NC254
Sn62 and Sn63

No-Clean Pin Probe Testable Solder Paste

Features:

- Broad Printing Process Window
- Clear Pin-Probe Testable Residue
- Reduces Voiding under Micro-BGAs
- 12-14 Hour Tack Time
- 24 Hour Stencil Life
- Excellent Wetting

Description:

NC254 has been developed to offer extremely broad process windows for printing, wetting and pin probe testing. The superior wetting ability of NC254 results in bright, smooth, shiny, solder joints. NC254 offers very low post process residues, which remain crystal clear and probable even at the elevated temperatures required for today's lead free alloys. NC254 has shown to reduce or eliminate voiding under micro-BGAs. NC254 also offers high humidity tolerance and a chemistry developed for use in air reflow. Slump and humidity tolerances found in NC254 extend the solder pastes useable life in facilities where environmental control is not at its optimum.

Printing:

- Apply sufficient paste to the stencil to allow a smooth, even roll during the print cycle (a bead diameter of 12 to 16 mm (½ to ⅝ inch) is normally sufficient to begin).
- Apply small amounts of fresh solder paste to the stencil at controlled intervals to maintain paste chemistry and workable properties.
- NC254 provides the necessary tack time and force for today’s high speed placement equipment, which will enhance product performance and reliability.
- Cleaning of your stencil will vary by application, however, it can be accomplished using AIM 200AX-10 stencil cleaner.
- Snap-off distance = on contact 0.00 mm (0.00”)
- PCB Separation Distance = 0.75-2.0 mm (.030-.080”)
- PCB Separation Speed = Slow
- Squeegee Pressure = 0.10-0.30 kg/cm (.6 -1.7 lbs/in.) of blade
- Squeegee Stroke Speed = 12-150 mm/sec. (.5 - 6 in./sec.)
  - Note: Recommended initial printer settings above are dependent on PCB and pad design

Reflow Profile:

Two unique profile families are depicted below; both can be used in ramp-spike or ramp-soak-spike applications, and they each have similar reflow temperatures. The two profiles differ in where they reach their respective peak temperatures, as well as the time above liquidus (TAL). The shorter profile of the two would apply to smaller assemblies, where as the longer profile would apply to larger assemblies, such as backplanes or high-density boards. The shaded area defines the process window. Oven efficiency, board size/mass, component type and density all influence the final profile for a given assembly. These profiles are starting points, and processing boards with thermal-couples attached is recommended to optimize the process.

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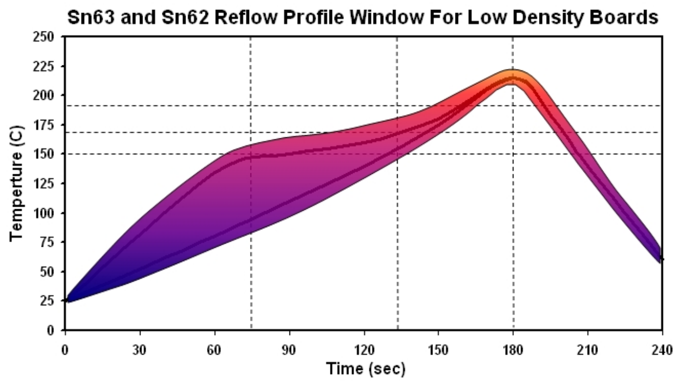

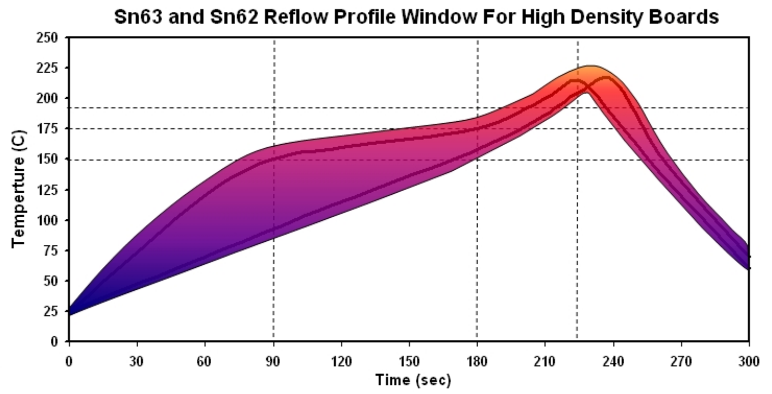

RATE OF RISE 1.5-2°C / SEC MAX	*RAMP TO 150°C (302°F)*	*PROGRESS THROUGH 150°C-170°C (302°F-338°F)*	*TO PEAK TEMP 220°C-210°C (428°F-410°F)*	*TIME ABOVE 183°C (381°F)*	*COOLDOWN ≤ 4 °C / SEC*	*PROFILE LENGTH AMBIENT TO PEAK*
Short Profiles	≤ 75 Sec	30-60 Sec	45-75 Sec	30-60 Sec	45± 15 Sec	2.75-3.5 Min
Long Profiles	≤ 90 Sec	60-90 Sec	45-75 Sec	60-90 Sec	45± 15 Sec	4.5-5.0 Min

- The recommended reflow profile for NC254 is provided as a guideline. Optimal profile may differ due to oven type, assembly layout, or other process variables. Contact AIM Technical Support if you require additional profiling assistance.
- The Reflow Profile for the Sn/Pb Pastes using a Vapor Phase Reflow Oven: Peak temperature range i s 230°C – 245°C.

