



# TECHNICAL DATA SHEET

CATEGORY: **RMA SOLDER PASTE**  
 NAME: **212**  
 ALLOY: **Sn63/Pb37 & Sn62/Pb36/Ag2**

## FEATURES

- EXTENDED STENCIL LIFE
- EXTENSIVE TACK TIME- UP TO 72 HOURS
- LARGE PROCESS WINDOW
- SLUMP RESISTANT
- VERY GOOD ACTIVITY
- AQUEOUS CLEAN WITH SAPONIFIER

Passes IPC SIR; Testing results available upon request.

## DESCRIPTION

**212** is a highly active resin/rosin-based formulation designed specifically to have excellent tack time and very good soldering characteristics. 212 has a wide process window uncommon to most solder pastes, in addition to a good activity level, which allows the product to accommodate a variety of environments and process applications. 212 performs well in continuous production, offering good slump resistance, high tack, excellent wetting, and low post-process residues. has been utilized on various assemblies with RF designs without cleaning; however, the compatibility of flux residues on RF assemblies is strongly dependent upon circuitry design.

## HANDLING

- 212 has a refrigerated shelf life of 1 year at 4°C or 40°F, and a non-refrigerated shelf life of 6 months at 22°C or 72°F. Do not freeze this product.
- Allow the solder paste to warm naturally and completely to ambient temperature (8 hours is recommended) prior to breaking seal for use.
- Mix the product lightly and thoroughly for 1 to 2 minutes to ensure even distribution of any separated material resulting from storage.
- Do not store new and used paste in the same container. Re-seal any opened containers while not in use. Replace the internal plug in conjunction with the cap of the 500 gram jar to ensure the best possible seal.

## PRINTER SETUP

Below are the suggested starting parameters for screen-printing. Some assumptions were made as to the printer types used in modern applications. Adjustments will vary between equipment, application and facility environment.

SNAP-OFF DISTANCE	<b>ON CONTACT (0.00")</b>	SQUEEGEE PRESSURE	<b>.75-1.5 LBS/IN. OF BLADE</b>
PCB SEPARATION DISTANCE	<b>.030-.050"</b>	SQUEEGEE STROKE SPEED	<b>.5 - 6 IN/SEC *</b>
PCB SEPARATION SPEED	<b>SLOW-MEDIUM</b>	<b>* DEPENDENT ON PCB AND PAD DESIGNS</b>	

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## **PASTE APPLICATION**

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- Apply sufficient paste to the stencil to allow a smooth, even roll during the print cycle. A bead diameter of 1/2 to 5/8 inch is normally sufficient to begin.
- Apply small amounts of fresh solder paste to the stencil at frequent, controlled intervals to maintain paste chemistry and workable properties.
- Cleaning of your stencil will vary according to the application; however, it can be accomplished using AIM's 200AX-10 or DJAW-10 stencil cleaners. Use these in moderation and remove any excess cleaner from stencil.

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## **PLACEMENT INFORMATION**

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212 provides the necessary tack time/force for today's high-speed placement equipment. Ensuring proper support of PCB's during assembly and handling will enhance product performance and reliability.

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## **REFLOW DATA**

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Please see the attached Reflow Profile Supplement.

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## **PASTE TECH-TIPS**

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<b>PROBLEM</b>	<b>POTENTIAL CAUSE</b>
• <b>BRIDGING:</b>	EXCESS SOLDER DEPOSITION, COMPONENT ALIGNMENT, PAD/COMPONENT SOLDERABILITY
• <b>LEACHING:</b>	EXCESSIVE REFLOW TIME OR TEMPERATURE
• <b>SOLDER BALLS:</b>	LOW PREHEAT TEMPERATURE, EXCESSIVE HEAT RAMP-UP, OXIDIZED PASTE, EXCESS PASTE
• <b>TOMBSTONING:</b>	EXCESSIVE HEAT RATE, COMPONENT TO PAD SIZE MISMATCH, PASTE REGISTRATION
• <b>WHITE RESIDUE:</b>	SOLDER PASTE OXIDATION, EXCESSIVE TIME AT TEMPERATURE
• <b>DISCOLORED JOINT:</b>	PASTE OXIDATION, BOARD/COMPONENT CONTAMINATION, EXCESSIVE SOAK TIME
• <b>BEADING:</b>	EXCESS SOLDER PASTE, COMPONENT PLACEMENT

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## **CLEANING**

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212 can be cleaned, if necessary, with saponified tap water. AIMTERGE-520A is recommended for cleaning. Deionized water is recommended for the final rinse. A temperature of 100° - 150°F is sufficient for removing any residues. An in-line or other pressurized spray cleaning system is suggested, but is not required.

