



NC257 SAC305



Lead-Free No Clean Solder Paste

Features:

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

Description:

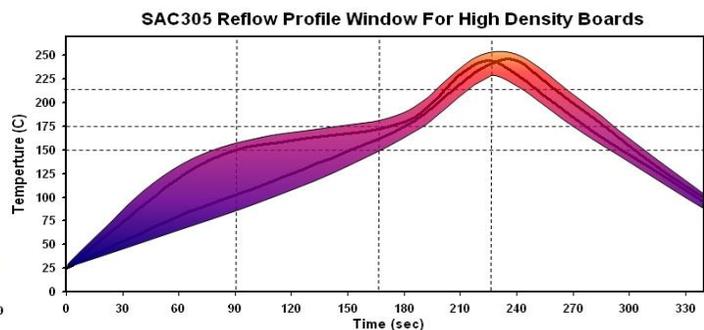
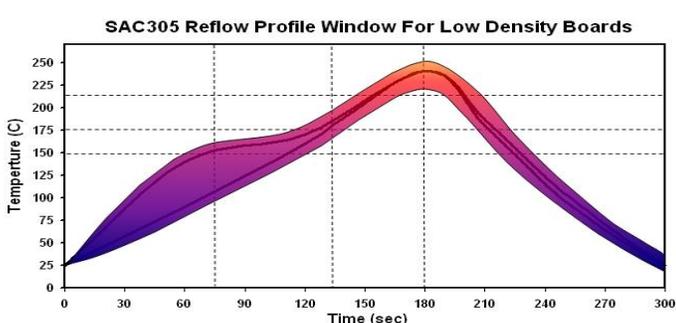
NC257 has been developed to offer extremely broad process windows for printing, wetting and pin-probe testing. The superior wetting ability of NC257 results in bright, smooth and shiny solder joints. It also offers very low post process residues, which remain crystal clear and easily probed even at the 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.

Printing:

- Apply sufficient paste to the stencil to allow a smooth, even roll during the print cycle (a bead diameter of 12 to 16 mm (½ to ⅝ 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.
 - Snap-off distance = On Contact 0.00 mm (0.00")
 - PCB Separation Distance = 0.75-2.0 mm (.030-.080")
 - PCB Separation Speed = Slow
 - Squeegee Pressure = 0.10 – 0.30 kg/cm (.6 - 1.7 lbs/ In.) of blade
 - Squeegee Stroke Speed = 25-50 mm/sec. (1-2 in./sec)
- * Note: Recommended initial printer settings above are dependent on PCB and pad design

Reflow Profile:

Two unique profile families are depicted below; both can be used in ramp-spike or ramp-soak-spike applications, and they each have similar reflow temperatures. The two profiles differ in where they reach their respective peak temperatures, as well as the time above liquidus (TAL). The shorter profile of the two would apply to smaller assemblies, where as the longer profile would apply to larger assemblies, such as backplanes or high-density boards. The shaded area defines the process window. Oven efficiency, board size/mass, component type and density all influence the final profile for a given assembly. These profiles are starting points, and processing boards with thermal-couples attached is recommended to optimize the process.



| <i>RATE OF RISE 2° C / SEC MAX</i> | <i>RAMP TO 150° C (302° F)</i> | <i>PROGRESS THROUGH 150° C-175° C (302° F-347° F)</i> | <i>TO PEAK TEMP 230° C- 245° C (445° F- 474° F)</i> | <i>TIME ABOVE 217° C (425° F)</i> | <i>COOLDOWN ≤ 4 ° C / SEC</i> | <i>PROFILE LENGTH AMBIENT TO COOL DOWN</i> |
|--|--|---|---|---------------------------------------|-----------------------------------|--|
| Short Profiles | ≤ 75 Sec | 30-60 Sec | 45-75 Sec | 30-60 Sec | 45± 15 Sec | 2.75-3.5 Min |
| Long Profiles | ≤ 90 Sec | 60-90 Sec | 45-75 Sec | 60-90 Sec | 45± 15 Sec | 4.5-5.0 Min |

- ❖ 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.
- ❖ THE REFLOW PROFILE FOR THE SnAgCu PASTES USING A VAPOR PHASE REFLOW OVEN: PEAK TEMPERATURE RANGE IS 230° C – 245° C.

