

MetaPaste™ NC-500 SAC305 Lead Free No Clean Paste Product Bulletin

An Excellent No Clean Paste

Metallic Resources' MetaPaste NC-500 Lead Free is a general purpose mildly activated rosin based No Clean solder paste manufactured as a homogeneous mixture of special low oxide content lead free Sn96.5/Ag3.0/Cu0.5 spherical solder powder, liquid flux, and gelling agents. The standard paste has a metal load of 89%, a particle size of 25-45 microns (-325 to +500 mesh), and a viscosity of 800-1,050 kcps. Other metal loads, particle sizes, and viscosities are available upon special request. **It is RoHS compliant.** The product is both halide-free and halogen-free. It meets IPC requirements for ROL0 no clean. It is available in 10cc (40 gram) syringes, 250 and 500 gram jars, and 500, 700, or 1,000 gram cartridges.

Perfect for SMT Applications

MetaPaste NC-500 No Clean solder paste is specially designed for SMT, hybrid, and dispensing soldering applications. The 800,000 cps viscosity provides a stiff, slump-resistant paste for stenciling.

A Superior No Clean Paste

MetaPaste NC-500 No Clean solder paste provides a 12-14 hour stencil life, 16 hour tack time, excellent re-flow, superior slump resistance, and high tolerance to humidity. Superior activity and wetting characteristics have been engineered into the product. The 45 micron particle size is ideally suited for printing to a 16 mil pitch. The SIR (Surface Insulation Resistance) on a 7 day test is 1.0×10^{10} ohm. It passes the halide test on silver chromate paper and copper mirror.

Standards Met

Conforms to Bellcore and IPC standards.

IPC:
Resistivity to Water Extract: Pass
Silver Chromate Paper Test: Pass
Copper Mirror Test: Pass

Bellcore (TR-NWT-000078)
Halogen Content: 0.0
Copper Mirror test: Pass
SIR: $>1.10^{10}$ class 3

Application Directions

MetaPaste NC-500 No Clean solder paste has a shelf life of 6 months if kept refrigerated. Opened jars should not be refrigerated again. Adequate time (8 hours) for the unopened refrigerated paste to equalize with ambient temperature must be allowed to prevent moisture condensation in the jar, which is detrimental to successful use of product. If moisture does infiltrate the paste, the viscosity may increase, the paste may dry out prematurely, and/or components may "pop" off the board.

The ideal temperature range for operation is between 68-74°F, with a relative humidity of 35-55%. Mix the product lightly and thoroughly for several minutes prior to application. Do not store new and used paste in the same container. Opened containers should be resealed when not in use.

Apply sufficient paste to the stencil to create a smooth, even roll during the print cycle. A bead diameter of 1/2" to 5/8" is sufficient. Apply small amounts of fresh MetaPaste NC-500 LF to the stencil frequently, at controlled intervals, to maintain the paste chemistry and application properties. Cleaning of the stencil will vary depending upon the application.

If desired, the paste may be cleaned with a standard degreasing solution, saponified water, or an alcohol/ water combination. An in-line or other spray cleaning system is recommended, but is not required.

Safety Precautions

MetaPaste NC-500 No Clean solder paste should be used in a well ventilated area. If ventilation is inadequate, wear NIOSH approved respirator or equivalent. Wear suitable protective clothing, safety glasses, disposable vinyl gloves to avoid contact with skin and eyes. Refer to the Material Safety Data Sheet (MSDS) for additional information. Do not dispose of any lead-containing products in non-approved containers.



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RECOMMENDED PROCESSING GUIDELINES

Printing

Tack Time is sixteen (16) hours between printing, placement and reflow under ambient conditions below 23°C/74°F and a relative humidity below 60%. The exact time will depend on the environmental condition of the solder paste and plant. The ideal temperature range for operation of the solder paste is 20°C/68°F – 23°C/74°F, with a relative humidity of 35-55%. The viscosity of this solder paste is 800 to 1,050 kcps on the Brookfield viscometer.

Should printed circuit boards need to be stored for more than 6 hours after populating, prior to reflow, it is recommended that PCBs are maintained in a tightly controlled area. Humidity should be controlled between 35% - 55% and temperature should not exceed 23°C/74°F.

Recommended Reflow Parameters

Sn96.5/Ag3.0/Cu0.5 in RMA, Water Soluble, and No Clean Formulations

Preheat Zone: Ramp to 150°C in 100 seconds to dry the volatiles from the solder paste.

