

ALPHA[®] UP-78 NO-CLEAN SOLDER PASTE

Maximum ATE Performance

DESCRIPTION

ALPHA UP-78 is a No Clean solder paste with a **post-reflow residue that is clear and colorless and is penetrable enough to allow easy ATE compatibility (pin testability)**. The residue is engineered to be soft and non-tacky to allow the lowest level of false rejects during pin testing.

ALPHA UP-78 is designed for stencil application and air reflow in surface mounting processes where post reflow cleaning is not required.

FEATURES & PROCESS BENEFITS

- Long stencil life & stable tack for minimum change in performance over 8 hour shifts under varying humidity exposure.
- Tolerant to a variety of reflow profiles for easy reflow on varying board designs.
- Highly penetrable residue to allow easy ATE compatibility (pin testing) and minimal false fails.
- Clear and colorless residue after reflow for the best board cosmetics.

AVAILABILITY

- Alloy: 63Sn/37Pb, 62Sn/36Pb/2Ag, 42Sn/58Bi*
- Rheology: Stencil printing
- Metal Percentage: 89%
- Powder Size: Type #3 (per IPC J-STD-005)
- Packaging Sizes: 350 and 700 gram jars and 6" and 12" cartridges.

*Note: **ALPHA UP-78** in Sn42/Bi58 performance is different than in Sn/Pb applications and requires customer validation of appropriateness for use in their application.

APPLICATIONS

Formulated for standard and fine pitch printing through stencil apertures as small as 0.008 inches (0.2 mm). Crisp, well defined print definitions are repeatably attainable on 0.016 inch (0.4mm) pitch pads with type 3 powder.

SAFETY

While the **ALPHA UP-78** 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

ALPHA UP-78 is shipped in thermally controlled boxes and should be stored refrigerated upon receipt at 32° to 50°F (1° to 10°C). This will be sufficient to maintain a nominal shelf life of six months. **ALPHA UP-78** should be permitted to reach room temperature before unsealing its package prior to use.

The information contained herein is based on data considered accurate and is offered at no charge. No warranty is expressed or implied regarding the accuracy of this data. Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

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**ALPHA UP-78 TECHNICAL DATA***

CATEGORY	RESULTS	PROCEDURES/REMARKS
FLUXING ABILITY	Reflowed Solder Paste, Hot Solder Dip, Tin Plate, Tin Hot Dip, Silver Plate, Copper, Gold, Ag/Pd Plate, Cu Protective Coatings	Fluxing ability on tarnished surfaces
CHEMICAL PROPERTIES		
Corrosivity	Copper Mirror Test (L)	IPC J-STD-004
Halide Content	Silver Chromate Paper Test (pass)	CLASSIFICATION: ROL-1
ELECTRICAL PROPERTIES		
SIR (IPC J-STD-004)	All Readings > 1.0 x 10E9 ohms	Pass, 7 days, uncleaned
SIR (Bellcore TR-NWT-000078)	All Readings > 1.0 x 10E13 ohms	Pass, 4 days, uncleaned
Electromigration (500 hour Bellcore)	1.3 x 10E9 ohms, initial, 6.5 x 10E9 ohms, 500hr	Passes visual and electrical
PHYSICAL PROPERTIES		Using 89% Metal, Type#3 Powder
Color and Specific Gravity	Clear, Colorless; 4.9g/cc	
Reflowed Residue	~ 5.5% ww, tack free after reflow	
Tack Force	> 2.4 g/mm ² @ 6 hours (72%RH, 25°C)	J-STD-005, See figure #2
Viscosity	Designated M-13. Viscosity is suitable for all typical stencil printing applications.	Malcom Spiral Viscometer; ICP-029
Stencil Life	> 6 hours	50%RH, 25°C
Slump	Suitable for fine pitch printing	IPC TM-650
ATE Compatibility (Pin Testability)	24 grams (<1.0 ounce) on 11.5 mil thick flux deposit	Force to Contact Test (30° spear geometry)

ALPHA UP-78 PROCESSING GUIDELINES*

(The following is a review of general application notes and precautions)

STORAGE-HANDLING	PRINTING	REFLOW (See Figure #1)	CLEANING (If desired)
•Refrigerate to guarantee stability @32-50°F (0-10°C) •Shelf life of refrigerated paste is six months. •Warm-up of 700g jar to room temperature should be ~ 6 hours. Set up printer with room temperature paste. Check paste temperature with a thermometer. •Do not remove worked paste from stencil and mix with unused paste in jar. This will alter rheology of unused paste.	STENCIL: Recommend Alpha laser cut stencil @ 0.006 inch thick for 0.020 inch pitch (.008 inch thick for 0.025 inch pitch) or Alpha manufactured chemically etched stencil. SQUEEGEE: Recommend metal or 90 durometer polyurethane. PRESSURE: 1pound per linear inch of print pattern. DOWNSTOP: -.075" STENCIL SEPARATION: 0.002"/sec SQUEEGEE SPEED: 0.5-2.0 inch (15-50 mm) per second PASTE ROLL: 0.4 - 0.6 inches (1-1.5 cm) diameter and make additions when roll reaches 0.2 inch (0.5cm) diameter.	•Use convection, IR, or combination ovens, belt, hot - plate, vapor phase. •Clean-dry air or nitrogen atmosphere. PROFILE: Straight ramp (60-120°C/min to 220°C ± 15°C peak, TA 30-60 sec.) recommended as a starting point unless soak required for high density assemblies to reach thermal equilibrium. Suggested soak profile: - Ramp @ 60-120°C/min. to 120-160°C. - Dwell @ 120-160°C for 1.0-1.5 minutes. - Ramp @ 60-120°C/min to 215-220°C peak temp. Time over 183°C for 30-60 seconds - Ramp down to R.T. @ 90-120°C/min. - Ensure solder is frozen at exit of last heated zone to avoid disturbed joint defects.	• Although designed as a no-clean flux system, the residue may be cleaned with: •BIOACT EC-ULTRA™ or, •BIOACT EC7-R™ or, •10% Alpha 2110 saponifier with water. •Water washing will not turn residues cloudy. • Clean stencils with Alpha SC-10 stencil cleaner

* Note technical data is based on SnPb



Figure 1: Reflow Profile Envelope

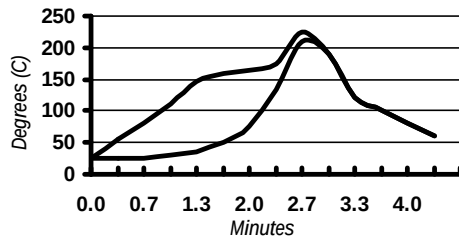


Figure 2: Tack vs. Time