Compatible Products:

- AIM Lead-Free Electropure Solder Bar
- NC Paste Flux, No-Clean Tacky Flux
- NC270WR VOC-Free No-Clean Spray Flux
- NC264-5 No-Clean Flux Spray/Foam
- Glowcore No-Clean Cored Wire
- One-Step Underfill FF35
- Epoxy 4044 Chip Bonding Epoxy

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.

Handling and Storage:

- NC257 has a refrigerated shelf life of 6 months at 0° C - 12° C (32° F - 55° 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.

Physical Properties:

| <i>ITEM</i> | <i>SPECIFICATION</i> |
|---------------|--|
| Appearance | Gray, Smooth, Creamy |
| Alloy | SAC305 |
| Melting Point | 217° - 218° C |
| Particle Size | T3, T4, T5 |
| Metal Loading | 88.5% (T3) |
| Viscosity | Print/Dispense Versions Available |
| Packaging | Available in all industry standard packaging |

Test Data Summary:

| <i>CLASSIFICATION</i> | | | |
|-----------------------------|--|---|--|
| Product Name | IPC Classification to J-STD-004 | Copper Mirror to J-STD-004B | Silver Chromate to J-STD-004B |
| NC257 | ROL0 | LOW | DISSOLVE 35% - PASS |
| <i>POWDER TESTING</i> | | | |
| No. | Item | Results | Test Method |
| 1 | Powder Size | Type 3 – 45-25 micron Type 4 – 38-20 micron | IPC TM 650 2.2.14 |
| 2 | Powder Shape | Spherical | Microscope |
| <i>FLUX MEDIUM TESTING</i> | | | |
| No. | Item | Results | Test Method |
| 1 | Acid Value | 160.5 mg KOH/ g flux | J-STD-004B IPC TM 650 2.3.13 |
| 2 | Halide Content | 0.0025 ± 0.0001 Cl/g | J-STD-004B IPC TM 650 2.3.35 |
| 3 | Fluorides Spot Test | No fluoride | J-STD-004B IPC TM 650 2.3.35.1 J-STD-004B IPC TM 650 2.3.35.2 |
| 4 | Corrosivity Test/ Copper Mirror | L | J-STD-004B IPC TM 650 2.3.32 |
| 5 | Corrosion Flux | Pass | J-STD-004B IPC TM 650 2.6.15 |
| 6 | Halide-Free/Silver Chromate Paper Test | Pass | J-STD-004B IPC TM 650 2.3.33 |
| 7 | Surface Insulation Resistance | > 1E9Ω at 96 and 168 h. - pass > 1E8Ω at 96 and 168 h. - pass > No dendrite growth or corrosion, after a visual inspection - pass | J-STD-004 IPC TM 650 2.6.3.3 |
| 8 | Telcordia (Bellcore) Electromigration | 65°C, 85% 500 hrs Initial: 7.26E+9Ω Final : 2.51 E+10Ω Rf/Ri > 0.1 - Pass | GR-78-CORE |
| 9 | Compatibility Test | See list of recommended products above | GR-78-CORE |
| <i>VISCOSITY TESTING</i> | | | |
| No. | Item | Results | Test Method |
| 1 | T-Bar Spindle Test Method | 670 ± 10% kcps | J-STD-005 IPC TM 650 2.4.34 |
| <i>SOLDER PASTE TESTING</i> | | | |
| No. | Item | Results | Test Method |
| 1 | Tack Test | 31 g | J-STD-005 IPC TM 650 2.4.44 |
| 2 | Tack Test | 120 g | JIS Z 3284 Annex 9 |
| 3 | Solder Ball Test | Pass | J-STD-005 IPC TM 650 2.4.43 |
| 4 | Wetting Test | Pass | J-STD-005 IPC TM 650 2.4.45 |
| 5 | Paste Shelf Life | 4°C (39°F) = 6 months | AIM TM 125-11 |
| 6 | Solder Paste Slump Test | Pass | J-STD-005 IPC TM 650 2.4.35 |

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