Soak Zone: Soak 80 seconds @ 150-190°C to get uniform temperature equilibrium of PCB.

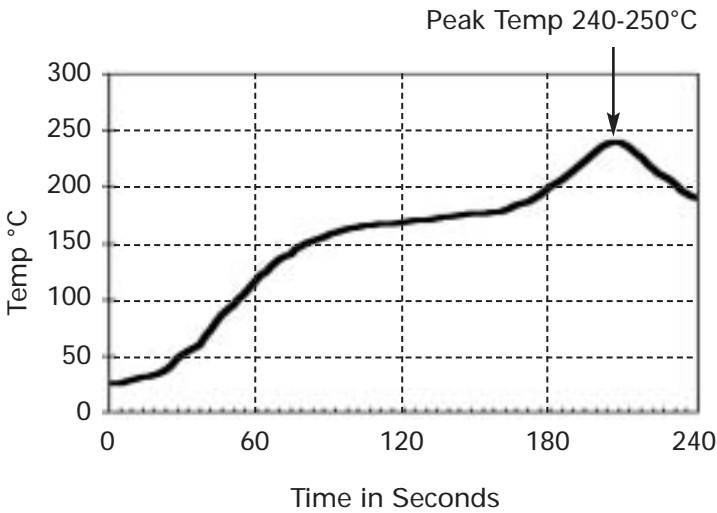
Reflow Zone: Ramp to a temperature of 240°C to 250°C for a period of 40 seconds for the Ramp/Soak/Spike profile.

Ramp to a temperature of 235°C to 245°C for a period of 40 seconds for the Optimized Ramp/Spike profile.

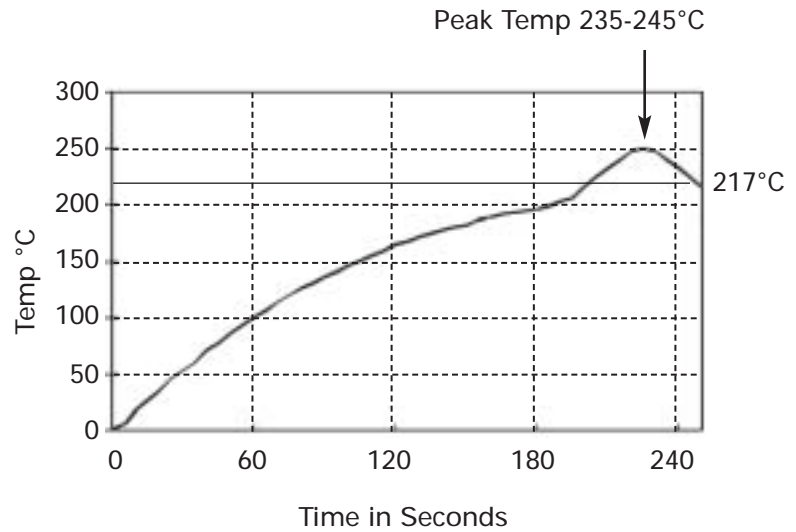
Cooling Zone: A cool down rate of 2°C, or more, per second is recommended for optimum results.

Cleaning Lag Time: Cleaning efficiency is not affected by lag time between reflow soldering and the cleaning process.

Ramp/Soak/Spike Reflow Profile



Optimized Ramp/Spike Profile



Squeegee Speed (in/sec)	90 D squeegee Pressure (lb/in)	Metal Blade Pressure (lb/in)
1	1.6 – 1.8	1.6 – 1.8
2	2.4 – 2.6	2.1 – 2.2
3	3.4 – 3.6	2.4 – 2.6
4	4.8 – 5.1	2.8 – 3.1

NC-500-0507

Recommendations made by this company and its representatives are based upon test data, experiments, and experience believed to be reliable. No guarantee of accuracy is made, however. All products are sold upon the condition that the buyer will make his own tests and assume the responsibility for the suitability of the product under his application and service conditions. Statements made herein will vary according to the nature of the surfaces to which the product is applied, application technique, and service condition. We in no event assume liability beyond the purchase price of our products involved and make as a condition of sale that we will refund the purchase price or replace materials proven to be defective and reported in a timely fashion, but no later than six (6) months after shipment. No representative of the manufacturer and/or seller has the authority to alter or extend these conditions.