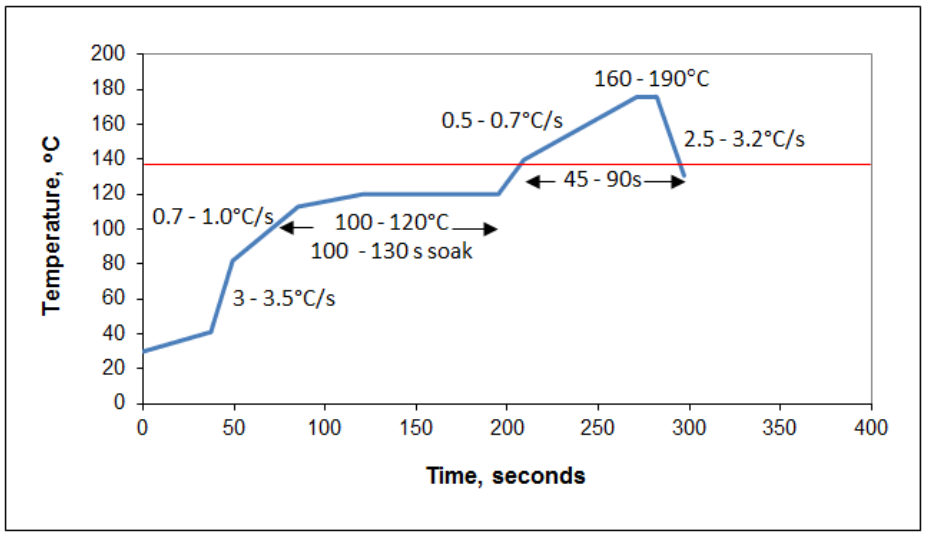
TECHNICAL DATA

Category	Results	Procedures/Remarks
Chemical Properties		
Activity Level	ROL0	IPC J-STD-004B
Halide Content	Halogen free	IPC J-STD-004B
Fluoride Spot Test	Pass	JIS Z 3197:1999 8.1.4.2.4
Halogen Test	Halogen free	EN14582, by oxygen bomb combustion, Non-detectable (ND) at < 50 ppm
Copper Mirror Test	Pass	JIS Z 3197:1999 8.4.2
Copper Corrosion Test	Pass	JIS Z 3197:1999 8.4.1
Electrical Properties		
SIR (JIS Z 3197 @ 40 °C/90%RH 168 hours)	> 10^{10} ohms	JIS Z 3197:2012

Category	Results	Procedures/Remarks
Electromigration(JIS Z 3197 @ 85 °C/85%RH 45-50V DC 1000 hours)	Final Reading > 10^8 ohms No Migration After 1000 hrs Pass	JIS Z 3197:2012
Physical Properties		
Color	Light yellow ~ Yellow residue	
Tack Force	148gf after 24hours	JIS Z 3284:1994, Annex 9
Solder Ball	Level 2 (JIS method)	IPC J-STD-005 TM-650 2.4.43
Cold/Printing Slump	0.2mm gap open	JIS Z 3284:1994 Annex 7
Hot Slump	0.4mm gap open	JIS Z 3284:1994 Annex 8

REFLOW PROFILES

OM-525 SBX02, SnBi0.4Ag Typical Reflow Profile



Note: These are profiles that were tested in the lab with acceptable reflow and coalescence 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.**

STORAGE

ALPHA OM-525 should be stored in a refrigerator upon receipt at 0 to 10 °C (32 to 50 °F). ALPHA OM-525 should be permitted to reach room temperature before unsealing its package prior to use (refer to the General Solder Paste Handling Guidelines document). This will prevent moisture condensation build up in the solder paste. Do not remove worked paste from stencil and mix with unused paste in jar. This will alter rheology of unused paste.

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 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