

# Technical Bulletin

## NL900 LEAD FREE NO CLEAN SOLDER PASTE

### Product Description

NL900 No Clean Solder Paste is a modified rosin based solder paste, which allows a previously unseen level of repeatability and consistency. This paste offers an excellent open time, extended abandon time and good soldering activity with pin probable post soldering residues.

### Attributes

- Pin- Probable Residue
- ROL0 to ANSI/J-STD-004
- Enhanced activity for tough to solder boards and components
- Excellent slump resistance
- High speed stencil printing up to 100mm/sec
- Excellent tack performance and printer open time
- Extended “between-print” abandon time

### Performance

The printing performance of solder paste depends in part on the metal content, and the solder particle size range. Increasing metal content reduces the tendency to slump and reduces the tack life of the solder paste, while the solder balling performance improves.

Printing Parameters	Value
Viscosity (measured at 25C using Brookfield Viscometer)	700-850 Kcps
Print Speed	20-100 mm/sec.
Squeegee Blade	80 to 90 durometer or stainless steel
Stencil Material	Stainless Steel, Molybdenum, Brass, Nickle Plated
Temperature/Humidity	Optimal ranges are 70-77F and 35-65%RH

Performance Parameters	Value
Stencil Life (25C @ 45% RH)	+24 Hours
Tack Life	+48 Hours
Tack Force	1.6 grams/mm2
Slump	
Room Temp., 1 hour	
0.7mm pads	0.2mm
1.5mm pads	0.2mm
80 <sup>0</sup> C, 20 minutes	
0.7mm pads	0.2mm
0.7mm pads	0.2mm
Note: Slump is expressed as the minimum spacing between pads that does not allow bridging.	
Abandon Time	
Pitch	
20 mil and greater	>4 hours
16 mil and less (10 mil aperture)	2 hour
(8 mil or less aperture)	1 hour
Flux Activity (per ANSI/J-STD-006)	ROL0
Copper Mirror (per IPC-J-STD-004)	Pass
Copper Plate Corrosion (per ANSI/J-STD-004)	Pass
Typical SIR, IPC @ 96 hours (per IPC-J-STD-004)	Pass (>2.0 X 10-9 ohms)
Typical SIR, IPC @ 168 hours (per IPC-J-STD-004)=	Pass (>1.5 X 10-9 ohms)

**Refrigeration and storage:** It is recommended to store NL900 at 5-10<sup>0</sup>C. The paste should be removed from cold storage a minimum of 8 hours in the unopened container prior to use. If the paste does not reach room temperature, it may stick to the stencil, not deposit onto the SMT pads, de-wet pads during reflow, outgas during reflow, or produce solder balls. Avoid direct sunlight.

**Handling and shelf life:** The optimum temperature and humidity are 75<sup>0</sup>F and 60% or below

respectively. Provided NL900 solder paste is stored tightly sealed in the original container at 5-10°C, a minimum shelf life of 6 months can be expected. Air shipment is recommended to minimize the time that containers are exposed to higher temperatures.

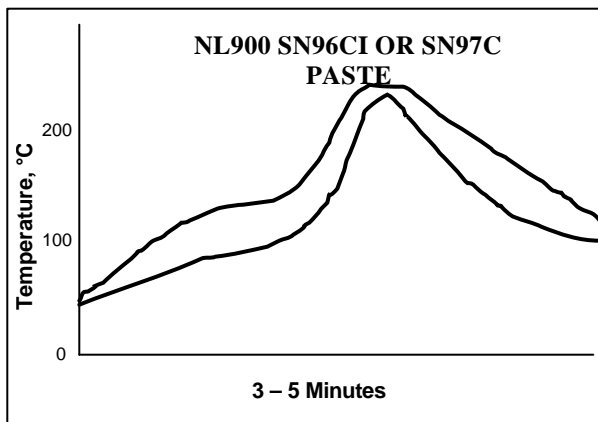
**Printing:** NL900 solder paste is currently available for stencil printing down to 16 mil(0.4mm) pitch devices with type 3 powder (-325+500 mesh). Printing at up to 100 mm/sec. can be reliably achieved in production using a metal squeegee blade. This is due to a unique rheology, which ensures that the higher shear rate viscosity is relatively low and the thixotropic index is high enough to ensure excellent definition and slump resistance, while maintaining good roll and drop off behavior. High squeegee pressures are not required, making NL900 particularly useful for second side printing processes.

**Reflow:** Reflow should be performed at 15-30°C above the liquid temperature of the alloy (depending on the type of board).

ALLOY	COMPOSITION	MELTING POINT (°C)
SN96CI	Sn/3.8Ag/1Cu	217
SN97C	Sn/3Ag/.5Cu	217-219

This temperature should be maintained for 30-60 seconds. Profiles should have less than a 3-minute preheat time above 260°F(130°C) to insure proper wetting of fine pitch leads.

**NL900 LEAD FREE  
REFLOW PROFILE**



1. Ramp to 140-160 degrees Celsius at 2 degrees Celsius per second.
2. Hold at 150-180 degrees Celsius for 60-120 seconds.
3. Ramp to peak reflow at 2 degrees Celsius per second.
4. Recommended peak reflow temperature is 235-245 degrees Celsius.
5. Dwell above liquidus for 45-90 seconds.

**Cleaning:** If cleaning is required, use a semi-aqueous solvent or DI water with a saponifier such as Florida Cirtech RA2000 (saponifier concentration 4-6% @ 120-150°F).

**Health & Safety:** This product, during handling or use, may be hazardous to health or the environment. Read the Material Safety Data Sheet and warning label before using this product.

**Packaging:**

NL900 Solder paste is available in:

- 500gram or 250 gram plastic jar.
- 1Kilogram, 500 gram or 250 gram cartridge for direct application.
- DEK ProFlow cassettes available upon request.

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