RMA250 Rosin Mildly Activated Tin-Lead Solder Paste

Introduction

RMA250 solder paste is rosin mildly activated tin-lead solder paste with pin-testable flux residue. RMA250 has increased activity over standard no-clean solder pastes, which improves wetting on difficult to solder surfaces. RMA250 shows excellent wetting, very low solder balling and graping, and has low voiding potential.

Attributes

- Excellent printing after pauses of up to 2 hours.
- Prints well through fine pitch and small area ratio apertures.
- Ideal reflow performance with excellent wetting, very low solder balling and graping, and low potential for voiding.
- Clear, pin-testable flux residue

Solder Alloy	Solder Powder Size Availability (IPC J-STD-005)	Melting Range (°C)
Sn63/Pb37	Type 3 or 4	183
Sn62/Pb36/Ag2	Type 3	179
Anti-tombstoning mixtures	Type 3 or 4	Range depends on the mixture

- Other sizes of solder powder are available upon request.
- The size range for the solder powder types are as follows:
  - Type 3 (25-45 µm >80%). Mesh -325/+500
  - Type 4 (20-38 µm >80%). Mesh -400/+635
  - Type 5 (15-25 µm >80%). Mesh -500/+800

Solder Paste Packaging	Net Weight (grams)
Jars	250, 500
Cartridges	500 or 600 (6 oz), 700 (8 oz), 1300 (12 oz)
Syringes	30, 100
Enclosed print systems	800

Compatible Products

NC120, NC160, NC165 liquid fluxes.
RMA250 gel flux.

Storage and Handling

Best practices for storage and handling of solder paste are listed below. Additional details can be found in the Solder paste storage and handling guide.

- Shelf life is 9 months when stored at 0 to 10 °C (32 to 50 °F).

- Warm the solder paste to room temperature (18 to 29 °C / 65 to 85 °F) before use. Do not force warming by heating the solder paste. Keep the solder paste sealed while warming, which typically takes 3 to 4 hours at room temperature. Warming overnight is acceptable.
- Ideally solder paste should be mixed before use to bring it to a normal working consistency. This can be done by hand-stirring in a jar, or using a knead cycle on the printer.
- Best practice is to keep the solder paste at room temperature until completely used. Remaining fresh solder paste should be sealed in the original container along with all inserts, lids, etc.
- If solder paste is removed from the printer and stored, it is recommended to store it in a separate container from the fresh solder paste. The container should be sealed with all inserts, lids, etc.
- Once solder paste is applied to the circuit board, the best practice is to reflow the solder paste as soon as possible. It is acceptable to reflow within approximately 4 hours.

Print Parameter	Preferred	Acceptable
Solder paste bead size	1.5 to 2.0 cm (0.60 to 0.80 in)	1.0 to 2.5 cm (0.40 to 1.0 in)
Squeegee blade	Fine grain stainless steel. 60° from horizontal. 45° from horizontal for pin in paste.	Any type of stainless steel
Stencils	Fine grain (2-5 µm) or ultra-fine grain (1-2 µm) stainless steel	All types of commercially available stencils
Print speed	30 to 100 mm/sec (1.2 to 4.0 in/sec)	20 to 200 mm/sec (0.8 to 8.0 in/sec)
Pressure / blade length (increase with increasing speed)	0.18 to 0.27 kg/cm (1.0 to 1.5 lbs/in)	0.18 to 0.54 kg/cm (1.0 to 3.0 lbs/in)
Separation speed	1.0 to 5.0 mm/sec	0.5 to 10.0 mm/sec
Underside stencil cleaning	Wet / vacuum / vacuum cycle every 1-5 prints	Other cleaning cycles every 1 to 20 prints depending upon technology
Stencil life	4 hours at 18-29 °C (65-85 °F) and 10-70% RH.	Stencil life may be shorter outside of the preferred conditions.