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## **SAFETY**

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- Use with adequate ventilation and proper personal protective equipment.
- Refer to the accompanying **Material Safety Data Sheet** for any specific emergency information.
- Do not dispose of any lead-containing materials in non-approved containers.



# PRODUCT TESTING RESULTS

CATEGORY: **RMA / NO-CLEAN SOLDER PASTE**  
 NAME: **212**

## SURFACE INSULATION RESISTANCE

### PASS-FAIL CRITERIA AND DATA EVALUATION

#	Reference	Property	Pass-Fail Criteria	Result
1	IPC-TM-650 §5.5.1	Quality of control coupons	>1E9 Ω at 96 and 168 h	PASS
2	J-STD-004 §3.2.4.5.1	SIR of test coupons	>1E8 Ω at 96 and 168 h	PASS
3	IPC-TM-650 §5.5.2	Post-test visual inspection	No dendrite growth or corrosion	PASS

### CONCLUSIONS

The results of the qualification tests indicate that the AIM 212 solder paste complies with the requirements of IPC TM-650, Method 2.6.3.3 for Surface Insulation Resistance (SIR).

### SIR TEST DATA

Control		Initial	24 hours	96 hours	168 hours
#1	A	1.00E+14	6.49E+09	5.77E+09	5.45E+09
	B	5.03E+13	6.67E+09	6.07E+09	5.87E+09
	C	1.00E+14	5.92E+09	5.27E+09	5.17E+09
	D	8.38E+12	6.20E+09	5.46E+09	5.26E+09
#2	A	1.00E+14	7.40E+10	6.27E+09	5.98E+09
	B	5.03E+13	7.25E+10	6.33E+09	6.02E+09
	C	1.10E+14	6.85E+10	5.83E+09	5.52E+09
	D	1.65E+12	7.24E+10	6.17E+09	5.73E+09
#3	A	1.10E+14	1.10E+10	6.31E+09	6.12E+09
	B	1.10E+14	8.74E+09	6.77E+09	6.52E+09
	C	1.00E+14	7.81E+09	6.13E+09	5.97E+09
	D	1.00E+14	7.64E+09	6.05E+09	5.86E+09
<b>212</b>					
#1	A	1.27E+12	2.59E+08	1.56E+08	2.45E+08
	B	3.47E+12	3.07E+08	4.62E+08	4.25E+08
	C	3.59E+12	3.04E+08	4.18E+08	3.86E+08
	D	1.05E+12	2.47E+08	2.44E+08	2.41E+08
#2	A	1.57E+12	2.62E+08	1.31E+08	2.27E+08
	B	2.58E+11	1.95E+08	1.30E+08	1.62E+08
	C	5.85E+11	2.20E+08	1.70E+08	1.88E+08
	D	4.19E+12	2.66E+08	2.50E+08	2.27E+08
#3	A	1.63E+11	1.91E+08	1.30E+08	1.59E+08
	B	4.24E+11	1.89E+08	1.21E+08	1.29E+08
	C	4.35E+11	2.17E+08	1.50E+08	1.97E+08
	D	1.65E+11	2.05E+08	1.40E+08	1.87E+08

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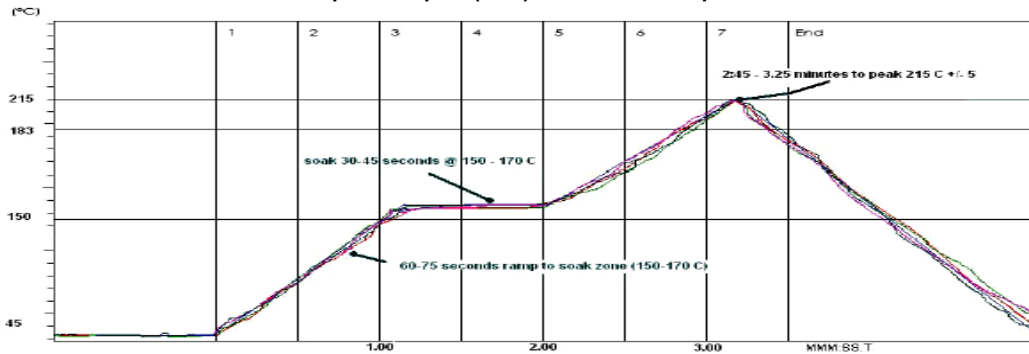


