Amp One Low Voiding Solder Paste
Lead-Free No-Clean

INTRODUCTION

Amp One solder paste from FCT Assembly, is redefining the voiding standard for PCB assembly. By combining industry low levels of voiding performance with excellent activity and decreasing the potential for solder balling and graping, Amp One delivers assemblers an unmatched ability to amplify their process window while ultimately achieving higher yields.

ATTRIBUTES

- Low voiding potential
- Excellent activity and printability
- Very low solder balling and graping
- Halide and halogen free

ALLOY AND POWDER SIZE

SN100C	Type 3 and 4
SAC305 (Sn96.5/Ag3.0/Cu0.5)	Type 3 and 4
Sn96.5/Ag3.5	Type 3
Anti-tombstoning mixtures	Type 3

PACKAGING

Jars	250, 500 grams
Cartridges	500, 600 grams
Syringes	30, 100 grams
Enclosed print systems	

STORAGE AND HANDLING

- Store solder paste at 5 – 10°C (40 – 50°F).
- Warm to room temperature for at least 4 hours before use, but warming overnight is desired. Do not open the container during the warming period.
- Once opened, do not refrigerate the solder paste again. Keep it in a sealed container at room temperature.
- Solder paste can be stored at room temperature for up to 2 weeks.
- Solder paste used on the printer should not be returned to the container with the fresh solder paste. It should be stored in a separate container at room temperature.
- Once the solder paste is printed, the circuit boards are usable for up to 8 hours. Beyond this time, the solder paste should be cleaned off of the circuit boards.

J-STD-004 DATA

Classification	ROL0
Copper mirror (TM 2.3.32)	Low activity
Halide content (TM 2.3.28.1)	0% wt.
Silver chromate (TM 2.3.33)	Halides not detected
Fluoride spot test (TM 2.3.35.1)	None detected
SIR (TM 2.6.3.7)	Pass > 7.00E+10 ohms
ECM (TM 2.6.14.1)	Pass, increase of 0.3 Log_{10} ohms

J-STD-005 DATA

Viscosity Brookfield (TM 2.4.34)	520 – 620 Kcps
Slump (TM 2.4.35)	Pass
Solder balling (TM 2.4.43)	Pass
Wetting (TM 2.4.45)	Pass

STENCIL DESIGN

Slic stencils from Fine Line Stencil are recommended for fine feature printing down to an area ratio of 0.55. NanoSlic Gold coating should be used for area ratios below 0.55.

PRINTER PARAMETERS

Solder paste bead size	Initial 2 cm (0.75 in) Add below 1.4 cm (0.50 in)
Squeegee angle	60 deg. from horizontal 45 deg. for pin in paste
Speed	25 to 150 mm/sec (1 to 6 in/sec)
Pressure*	0.18 to 0.27 kg/cm (1 to 1.5 lb/in)
Separation speed	2 to 10 mm/sec
Underside cleaning	Solvent, vacuum, and dry wipe recommended. NanoSlic Gold coating enables wiping every 20 – 40 prints
Stencil life	8 hours at 65-85 °F and 10-70% RH

*Pressure should be increased with increasing print speed. First set the print speed. Then set the pressure to the minimum required to clean the solder paste off of the stencil.

REFLOW PROFILE - LINEAR

Time from 45°C to peak	3.5 to 4.5 min
Ramp rate	0.7 to 2.0 °C / sec
Preheat time (130–180°C)	30 - 90 sec (70 sec target)
Peak temperature	235 – 255 °C for SAC alloys 240 – 260 °C for SN100C
Time above liquidus (TAL)	45 – 75 sec (60 sec target)
Cooling rate	3 – 6 °C / sec

TAL should be calculated based on the liquidus point of the alloy used: SN100C 227°C, SAC305 221°C, Sn96.5/Ag3.5 221°C.

Adding a soak between 180 and 200 °C for 20 – 30 seconds can minimize the potential for voiding, and can also reduce the potential for tombstoning.

CLEANING

Raw solder paste can be removed from the stencil using isopropyl alcohol or a variety of commercial cleaners. When solder paste is left on the stencil unused for more than 4 hours, then the stencil should be cleaned.

No-clean solder paste residues do not need to be removed from the circuit board. If removal of the flux residues is desired, then a commercial cleaning agent should be used. Several common cleaning agents have been tested and found to be effective. Please contact your cleaning chemical supplier for details.