

# ALPHA® OM-535

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

## DESCRIPTION

**ALPHA OM-535** 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-535** solder paste version with **ALPHA SBX02** alloy, melting point below 140°C, 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-535** 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 yields very low voiding BGA solder joints, even when a traditional SAC alloy sphere is used.

All components used with **ALPHA OM-535** must be lead-free to eliminate the formation of tin/lead/bismuth phase which has a melting point under 100°C.

## 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

<u>Alloys:</u>	<b>ALPHA SBX02</b> , SnBi0.4Ag
<u>Powder Size:</u>	Type 4, (20-38µm per IPC J-STD-005)
<u>Residues:</u>	Approximately 5% by (w/w)
<u>Packaging Sizes:</u>	500gram jars, 6" & 12" cartridges
<u>Lead Free:</u>	Complies with RoHS Directive 2002/95/EC.

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## APPLICATION

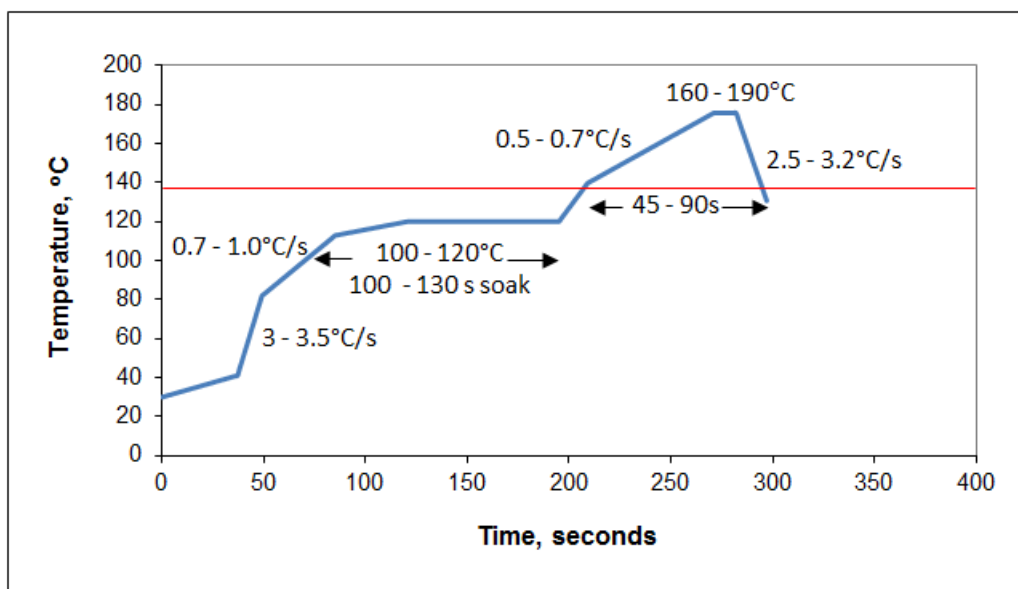
### PRINTING

STENCIL: Recommend ALPHA CUT, ALPHA NICKEL-CUT, ALPHA TETRABOND®, or ALPHA FORM stencils @ 0.100mm - 0.150 mm (4-6 mil) thick for 0.4 - 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 - 0.36 kg/cm of blade (1.25 -2.0lbs/inch)
- SPEED: 25 – 100 mm per second (1 – 6 inches per second)
- PASTE ROLL: 1.5-2.0 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 – 5 mm/sec
- LIFT HEIGHT: 8 – 14mm(0.31 – 0.55")

### REFLOW

#### OM-535 SBX02, SnBi0.4Ag Typical Reflow Profile



Please take note that this is only a typical recommendation. While it is beneficial to start off with these parameters, an open mindset is important in working out any adjustment necessary for optimized performance

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## TECHNICAL DATA

CATEGORY	RESULTS	PROCEDURES/REMARKS
<b>CHEMICAL PROPERTIES</b>		
Activity Level	ROLO	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
<b>ELECTRICAL PROPERTIES</b>		
SIR (JIS Z 3197 @ 40°C/90%RH 168 hrs)	> 10 <sup>10</sup> ohms	JIS Z 3197:2012
Electromigration (JIS Z 3197 @ 85°C/85%RH 45-50V DC 1000 hours)	Final Reading > 10 <sup>8</sup> ohms No Migration After 1000 hrs Pass	JIS Z 3197:2012
<b>PHYSICAL PROPERTIES</b>		
Color	Light yellow ~ Yellow residue	
Tack Force	148gf after 24hours	JIS Z-3284-1994, Annex 9
Viscosity	89% T4 metal powder load designated M19 for printing.	Malcom Spiral Viscometer; J-STD-005
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

## SAFETY

While the **ALPHA OM-535** flux system is not considered toxic, its use in typical reflow will generate a small amount of reaction and decomposition vapors. These vapors should be adequately exhausted from the work area. Consult the MSDS for additional safety information.

## STORAGE & HANDLING

**ALPHA OM-535** should be stored in a refrigerator upon receipt at 0° to 10°C (32 to 50°F). **ALPHA OM-535** should be permitted to reach room temperature before unsealing its package prior to use (see handling procedures on page 3). 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.