TECHNICAL DATA SHEET

CATEGORY: **NO CLEAN PIN PROBE TESTABLE SOLDER PASTE**
NAME: **NC251**
ALLOY: **Sn63/Pb37 & Sn62/Pb36/Ag2**

FEATURES

- PIN PROBE TESTABLE RESIDUES
- 12-14 HOUR STENCIL LIFE
- 8-12 HOUR TACK TIME
- PRINTS UP TO 6 INCHES PER SECOND
- EXCELLENT WETTING
- AIR REFLOW / NITROGEN NOT NECESSARY
- AQUEOUS CLEAN WITH SAPONIFIER
- REDUCES VOIDING ON MICRO-BGAs

* Passes BELLCORE (Telecordia GR-78-Core Flux Requirements) and IPC (product testing summary on third page, data available upon request)

DESCRIPTION

NC251 is a mildly activated, resin-based formulation developed to offer pin-probeable residues. In addition, NC251 has proven to reduce voiding on BGAs and offers excellent activity and wetting characteristics, superior slump resistance, and excellent printing characteristics. NC251 also offers high humidity tolerance and a chemistry developed for use in air reflow. Slump and humidity tolerances found in NC251 extend the solder pastes useable life in facilities where environmental control is not at its optimum. NC251 has been utilized on various assemblies with RF designs without cleaning; however, the compatibility of flux residues on RF assemblies is strongly dependent upon circuitry design.

STANDARD PASTE COMPOSITION

Application Method	Particle Size	Metal Load
Standard Stencil Printing	45	89.5%
Fine Pitch Stencil Printing	25	89%
Ultra-Fine Pitch Stencil Printing	20	88.5%
Dispensing syringes	45	85%

Note: These are typical starting guidelines. To achieve optimal performance, actual metal load and particle size may vary per process, application, and environment.

HANDLING

- NC251 has a refrigerated shelf life of 1 year, at 4°C; (40°F), and a non-refrigerated shelf life of 6 months at 22°C; (72°F). Do not freeze this product.
- Allow the solder paste to warm completely and naturally to ambient temperature; (8 hours is recommended), prior to breaking seal for use.
- Mix the product lightly and thoroughly for 1 to 3 minutes to ensure even distribution of any separated material resulting from storage.
- Do not store new and used paste in the same container. Re-seal any opened containers while not in use.
- Replace the internal plug in conjunction with the cap of the 500 gram jar to ensure the best possible seal.

PRINTER SETUP

Below are the suggested starting parameters for your screen printer. Assumptions were made as to the printer types used in today's applications, and adjustments will vary between equipment, application and facility environment.

SNAP-OFF DISTANCE	**ON CONTACT (0.00")**	SQUEEGEE PRESSURE	**.6 - .7 LBS/IN. OF BLADE**
PCB SEPARATION DISTANCE	**.030-.050"**	SQUEEGEE STROKE SPEED	**.5 - 6 IN/SEC ***
PCB SEPARATION SPEED	**MEDIUM**	* **DEPENDENT ON PCB AND PAD DESIGNS**	

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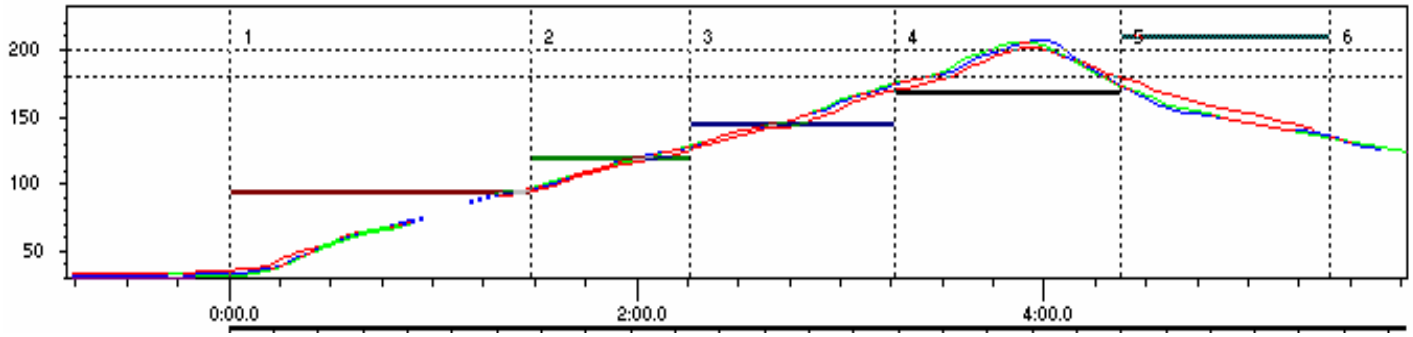
PASTE APPLICATION

- Apply sufficient paste to the stencil to allow a smooth, even roll during the print cycle. A bead diameter of 1/2 to 5/8 inch is normally sufficient to begin.
- Apply small amounts of fresh solder paste to the stencil at frequent, controlled intervals to maintain paste chemistry and workable properties.
- Cleaning of your stencil will vary according to the application; however, it can be accomplished using AIM 200AX-10 stencil cleaner. Use 200AX-10 in moderation and remove any excess cleaner from the stencil surface.
- 251 provides the necessary tack time/force for today's high-speed placement equipment. Ensuring proper support of PCBs during assembly and handling will enhance product performance and reliability.
- For technical advice, consult the AIM web page at www.aimsolder.com.

