Technical Data Sheet
No Clean Pin Probe Testable Solder Paste
NC257 SAC305

Features:

- Broad Printing Process Window
- Clear Pin–Probe Testable Residue
- Reduces Voiding Under Micro-BGAs
- Excellent Wetting, Even Leadless Devices
- 24 Hour Stencil Life
- 12-14 Hour Tack Time

Description:

NC257 has been developed to offer extremely broad process windows for printing, wetting and pin-probe testing. The superior wetting ability of NC257 results in bright, smooth and shiny solder joints. It also offers very low post process residues, which remain crystal clear and easily probed even at the elevated temperatures required for today's lead-free alloys. This alloy offers a chemistry developed for use in air reflow, as well as providing slump and humidity tolerances to extend the useable life in facilities where environmental control is not at its optimum.

Handling and Storage:

- NC257 has a refrigerated shelf life of 6 months at 4° C (40° F).
- Allow the solder paste to warm up completely and naturally to ambient temperature (8 hrs.) prior to breaking the seal for use.
- Mix the product lightly and thoroughly (1-2 mins. max) to ensure even distribution of any separated material.
- Do not store new and used paste in the same container, and reseal any opened containers while not in use.
- Replace the internal plug and cap of the 500 gram jars to ensure the best possible seal.

Paste Application:

- Apply sufficient paste to the stencil to allow a smooth, even roll during the print cycle (a bead diameter of ½ to 5/8 inch is normally sufficient to begin).
- Apply small amounts of fresh solder paste to the stencil at controlled intervals to maintain paste chemistry and workable properties.
- NC257 provides the necessary tack time and force for today's high speed placement equipment, which will enhance product performance and reliability.
- Cleaning of your stencil will vary by application, however, it can be accomplished using AIM 200AX-10 stencil cleaner.

Cleaning:

- NC257 can be cleaned if necessary with saponified water or an appropriate solvent cleaner.
- Please refer to the AIM cleaner matrix for a list of compatible cleaning materials.

Printing:

- Snap-off distance = on contact (0.00")
- PCB Separation Distance = .030-.080"
- PCB Separation Speed = Slow
- Squeegee Pressure =.6 -.7lbs/ In. of blade
- Squeegee Stroke Speed .5 -.6 In./Sec

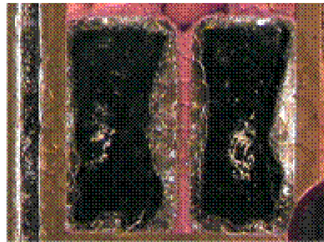
  * dependent on PCB and pad design

Specification:

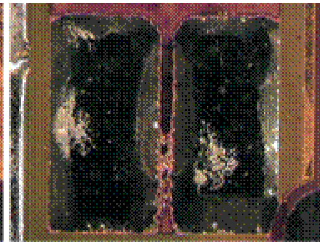
ITEM	*SPECIFICATION*
Appearance	Gray, Smooth, Creamy
Alloy	SAC 305
Melting Point	217° -218° C
Particle Size	P3, P4, P5
Powder Shape	Spherical
Viscosity	Print/Dispense
Flux Type	REL0

Residue Comparisons:

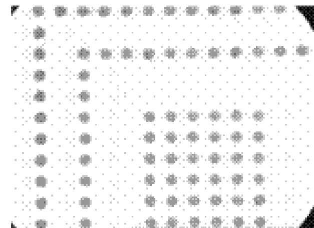
NC 254



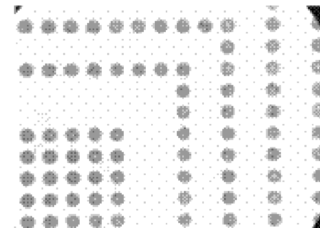
NC 257



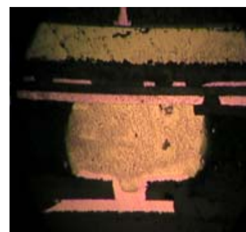
AIM NC257



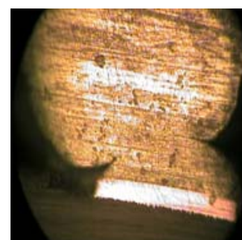
Competitor A



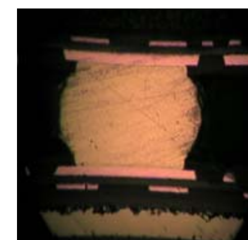
Void in via
Competitor I



AIM NC257



Head in Pillow
Competitor A

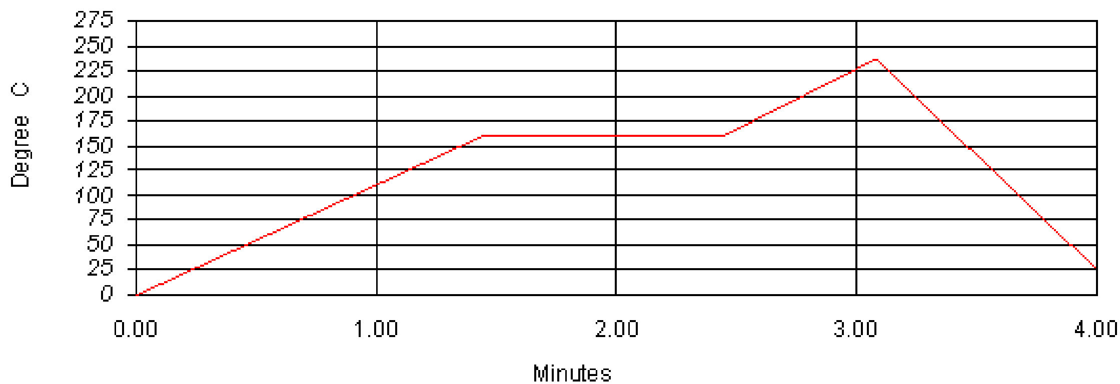


AIM NC257

Paste Tech Tips: Problems and Possible Causes:

