

## Product Data Sheet

# NC-SMQ®57 No-Clean Solder Paste

### Features

- Low residue
- Exceptional wetting
- Accommodates low to high humidity conditions

### Introduction

**NC-SMQ57** is a no-clean solder paste designed for demanding electronic assembly processes. It is a moderately low residue, air reflow solder paste with exceptional wetting capabilities. **NC-SMQ57** accommodates a broad range of environmental conditions, from low to high relative humidity.

### Alloys

Indium Corporation manufactures low-oxide spherical powder composed of Sn/Pb, Sn/Pb/Ag, and many other alloys covering a wide temperature range. Typical metal loads range from 85%-90% for standard alloy compositions. The actual metal % is application dependent and varies with alloy density. Solder powder is available in Type 1 thru 4 classifications per ANSI/J-STD-005 for printing and dispensing applications. Please call us for information on non-standard mesh sizes and alloys.

| Type | Pitch      | Mesh Size  | Solder Powder Diameter |             |
|------|------------|------------|------------------------|-------------|
|      |            |            | Microns                | Inches      |
| 1    | STD        | -100/+200  | 75-150                 | .0030-.0059 |
| 2    | STD        | -200/+325  | 45-75                  | .0018-.0030 |
| 3    | Fine       | -325/+500  | 25-45                  | .0010-.0018 |
| 4    | Ultra-Fine | -400/+635* | 20-38                  | .0008-.0015 |
| 5    | Ultra-Fine | -500/+635  | 20-25                  | .0008-.0010 |
| 6    | Ultra-Fine | -635       | <20                    | <.0008      |

\*-400/+500 also available

### Shelf Life, Recommended Storage and Use

The shelf life of **NC-SMQ57** is 6 months when stored at <5°C. Storage temperatures should not exceed 25°C. When storing solder paste contained in syringes and cartridges, they should be stored tip down.

Solder paste should be allowed to reach ambient working temperature prior to use. Actual time to reach thermal equilibrium will vary with container size. In order to maximize the opened-jar paste performance, the paste should be covered when not in use.

### Technical Support

Indium Corporation's internationally experienced engineers provide in-depth technical assistance to our customers. Thoroughly knowledgeable in all facets of Material Science as it applies to the electronics and semiconductor sectors, Technical Support Engineers provide expert advice in solder properties, alloy compatibility and selection of solder preforms, wire, ribbon and paste. Indium Corporation's Technical Support engineers provide Rapid Response to all technical inquiries.

### Material Safety Data Sheets

The MSDS for this product can be found online at <http://www.indium.com/techlibrary/msds.php>

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### BELLCORE AND J-STD TESTS & RESULTS

| Test                                     | Result  | Test                                                    | Result     |
|------------------------------------------|---------|---------------------------------------------------------|------------|
| <b>J-STD-004 (IPC-TM-650)</b>            |         | <b>J-STD-005 (IPC-TM-650)</b>                           |            |
| • Flux Type Classification               | L0      | • Typical Solder Paste Viscosity (Sn63, 90%, -325/+500) |            |
| • Flux Induced Corrosion (Copper Mirror) | Pass    | Brookfield (5 rpm)                                      | 900 kcps   |
| • Presence of Halide                     |         | Malcom (10 rpm)                                         | 1700 poise |
| Fluoride Spot Test                       | Pass    | • Typical Thixotropic Index:                            |            |
| Elemental Analysis (Br,C1,F)             | <0.035% | SSF (ICA Test)                                          | -0.58      |
| • Non-Volatile Content (Solids Content)  | 71%     | • Slump Test                                            | Pass       |
| • Post Reflow Flux Residue (ICA Test)    | 41%     | • Solder Ball Test                                      | Pass       |
| • Corrosion                              | Pass    | • Typical Tackiness                                     | 40g        |
| • SIR                                    | Pass    | • Wetting Test                                          | Pass       |
| • Bellcore Electromigration              | Pass    |                                                         |            |
| • Acid Value                             | 126     |                                                         |            |

All information is for reference only. Not to be used as incoming product specifications.

Form No. 97663 (A4) R7

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## NC-SMQ®57 No-Clean Solder Paste

### Printing

#### Stencil Material:

Stainless Steel, Brass, or Nickel Plated

#### Stencil Thickness:

|                       |                                  |
|-----------------------|----------------------------------|
| 0.050"/1.27mm pitch:  | 0.010"/0.254mm to 0.008"/0.203mm |
| 0.025"/0.635mm pitch: | 0.008"/0.203mm to 0.006"/0.152mm |
| 0.020"/0.508mm pitch: | 0.006"/0.152mm to 0.004"/0.102mm |
| 0.016"/0.406mm pitch: | 0.005"/0.127mm to 0.004"/0.102mm |
| 0.012"/0.305mm pitch: | 0.004"/0.102mm to 0.003"/0.076mm |

#### Squeegee:

80-90 Shore A Durometer Rubber or Stainless Steel Blade

#### Squeegee Speed:

1.0" (25.4 mm) to 2.0" (50.8 mm) per second for typical fine-pitch printing. Faster or slower speeds can be used depending on process requirements.

#### Squeegee Pressure:

0.018-0.027kg/mm of blade length

### Cleaning

**NC-SMQ57** is designed for no-clean applications; however, the flux residue can be removed if necessary by using a semi-aqueous system, saponified water, alcohols, and other CFC-free alternatives.

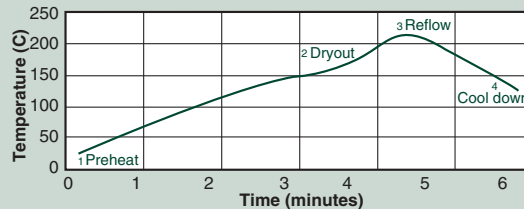
**Spray Pressure:** 30 psi (2 bar) minimum recommended.

**Stencil Cleaning:** This is best performed using isopropyl alcohol (IPA) as a solvent. Conventional cleaning solvents, saponification, and other CFC-free alternatives are also effective.

### Reflow

Convection, IR, Vapor Phase, Conduction, Laser, etc.

#### Recommended Profile:



This profile is for use with Sn63Pb37 & Sn62Pb36Ag2 alloys and will serve as a general guideline in establishing a reflow profile for your process. Adjustments will be necessary for use with other alloys. Various board geometries, densities, and oven types may require further profile adjustments.

The typical reflow profile encompasses four basic stages:

1. **Preheat:** 0.5°C to 1.0°C/second rate of rise
2. **Soak or Dryout:** 30 to 60 seconds
3. **Reflow:** Peak temperature should be 30°C to 40°C above the liquidus of the alloy for 30 to 60 seconds.
4. **Cool down:** <4°C/second

This product data sheet is provided for general information only. It is not intended, and shall not be construed, to warrant or guarantee the performance of the products described which are sold subject exclusively to written warranties and limitations thereon included in product packaging and invoices.

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