# REFLOW PROFILE SUPPLEMENT

ALLOYS:

Sn63/Pb37 and Sn62/Pb36/Ag2

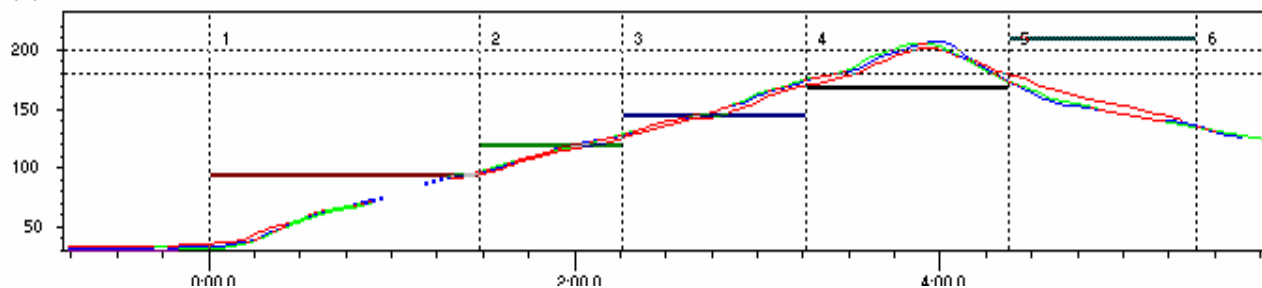
## Ramp-Soak-Spike (RSS): Recommended profile



### RSS Profile Guidelines

- The typical initial rate of rise for the RSS profile is 1.4 to 1.8°C/second.
- Ramp up to 150°C and then soak the assembly for 30 to 60 seconds.
- The soak zone should be controlled between 150 -170°C. Above this point the paste will lose its activator.
- Proceed to spike immediately once the PCB has reached thermal stability.
- Peak temperature is 215°C ± 5°C.
- Time above liquidus is 45 ± 15 seconds.
- The total profile length should be between 2 ¼ - 3 ½ minutes from ambient to peak temperature.
- Cool down should be controlled within 4°C/second.

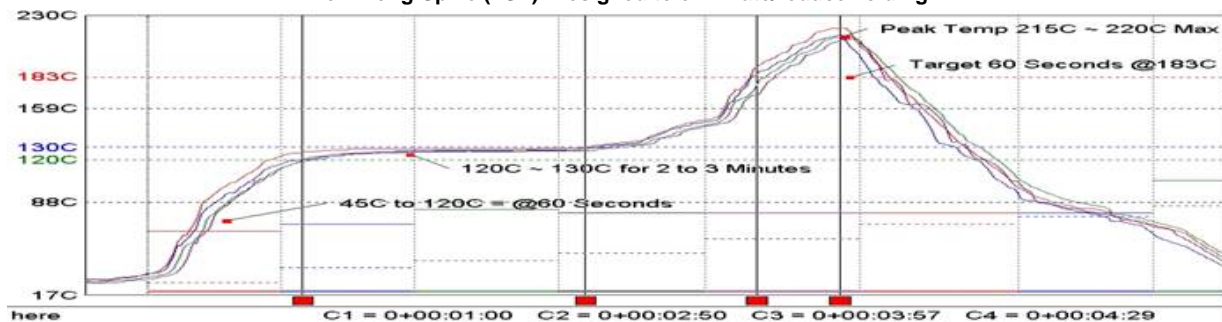
## Ramp-to-Spike (RTS)



### RTS Profile Guidelines

- The typical rate of rise for the RTS profile is 0.7 to 1.5°C/second.
- The profile should be a straight line or concave; it should not be convex.
- 2/3 of the profile should be below 150°C.
- Peak temperature is 215°C ± 5°C.
- Time above liquidus is 60 ± 15 seconds.
- The total profile length should be between 3 ½ - 4 minutes from ambient to peak temperature.
- Cool down should be controlled within 4°C/second.

## Low-Long-Spike (LSP): Designed to eliminate/reduce voiding



### LSP Guidelines

- The typical initial rate of rise for the LSP profile is 1.25°C/second.
- Ramp up to 120°C and then soak the assembly for 120 to 180 seconds.
- Proceed to spike immediately after exiting the soak zone.
- Peak temperature is 215°C ± 5°C.
- Time above liquidus is 60 ± 15 seconds.
- The total profile length should be between 4 ½ - 5 minutes from ambient to peak temperature.
- Cool down should be controlled within 4°C/second.