- Bridging - Excessive solder, pad component solder ability, alignment
- Solder Balls - low preheat temperature, oxidized or excess paste, too rapid initial ramp up
- Tomb Stoning - excessive delta temperature, rapid heat rate, component to pad mismatch, paste registration
- Discolored Joints - excessive peak temperature, board paste component contamination, excessive soak time
- Dull Grainy Joint - too hot or cold peak temp., excessive soak, too long or too short overall profile, too slow cool down
- Disturbed Joint - board was jarred during molten stage
- Solder Beads - excessive solder volume, excessive placement pressure
- Amber/Charred Residue - excessive peak temperature, excessive time above liquidus (TAL)
- Non-Wetting - contaminated pad/component, too short TAL, too long soak, soak temperature too high
- De-Wetting – excessive TAL, too high peak temperature

Profile Guideline



RATE OF RISE 2°C / SEC MAX	*RAMP TO 150°C (302°C)*	*PROGRESS THROUGH 150°C-175°C (302°F-347°F)*	*TO PEAK TEMP 240°C-260°C (482°F-518°F)*	*TIME ABOVE 240°C (464°F)*	*COOLDOWN ≤ 4 °C / SEC*	*PROFILE LENGTH 2:30-3:45MM AMBIENT TO PEAK*
	≤ 75 **SECONDS**	30-60 **SECONDS**	45-75 **SECONDS**	30-60 **SECONDS**	45± 15 SE**CONDS**	2.75-3.5 **MINUTES**

❖ THE RECOMMENDED REFLOW PROFILE FOR NC257 IS PROVIDED AS A GUIDELINE. OPTIMAL PROFILE MAY DIFFER DUE TO OVEN TYPE, ASSEMBLY LAYOUT, OR OTHER PROCESS VARIABLES. CONTACT AIM TECHNICAL SUPPORT IF YOU REQUIRE ADDITIONAL PROFILING ASSISTANCE.

NC257 SAC305 Compatible Products:

- SAC305 Electropure Solder Bar
- NC257 Flux Paste, No Clean Tacky Flux
- NC275 VOC Free No Clean Spray Flux
- NC264-5 No Clean Flux Spray/Foam
- SAC305 Glowcore – No Clean Cored Wire
- 1 Step Underfill Epoxy 623
- Epoxy 4044 – Chip Bonding Epoxy
- 200AX – Stencil Cleaner

Test Data Summary

Flux Medium Testing				
No.	Item	Specification limits	Test Method	Test per lot
1	Acid Value	160.55mgKOH/gflux +/-2.26	IPC TM650 2.3.13	
2	Halide Content	0.0025+/-0.0001Cl/g	IPC TM650 2.3.35	
3	Fluorides Spot Test	No Fluoride	IPC TM650 2.3.35.1 IPC TM650 2.3.35.2	
4	Corrosivity Test/Copper Mirror	L0	IPC TM650 2.3.32	
5	Corrosion Flux	Pass	IPC TM650 2.6.15	
6	Halide-Free/Silver Chromate Paper Test	Pass	IPC TM650 2.3.33	
7	Non-Volatile Residue	83.53%	IPC TM650 2.3.34	
8	Surface Insulation Resistance	24hrs=1.21E+08 168hrs=2.51E+08 All data over 1.00E+08	IPC TM650 2.6.3.3	
9	Bellcore (Telcorida) SIR and Electromigration	Initial:7.26E+09 Final:2.51E+10 Rf/Ri=3.58 Rf/Ri >0.1	GR-78-CORE	
10	Compatibility Test for NC 257 Lead Free Solder Paste, VOC-free NC 270 WR Liquid Flux and Glow Core Solder Wire	Pass	GR-78-CORE	
11	Polarization Test	Pass	ASTM G5-94/G3-89	

Solder Paste Testing				
No.	Item	Specification limit	Test Method	CoC
1	Tack Test	34.2gf	IPC TM 650 2.4.44	X
2	Tack Test	N/P	JIS Z 3284 Annez 9	
3	Solder Ball Test	Pass	IPC TM 650 2.4.43	Pass
4	Wetting Test	Pass	IPC TM 650 2.4.45	X
5	Paste Shelf Life	22°C=6 months	AIM TM 125-11	
6	Solder Paste Slump Test	Pass	IPC TM 650 2.4.35	
7	Viscosity	750-800	JIS Z 3284-1994 (Spiral Test Method (Malcom PCU205)	X
8	Metall content	Nominal +/-0.5%		X

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