



# TECHNICAL DATA SHEET

CATEGORY: **RA SOLDER PASTE**  
 NAME: **RA-312**  
 ALLOY: **Sn100**

## FEATURES

- HIGH ACTIVITY
- EXCELLENT WETTING
- LARGE PROCESS WINDOW
- VERY GOOD THERMAL STABILITY
- AQUEOUS CLEAN WITH SAPONIFIER
- MELTING POINT 232°C

## DESCRIPTION

**RA-312** is a fully activated rosin-based formulation. RA-312 has a wide process window uncommon to most RA solder pastes, in addition to a very good activity level, which allows the product to accommodate a variety of environments and process applications. RA-312 is suitable for soldering difficult-to-wet materials and offers the thermal stability necessary to accommodate a wide variety of reflow profiles. The cleaning of post-process residues may be required for most applications.

## STANDARD PASTE COMPOSITION

Application Method	IPC Powder Type	Metal Load
Standard Stencil Printing	3	88.5%
Fine Pitch Stencil Printing	5	88%
Ultra-Fine Pitch Stencil Printing	5	87.5%
Dispensing syringes	3	84%

Note: These are typical starting guidelines. To achieve optimal performance, actual metal load and particle size may vary per process, application, and environment.

## HANDLING

- RA-312 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.

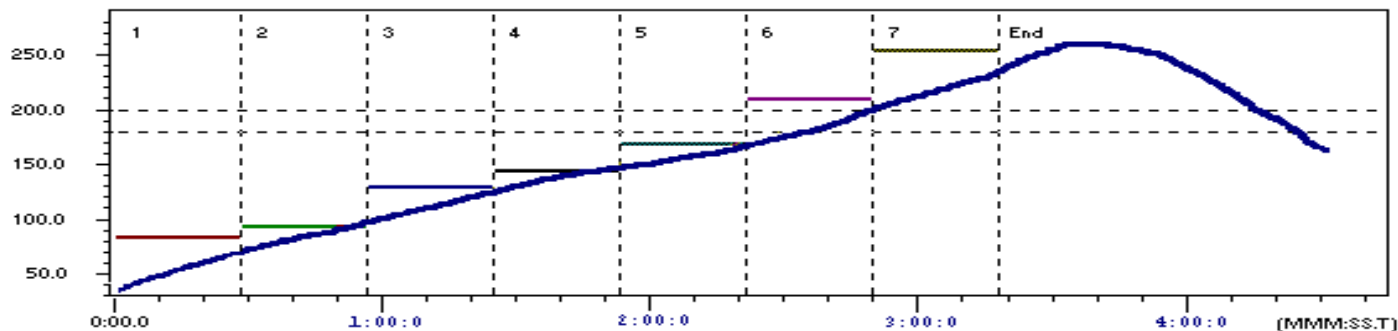
SNAP-OFF DISTANCE	<b>ON CONTACT (0.00")</b>	SQUEEGEE PRESSURE	<b>1-1.5 LBS/IN. OF BLADE</b>
PCB SEPARATION DISTANCE	<b>.030-.050"</b>	SQUEEGEE STROKE SPEED	<b>.5 - 6 IN/SEC *</b>
PCB SEPARATION SPEED	<b>SLOW</b>	<b>* DEPENDENT ON PCB AND PAD DESIGNS</b>	

## PASTE APPLICATION

- 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 200AX-10 stencil cleaner. Use 200AX-10 in moderation and remove any excess cleaner from the stencil surface.

RA-312 provides the necessary tack time/force for today's high-speed placement equipment. Ensuring proper support of PCBs during assembly and handling will enhance product performance and reliability.

## REFLOW DATA



<b>RATE of RISE</b> 1-2°C / SEC MAX	<b>PRE-HEAT</b> 150°C	<b>PROGRESS THROUGH</b> 150 - 175°C	<b>TO PEAK TEMP</b> 255 ± 5 °C	<b>TIME ABOVE</b> 232° C	<b>COOLDOWN</b> ≤ 4°C/sec	<b>PROFILE LENGTH</b> 2:30-3:45 AMBIENT TO PEAK
	≤ 145 SECONDS	10 - 30 SECONDS		45 ± 15 SECONDS		

## PASTE TECH-TIPS

<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

## CLEANING

RA-312 can be cleaned, if necessary, with a saponified tap water. AIMTERGE-520 is recommended. De-Ionized water is recommended for the final rinse. A temperature of 120 - 150°F is sufficient for removing any residues. An in-line or other pressurized spray cleaning system is suggested, but is not required.

## SAFETY

- 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.

The information contained herein is based on data considered accurate and is offered at no charge. Product information is based upon the assumption of proper handling and operating conditions of 72°F and 35% rH. No warranty is expressed or implied regarding the accuracy of this data. Liability is expressly disclaimed for any loss or injury arising out of the use of this information or the use of any materials designated.

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Americas +1-401-463-5605 • Europe +44-1737-222-258 • Asia-Pacific +852-2649-7183 • info@aimsolder.com • www.aimsolder.com