NC254 Compatible Products:

- Electropure Solder Bar
- NC275 VOC-Free No Clean Spray Flux
- NC264-5 No Clean flux Spray/Foam
- One-Step Underfill 688
- 200AX – Stencil Cleaner
- Epoxy 4089 – Chip Bonding Epoxy

Cleaning:

- NC254 can be cleaned if necessary with saponified water or an appropriate solvent cleaner.
- Please refer to the AIM cleaner matrix for a list of compatible cleaning materials.

Handling and Storage:

- NC254 has a refrigerated shelf life of 1 year at 4°C - 12°C (40°F - 55°F).
- Allow the solder paste to warm up completely and naturally to ambient temperature (8 hrs.) prior to breaking the seal for use.
- Mix the product lightly and thoroughly (1-2 mins. max) to ensure even distribution of any separated material.
- Do not store new and used paste in the same container, and reseal any opened containers while not in use.
- Replace the internal plug and cap of the 500 gram jars to ensure the best possible seal.

Physical Properties:

ITEM	*SPECIFICATION*
Appearance	Gray, Smooth, Creamy
Alloy	Sn63 and Sn62
Melting Point	183°C
Particle Size	T3, T4, T5
General Metal Loading	90% (T3)
Viscosity	Print/Dispense
Packaging	Available in all industry standard packaging.

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Test Data Summary:

CLASSIFICATION			
Product Name	IPC Classification to J-STD-004	Copper Mirror to J-STD-004	Silver Chromate to J-STD-004
NC254	REL0	LOW	PASS
POWDER TESTING			
No.	Item	Results	Test Method
1	Powder Size	Type 3 – 45-25 micron Type 4 – 38-20 micron	J-STD-004 IPC TM 650 2.2.14
2	Powder Shape	Spherical	Microscope
FLUX MEDIUM TESTING			
No.	Item	Results	Test Method
1	Acid Value	84.97 ± 0.75 (mg KOH/g Flux)	J-STD-004 IPC TM 650 2.3.13
2	Halide Content	0.0059 +/- 0.0001 % CI/g	J-STD-004 IPC TM 650 2.3.35
3	Fluorides Spot Test	No fluoride	J-STD-004 IPC TM 650 2.3.35.1 J-STD-004 IPC TM 650 2.3.35.2
4	Corrosivity Test/ Copper Mirror	L	J-STD-004 IPC TM 650 2.3.32
5	Corrosion Flux	Pass	J-STD-004 IPC TM 650 2.6.15
6	Halide-Free/Silver Chromate Paper Test	Pass	J-STD-004 IPC TM 650 2.3.33
7	Surface Insulation Resistance (SIR)	85° C, 85% RH: Control: Samples: Initial 4.69E+13Ω 3.54E+13Ω 24 hrs 1.10E+10Ω 8.43E+08Ω 96 hrs 9.62E+09Ω 8.70E+08Ω 168 hrs 7.75E+09Ω 1.18E+09Ω - No dendrite growth or corrosion, after a visual inspection – Pass All Criteria	J-STD-004 IPC TM 650 2.6.3.3
8	Telcordia (Bellcore) SIR	35°C, 85% 4 days Initial: 8.34E+12Ω Final : 9.65E+12Ω Requirement > 1.0E+10Ω - Pass	GR-78-CORE
9	Telcordia (Bellcore) Electromigration	65°C, 85% 500 hrs Initial: 3.05E+10Ω Final : 1.57E+10Ω Rƒ/Ri > 0.1 – Pass	GR-78-CORE
10	Compatibility Test	See list of recommended products above	GR-78-CORE
VISCOSITY TESTING			
No.	Item	Results	Test Method
1	T-Bar Spindle Test Method	650 ± 10% kcps	J-STD-005 IPC TM 650 2.4.34
SOLDER PASTE TESTING			
No.	Item	Results	Test Method
1	Tack Test	31 g	J-STD-005 IPC TM 650 2.4.44
2	Tack Test	120 g	JIS Z 3284 Annez 9
3	Solder Ball Test	Pass	J-STD-005 IPC TM 650 2.4.43
4	Wetting Test	Pass	J-STD-005 IPC TM 650 2.4.45
5	Paste Shelf Life	4°C (39°F) = 1 year	AIM TM 125-11
6	Solder Paste Slump Test	Pass	J-STD-005 IPC TM 650 2.4.35

Manufacturing and Distribution Worldwide
Americas +1-401-463-5605 · Europe +44-1737-222-258 · Asia-Pacific +86-755-2993-6487 · info@aimsolder.com · www.aimsolder.com
AIM IS ISO9001:2000 CERTIFIED

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