

PRODUCT DATA SHEET

NC-SMQ90

Solder Paste

Introduction

NC-SMQ90 is a halide-free, no-clean solder paste formulated to yield accurate, repeatable dispensing performance on both pneumatic and positive displacement dispensing equipment. It is a moderately low-residue, air-reflow product with exceptional wetting capabilities. **NC-SMQ90** meets or surpasses all ANSI/J-STD-004, -005 specifications and Bellcore test criteria.

Alloys

Indium Corporation manufactures low-oxide spherical powder composed of SnPb and SnAgCu in the industry standard Type 3 mesh size (J-STD-006). Other non-standard mesh sizes and alloys are available upon request. The weight ratio of the solder powder to solder paste is referred to as the metal load and is typically in the range of 84–86% for standard alloy compositions.

Standard Product Specifications

Alloy	Metal Load		Mesh Size	Particle Size
	Printing	Dispensing		
Sn63/Pb37 Sn62/Pb36/Ag2	–	85%	Type 3 -325/+500	24–45µm 0.001–0.0018"
SAC305 SAC387	–	84%	Type 3 -325/+500	24–45µm 0.001–0.0018"

Bellcore and J-STD Tests and Results

Test	Result	Test	Result
J-STD-004 (IPC-TM-650)		J-STD-005 (IPC-TM-650)	
Flux Type Classification	ROLO	Typical Solder Paste Viscosity (Sn63, 85%, Type 3) Brookfield (5rpm) Malcolm (10rpm)	450kcps 1,000 poise
Flux-Induced Corrosion (Copper Mirror)	Pass		
Presence of Halide: Fluoride Spot Test Elemental Analysis (Br, Cl, F)	Pass 0%		
Post-Reflow Flux Residue (ICA Test)	38%	Slump Test	Pass
Corrosion	Pass	Solder Ball Test	Pass
SIR	Pass	Wetting Test	Pass
Typical Acid Value	129		

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

Packaging

Standard packaging is 10 and 30cc Semco® syringes with a yellow (flatwall) or red (wiper) piston, or a thumb plunger. Other packaging options are available upon request.

Cleaning

NC-SMQ90 is designed for no-clean applications; however, the flux can be removed, if necessary, by using a commercially available flux residue remover.

Storage and Handling Procedures

Refrigerated storage will prolong the shelf life of solder paste by slowing down the flux/powder reaction. The shelf life of **NC-SMQ90** is 6 months when stored at <5°C. Solder paste packaged in syringes and cartridges should be stored with the tip down to prevent flux separation and piston backoff.

Solder paste should be allowed to reach ambient working temperature prior to use. Generally, paste should be removed from refrigeration at least 2 hours before use. Actual time to reach thermal equilibrium will vary with container size. Removing paste from storage 1 day before use is recommended. Jars and cartridges should be labeled with date and time of opening.

From One Engineer To Another®

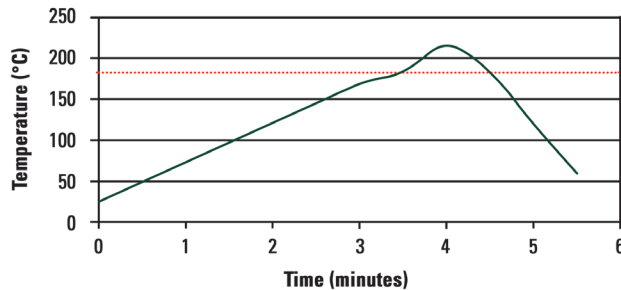


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Reflow

Recommended Profile:



This profile is designed for use with Sn63/Pb37 and Sn62/Pb36/Ag2 and can serve as a general guideline in establishing a reflow profile for use with other alloys. Adjustments to this profile may be necessary based on specific process requirements. Please contact Indium Corporation's Technical Support if you require a reflow profile for a different alloy.

Heating Stage:

A linear ramp rate of 0.5–1°C/second allows gradual evaporation of volatile flux constituents and prevents defects such as solder balling/beading and bridging as a result of hot slump. It also prevents unnecessary depletion of fluxing capacity when using higher temperature alloys.

Liquidus Stage:

A peak temperature of 25–45°C (215°C shown) above the melting point of the solder alloy is needed to form a quality solder joint and achieve acceptable wetting due to the formation of an intermetallic layer. If the peak temperature is excessive, or the time above liquidus greater than the recommended 45–90 seconds, flux charring, excessive intermetallic formation, and damage to the board and components can occur.

Cooling Stage:

A rapid cool down of <math><4^{\circ}\text{C}/\text{second}</math> is desired to produce a fine-grain structure in the solder joint. Slow cooling will form a large-grain structure, which will typically exhibit poor fatigue resistance. If excessive cooling (>4°C/second) is used, both the components and the solder joint may be stressed due to a high CTE mismatch.

Technical Support

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

Safety Data Sheets

The SDS for this product can be found online at <http://www.indium.com/sds>

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. All Indium Corporation's products and solutions are designed to be commercially available unless specifically stated otherwise.

All of Indium Corporation's solder paste and preform manufacturing facilities are IATF 16949:2016 certified. Indium Corporation is an ISO 9001:2015 registered company.

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