



Metallic Resources



MetaPaste™ WS-400 SC995e™
Lead Free No Clean Paste
Product Bulletin

An Excellent Water Soluble Paste

Metallic Resources' MetaPaste WS-400 is a general purpose mildly activated water soluble paste manufactured as a homogeneous mixture of special low oxide content lead free Sn99.5/Cu0.5/Co spherical solder powder, liquid flux, and gelling agents. It is RoHS compliant.

MetaPaste WS-400 solder paste has excellent re-flow, superior slump resistance, and high tolerance to humidity. Superior activity and wetting characteristics have been engineered into the product.

Physical Properties

Metal Load	89% (Standard)
Particle Size	Type 3 (25-45 microns) Type 4 (20-38 microns)
Viscosity	800-1,050 kcps
Stencil Life	12 – 14 hour
Tack Time	16 hour

Other metal loads, particle sizes, and viscosities are available upon special request. It is available in 10cc (40 gram) syringes, 250 and 500 gram jars, and 500, 700, or 1,000 gram cartridges.

Standards Met

IPC J-STD-004 Standards
Type ORH1 classification

Silver Chromate Test: Pass
Copper Mirror Test: Pass
SIR: 2.38×10^{10} ohms

Bellcore/Telcordia Standards
Electromigration: 6.12×10^{10} ohms

Application Directions

MetaPaste WS-400 solder paste has a shelf life of up to 6 months if kept refrigerated. Opened containers should be resealed when not in use.

Processing guidelines for paste preparation, printing, and reflow are found on page 2 of this bulletin.

Safety Precautions

MetaPaste WS-400 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 Safety Data Sheet for additional information.

Do not dispose of any lead containing products in non-approved containers.



Metallic Resources, Inc.



Ph: 330.425.3155 | Fax: 330.425.2180

2368 E. Enterprise Parkway | Twinsburg, OH 44087

Recommended Processing Guidelines

Preparation

- Allow adequate time (8 hours) for the unopened refrigerated paste to equalize with ambient temperature.
- Mix the product lightly and thoroughly for several minutes prior to application.

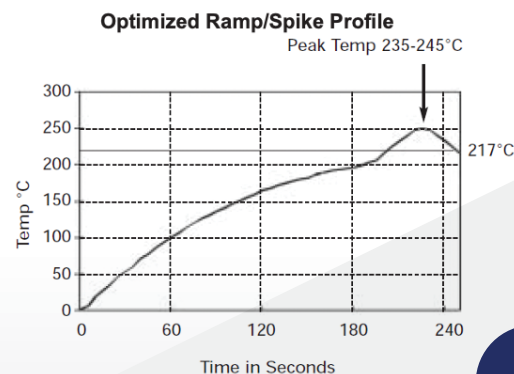
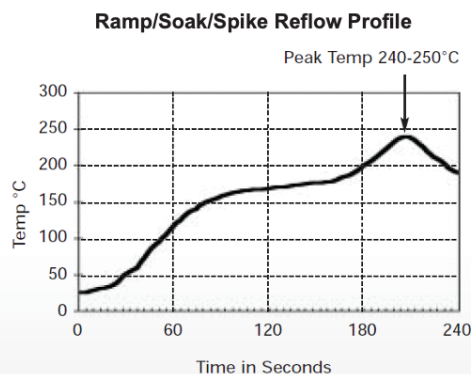
Printing

- 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 ideal temperature range for operation 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.
- Apply enough paste to the stencil to create a smooth even roll during the print cycle.
- Bead diameter of 1/2" to 5/8" is sufficient.

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

Recommended Reflow Parameters

- 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 cleaning.



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