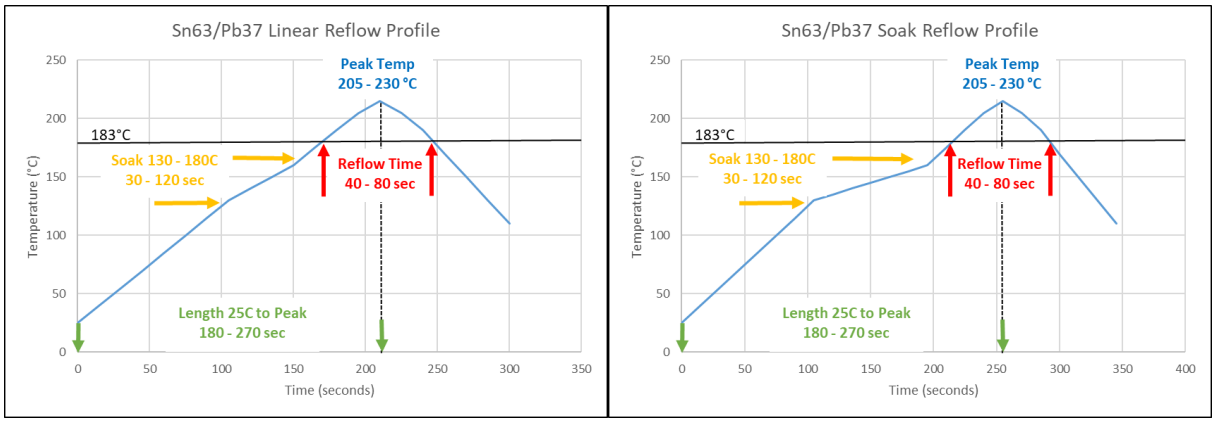
- Blade pressure should be set as low as possible to clean off the stencil. Higher blade pressures will increase stencil and blade wear, and can lead to “scooping” and other print defects.
- Underside stencil cleaning is best accomplished with commercial cleaners and high quality wipe materials. Nano-coated stencils can be used to reduce the frequency of underside cleaning.

Reflow Parameter	Preferred	Acceptable
Profile length (25 °C to peak)	3.5 to 4.0 min (210 to 240 sec)	3.0 to 4.5 min (180 to 270 sec)
Heating ramp rate (20 second window)	1.0 to 2.0 °C/sec	1.0 to 3.0 °C/sec
Preheat / soak time (130 - 180 °C)	60 to 90 sec	30 to 120 sec
Peak temperature	210 to 220 °C for Sn63/Pb37 alloys	205 to 230 °C for Sn63/Pb37 alloys

Reflow time (time above liquidus)	50 to 70 sec	40 to 80 sec
Cooling ramp rate (20 second window)	3.0 to 6.0 °C/sec	1.0 to 6.0 °C/sec

- Reflow time should be calculated based on the liquidus point of the alloy used: Sn63/Pb37 = 183°C, Sn62/Pb36/Ag2 = 179°C.

An example reflow profile graph is shown below. This is a good starting point but can be modified to fit the product and process. Contact FCT Assembly for assistance with reflow profiling.



Cleaning

Raw solder paste can be removed from the stencil, squeegee blades, and circuit boards using a variety of commercial cleaners. Isopropyl alcohol (IPA) can also be used.

After reflow, no-clean solder paste residues are designed to be "safe" and do not need to be removed from the circuit board. If removal of the flux residues is desired, then a commercial cleaning agent should be used. Several common cleaning agents have been tested and found to be effective. Please contact your cleaning chemical supplier for details.

Safety

Wear chemically resistant gloves when handling solder paste. Avoid breathing fumes, especially during reflow of the solder paste. Follow the guidelines detailed in the Safety Data Sheet (SDS).

J-STD-004B Flux Standard	Test Method	Result
J-STD-004B classification	J-STD-004B methods	ROL1
Halide ion content (Br^-, Cl^-, F^-, I^-)	IPC 2.3.28.1	0.10 to 0.20% wt of solids
Halogen content (Br and Cl)	EN 14582, IPC 2.3.28.1	0.60 to 0.70% wt of solids
Halide by silver chromate	IPC 2.3.33	Halides detected
Fluoride by spot test	IPC 2.3.35.1	None detected
Copper mirror	IPC 2.3.32	Low activity
Copper corrosion	IPC 2.6.15	No corrosion

Surface Insulation Resistance (SIR)	IPC 2.6.3.7	Pass > 1.00E+10 ohms
Electro Chemical Migration (ECM)	IPC 2.6.14.1	Pass, increase of 0.6 Log_{10} ohms
J-STD-005 Solder Paste Standard	**Test Method**	**Result**
Viscosity - Brookfield	IPC 2.4.34	Refer to the C of A
Slump - frosted glass	IPC 2.4.35	Pass
Solder balling - frosted glass	IPC 2.4.43	Preferred
Wetting - copper	IPC 2.4.45	Pass