Product Data Sheet

NL932 No Clean Solder Paste

INTRODUCTION

NL932 is a halide-free lead-free no clean solder paste, which allows a previously unseen level of repeatability and consistency. **NL932**, combined with the latest stencil technology, delivers Surface Area Ratio (SAR) paste transfer efficiencies below 0.6 and 0.55 respectively. **NL932** is formulated to deliver exceptional cosmetics, especially when used in conjunction with Nihon Superior's SN100C patented lead free alloy. NL 932 can also be washed off in water under certain conditions.

ATTRIBUTES

- Excellent print consistency with Surface Area Ratios (SAR) as low as 0.55 when combined with the latest stencil technology
- Wide reflow profile window with good solderability on various PCB surface finishes
- Completely Halide free by all tests (i.e., no hidden halides)
- Excellent cosmetics and a clear residue
- Water washable under certain conditions
- Low voiding/high reliability
- Compatible in either Nitrogen or Air reflow
- Formulated to work with SAC and SN100C alloys

PRODUCT INFORMATION

Alloys:	SAC 305, SAC 387, SAC 405, SN100C
Powder Size:	Available in type 3 and type 4. Type 5 available by request
Packaging:	500gram jars or cartridges. Also available in enclosed print head systems.
Flux:	NL932 flux available in 10CC and 30CC syringes.

STORAGE AND HANDLING

NL932 should be refrigerated at 0-10°C to prolong shelf life. At this range the shelf life will exceed 6 months. Cartridges should be stored tip down. Paste can be stored up to two weeks at room temperature. When refrigerated, warm up paste container to room temperature for up to four hours. Paste must be at ≥ 19°C before processing. Working range of **NL932** is between 19-32°C.

PRINTER OPERATION

The following are general recommendations for stencil printer optimization. Adjustments may be necessary based on specific process requirements.

Solder Paste Bead:	2cm. Add when bead < 1 cm
Squeegee:	Metal, Slic blade preferred. 60 degrees from horizontal
Speed:	25 to 150 mm/sec.
Pressure:	0.18-0.27 Kg/cm (squeegee length)
Underside Wipe:	A quality stencil should exceed > 10 prints/wipe
Stencil life:	> 8 hours at 30+60% RH and 20-25°C

STANDARD PRODUCT AVAILABILITY

Alloy	Metal loading
SAC 305	88.50% for type 3
SAC 305	88.25% for type 4
Sn100	88.50% for type 3
Sn100	88.25% for type 4

RECOMMENDED REFLOW PROFILE

The recommendations apply to most lead free alloys in the SAC alloy system. This can be used as a general guideline in establishing a reflow profile when using **NL932**. Deviations from these recommendations are acceptable and may be necessary, based on specific process requirements including board size, thickness and

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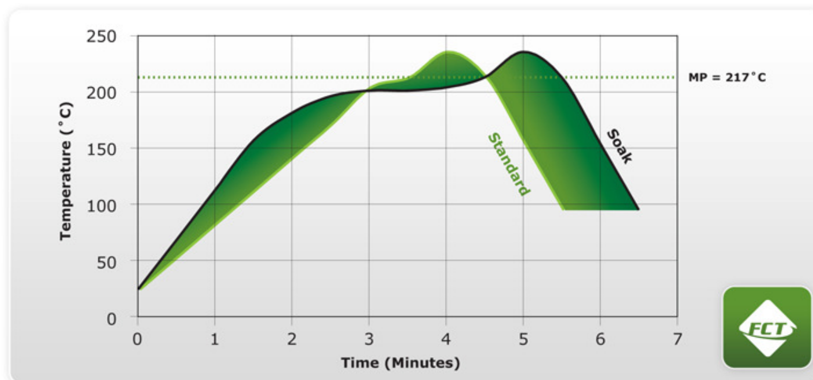

other process characteristics. Please add 7-10C when using Sn100 based solder paste.

REFLOW

A peak temperature of 12-45 C above the melting point of the alloy is recommended for optimum results. A time above liquidus (TAL) of 30 to 90 seconds should also be used. Excessive temperature or excessive TAL may result in excessive Intermetallic Compound (SnCu—IMC) formation, which can adversely affect solder joint and long term reliability.

HEATING

A linear ramp of 0.5 to 2 C/sec is suggested to gradually remove the solvents and other volatile components in the solder paste. This also helps in minimizing solder balls, beading and bridging from hot slump.

A linear ramp also helps minimize depletion of flux activity which can happen at extended times above the liquidus (TAL) and at very high reflow temperatures.

A profile with a soak between 200-210C for less than 20 seconds can be used to reduce void formation on BGA and CSP devices.

A short 20-30 second soak below the melting point of the solder can be used to help minimize tombstoning.

COOLING

A cooling rate greater than 2C per second should be used to insure a fine grain solder structure and minimal IMC layer.

MATERIAL SAFETY DATA SHEETS

Material Safety Data Sheets (MSDS) are available online at www.fctsolder.com

TEST RESULTS

J-STD-004A (IPC Tm-650) Test	Result
Flux Type (per J-STD-004A)	ROL0
Copper Mirror	Pass
Halide Test	Pass
Silver Chromate	Zero
Fluoride test	Zero
Ion Chromatography	Zero
SIR	Pass
J-STD-005 (IPC-TM-650) Test	**Result**
Brookfield viscosity Type 3	750,000
Brookfield viscosity Type 4	800,000
Slump	Pass
Solder Ball	Pass
Wetting	Pass
Bellcore Test	**Result**
SIR	Pass
Electromigration	Pass