



Alpha-Fry Technologies

A COOKSON ELECTRONICS COMPANY

Technical Bulletin

OMNIX 5002 HIGH SPEED, PIN TESTABLE, SOLDER PASTE

DESCRIPTION

OMNIX 5002 is a no-clean solder paste formulated for optimum performance in a wide variety of applications. The semi-soft, highly reliable residues provide a very low incidence of first probe false readings. OMNIX 5002 can be squeegee or pump printed at high speeds.

FEATURES & PROCESS BENEFITS

- OM-5002 prints at squeegee speeds up to 200mm/sec with consistent print volumes and definition after pauses up to 7 hours.
- Excellent resistance to hot and cold slump for (Contour stability) minimizing bridge formation.
- Excellent wetting characteristics and cosmetics on all types of pad finishes (incl. OSP) even after multiple reflow excursions.
- Penetrable post reflow flux residues to maximize pin testability (ICT).
- OM-5002 exhibits long stencil and tack life > 8 hours (25-75% RH).

AVAILABILITY

- Alloy: 63Sn/37Pb, 62Sn/36Pb/2Ag
- Rheology: Squeegee & Pump Printing such as MPM Rheopump
- Metal Percentage: 90%
- Powder Size: Type #3 (-325+500 mesh per IPC J-STD-006)
- Packaging Sizes: Small jars, 6" and 12" cartridges and ProFlo™ cassettes.

APPLICATIONS

Formulated for standard and fine pitch printing through stencil apertures as small as 0.007 inches (0.2 mm). Suitable for use across a wide variety of process settings. OMNIX 5002 is especially suitable for printing on assemblies that will receive in circuit test probing.

SAFETY

While the OMNIX 5002 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, and for toxicity data on alloys containing lead and silver.

SHIPPING AND STORAGE

OMNIX 5002 is shipped in thermally controlled boxes and should be stored refrigerated upon receipt at 35°-45°F (3°-7°C). This will be sufficient to maintain a nominal shelf life of six months. OMNIX 5002 must be permitted to reach room temperature before unsealing its package prior to use (68°F (20°C)). Prolonged storage at nominal room temperature is attainable for unused material.

(TECHNICAL DATA ON PAGE 2)

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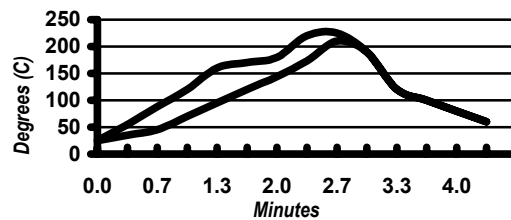
OMNIX 5002 TECHNICAL DATA

CATEGORY	RESULTS	PROCEDURES/REMARKS
CHEMICAL PROPERTIES		
Activity Level	ROL-0 = J-STD Classification	IPC J-STD-004
Halide Content	Halide free (by titration). Passes Ag Chromate Test	IPC J-STD-004
Bono Testing	Pass (Sn 63/Pb 37)	Bono Testing Standard
ELECTRICAL PROPERTIES		
SIR (IPC 7 days @ 85° C/85% RH)	1.7E + 10 ohms	Pass, IPC J-STD-004 {Pass = 1 x 10 ⁸ ohm min}
SIR (Bellcore 96 hours @ 35°C/85% RH)	4.3E x 12 ohms	Pass, Bellcore GR78-CORE {Pass = 1 x 10 ¹¹ ohm min}
Electromigration (Bellcore 500 hours @ 65°C/85° RH)	Pass	Pass, Bellcore GR78-CORE 62Sn/36Pb/2Ag {Pass= final > initial/10}
PHYSICAL PROPERTIES		
Color & Specific Gravity	Clear, Colorless Flux Residue; 4.6 g/cc paste	63Sn/37Pb alloy
Tack Force vs. Humidity (4 hours)	>1.5 grams/mm ²	IPC J-STD-005
Viscosity	90% metal load designated M13 is suitable for all typical stencil printing applications.	Malcom Spiral Viscometer; J-STD-005
Solderball	Pass	Pass IPC J-STD-005 DIN Standard 32 513, Pass
Stencil Life	> 8 hours	@ 50%RH, 74°F (23°C)
Slump	Hot Slump pass (25 mil is maximum bridge allowed for pass rating)	IPC J-STD-005

OMNIX 5002 Processing Guidelines

STORAGE-HANDLING	PRINTING	REFLOW (See Figure #1)	CLEANING
<p>Refrigerate to guarantee stability @35-45°F (3-7°C)</p> <ul style="list-style-type: none"> Shelf life of refrigerated paste is six months. Unopened OMNIX 5002 can be stored at Room Temp (up to 77°F, 25°C) for up to 1 month. Required warm-up of paste container to room temperature for approx. 4 to 6 hours. Paste must be 71°F (20°C) before processing. Verify paste temperature with a thermometer to ensure paste is at 71°F (20°C or greater) before setup. Printing can be performed at temperatures up to 85°F (30°C). Do not remove worked paste from stencil and mix with unused paste in jar. This will alter rheology of unused paste. 	<p>STENCIL: Recommend Alpha laser cut stencil @ 0.127 or 0.152 inch thick for 0.016 or 0.020 mil pitch</p> <p>SQUEEGEE: Recommend metal or 90 durometer polyurethane.</p> <p>PRESSURE: 1.0-2.0 pounds per linear inch of squeegee length.</p> <p>SPEED: 1 to 6 inches per second (25-150 mm/sec).</p> <p>PASTE ROLL: 1.5-2.0 cm diameter and make additions when roll reaches 1 cm diameter. Maximum roll size will depend upon blade type.</p> <p>PRINT PUMP HEAD: OMNIX 5002 is suitable for use in MPM RheoPump™</p>	<p>ATMOSPHERE: Clean-dry air or nitrogen atmosphere.</p> <p>PROFILE (Sn 63 alloy): A straight ramp profile @ 0.8°C to 1.2°C per second ramp rate is recommended. High density assemblies may require preheating within the profile and may be accomplished as follows:</p> <ul style="list-style-type: none"> Ramp @ 60-120°C/min. to 145-160°C. Dwell @ 145-160°C for 0.5-2.0 minutes. Ramp @ 1-2°C/sec to 210-225°C peak temp. Time above 183°C=45-70 secs Ramp down to R.T. @ 1.5 to 2°C per second. 	<ul style="list-style-type: none"> Alpha OMNIX 5002 residue is designed to remain on the board after reflow. <p>Misprints and soft flux residues remaining after rework may be removed with Bioact™ SC-10 & SC-10E solvents and Hydrex™ Aqueous cleaners available from Alpha Metals.</p>

Figure #1: Reflow Envelope



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