



# TECHNICAL DATA SHEET

CATEGORY: **NO-CLEAN SOLDER PASTE**  
 NAME: **NR-116**  
 ALLOY: **Sn63/Pb37 & Sn62/Pb36/Ag2**

## FEATURES

- NO VISIBLE RESIDUE
- DESIGNED FOR NITROGEN REFLOW
- AQUEOUS CLEAN WITH SAPONIFIER
- RESIN / ROSIN FREE
- GOOD WETTING CHARACTERISTICS

\* Passes BELLCORE and IPC, product testing results available upon request

## DESCRIPTION

**NR-116** is a no-visible-residue solder paste developed for use in nitrogen reflow applications. As a resin-free / rosin-free no-clean product, any remaining post-process residues may be left on the PCB without degradation. NR-116 has good wetting characteristics on bare copper and solder coated circuit boards. NR-116 performs well in continuous production, offering good slump resistance, high tack, and ultra low post-process residues. This material 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.

## STANDARD PASTE COMPOSITION

Application Method	IPC Powder Type	Metal Load
Standard Stencil Printing	3	89.5%
Fine Pitch Stencil Printing	5	89%
Ultra-Fine Pitch Stencil Printing	5	88.5%
Dispensing syringes	3	85%

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

## HANDLING

- NR-116 has a refrigerated shelf life of 3 months.  
Do not freeze this product.
- Allow the solder paste to warm completely and naturally to ambient temperature (8 hours is recommended) prior to breaking the seal for use.
- Mix the product lightly and thoroughly for 1 to 2 minutes to ensure an 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.

## PRINTER SETUP

Following are the suggested starting parameters for your screen printer. Some assumptions were made as to the printer types used in today's 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>MEDIUM</b>	<b>* DEPENDENT ON PCB AND PAD DESIGNS</b>	

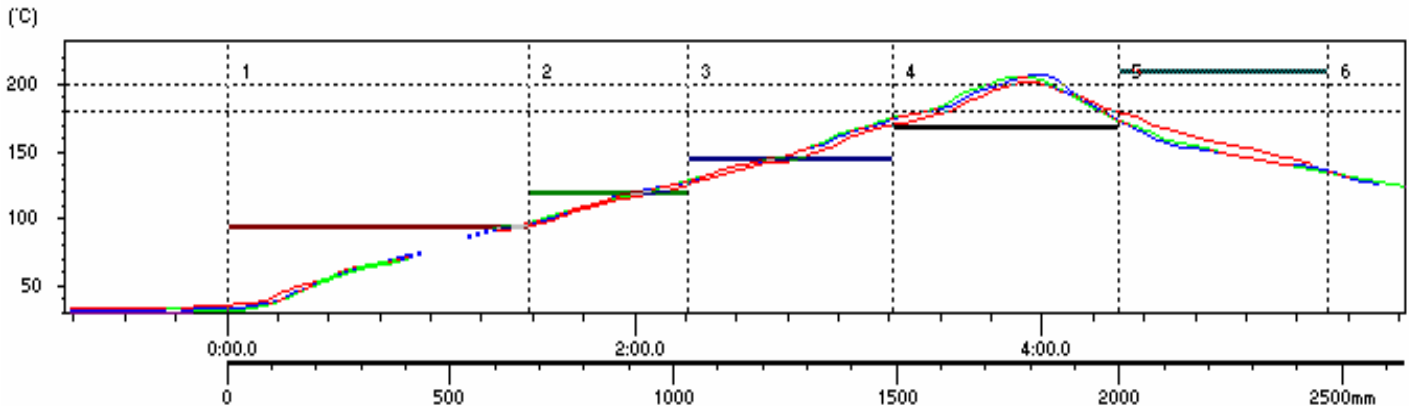
## PASTE APPLICATION

- Oxygen levels during reflow should be maintained at 30 PPM maximum; 15 PPM is optimum.
- 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 DJAW stencil cleaner. Use DJAW in moderation and remove any excess cleaner from the stencil surface.

## PLACEMENT INFORMATION

NR-116 provides the necessary tack time/force for today's high-speed placement equipment. Ensuring the proper support of PCB's during assembly and handling will enhance product performance and reliability.

## REFLOW DATA



RATE of RISE 1-2°C / SEC MAX	PRE-HEAT RAMP TO 100°C ( 212° F )	PROGRESS THROUGH 150° - 175°C ( 302° - 347° F )	TO PEAK TEMP 215°C ± 5°C ( 419° F ± 9° F )	TIME ABOVE 183° C ( 362° F )	COOLDOWN £ 4°C
	£ 145 SECONDS	10 - 30 SECONDS		60 ± 15 SECONDS	

## PASTE TECH-TIPS

<u>PROBLEM</u>	<u>POTENTIAL CAUSE</u>
• <b>BRIDGING:</b>	EXCESS SOLDER DEPOSITION, PAD/COMPONENT SOLDERABILITY OR ALIGNMENT PROBLEM
• <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

## CLEANING

NR-116 can be cleaned, if necessary, with saponified tap water. AIMTERGE-520 is recommended. 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.

## 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.

04.22.04

Manufacturing and Distribution Worldwide

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