REFLOW PROFILE GUIDELINES

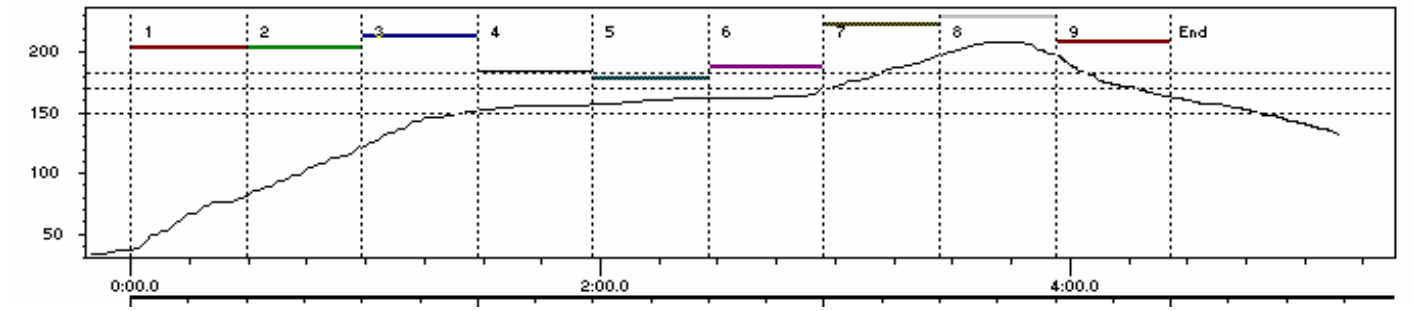
(Actual profile may vary depending upon PCB and reflow oven)

Ramp-to-Spike Profile (Preferred)



RATE of RISE 1-2ºC / SEC MAX	PRE-HEAT RAMP TO 100ºC (212° F)	PROGRESS THROUGH 150° - 175ºC (302° - 347° F)	TO PEAK TEMP 215ºC ± 5ºC (419° F ± 41° F)	TIME ABOVE 183° C (362° F)	COOLDOWN £ 4ºC
	£ 145 SECONDS	10 - 30 SECONDS		60 ± 15 SECONDS	

Ramp-Soak-Spike Profile (Can be used for high-density PCBs or when processing in reflow equipment that results in a large D^t)



RATE of RISE 2-3ºC / SEC MAX	PRE-HEAT RAMP TO 150ºC (302° F)	SOAK 150 - 170ºC (302° - 338° F)	TO PEAK TEMP 215ºC ± 5ºC (419° F ± 41° F)	TIME ABOVE 183° C (362° F)	COOLDOWN £ 4ºC
NOTE:	£ 90 SECONDS	60 - 90 SECONDS		60 ± 15 SECONDS	

Optimize soak to remove Δ^t between components and PCB. Proceed to spike immediately once the PCB has reached thermal stability.

CLEANING

251 can be cleaned, if necessary, with saponified water or an appropriate solvent cleaner. Please refer to the AIM No-Clean-Cleaner Matrix for a list of suitable cleaning materials.

SAFETY

- Use with adequate ventilation and proper personal protective equipment.
- Refer to the accompanying **M**aterial **S**afety **D**ata **S**heet for any specific emergency information.
- Do not dispose of any lead-containing materials in non-approved containers.

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PRODUCT TESTING RESULTS

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PHYSICAL SPECIFICATIONS

Parameter	Value
Visual	Solid (Paste)
Odor	Typical Rosin
Ionicity (in water)	Non-ionic
Specific Gravity	5.63 (water = 1)
Flash Point	N/A

SOLDER PASTE TEST REPORT

Test	Specification	Results
Silver Chromate	5051.00	Pass- No white ppt.
Silver Chromate	TM-650 2.3.33	Pass
Copper Mirror	24 hrs, 25°C, 50% RH	Pass- No Copper Removal
Tack	IPC TM-650 2.4.44	Pass
Viscosity	J-STD-005	Relative to production batch

SOLDER MASK COMPATIBILITY

NC251 Has Been Tested With and is Compatible With the Following Solder Masks
Taiyo PSR4000
Ciba Geigy Probimer 52

SURFACE INSULATION RESISTANCE

Test	Conditions	Requirements	Results
S.I.R. Telecordia GR-78-CORE Flux Requirements	24 Hours	2.0E10 Ohms	5.72E11 Pass
S.I.R. Telecordia GR-78-CORE Flux Requirements	96 Hours	2.0E10 Ohms	6.94E11 Pass
Surface Insulation Resistance 5051.00	35/85, 4 Days, Uncleaned	1.75E10 Ohms	8.12E11 Ohms Pass
Surface Insulation Resistance 5051.00	35/85, 4 Days, Cleaned	1.75E10 Ohms	5.86E12 Ohms Pass
Surface Insulation Resistance IPC-TM-650 2.6.3.3	96 Hours	>1.0E8 Ohms	Pass
Surface Insulation Resistance IPC-TM-650 2.6.3.3	168 Hours	>1.0E8 Ohms	Pass

ELECTROMIGRATION

Test	Conditions	Results
Electromigration Telecordia GR-78-CORE Flux Requirements	96 Hours	2.76E10 Pass
Electromigration Telecordia GR-78-CORE Flux Requirements	500 Hours	1.40E11 Pass
Electromigration 5051.00 Taiyo PSR4000	65°C/85%RH, 20 Days	5.80E10/6.58E10 Pass
Electromigration 5051.00 Ciba Geigy Probimer 52	65°C/85%RH, 20 Days	2.47E10/4.19E10 Pass

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