

PRODUCT DATA SHEET

Indium8.9HF SnPb Solder Paste

Features

- Halogen-free per EN14582 test method
- High transfer efficiency through small apertures ($\leq 0.66AR$)
- Eliminates hot and cold slump
- High oxidation resistance
- Wets well to oxidized BGA and pad surfaces to eliminate head-in-pillow defects
- Clear, probe testable flux residue
- SnPb and Pb-free compatible
- Ideal for mixed-alloy SnPb and Pb-free processes

Alloys

Indium Corporation manufactures low-oxide spherical powder composed of a variety of alloys that cover a broad range of melting temperatures. This document covers Type 4 and Type 3 powder as standard offerings with Sn62 and Sn63 alloys. The metal percent is the weight percent of the solder powder in the solder paste and is dependent upon the powder type and application. Standard product offerings are detailed in the following table.

Standard Product Specifications

Alloy	Metal Load
Sn63/Pb37	89.5% (Type 4)
Sn63/Pb37	90% (Type 3)

Compatible Products

- Rework Flux: TACFlux®089HF, TACFlux®020B
- Cored Wire: CW-807
- Wave Flux: WF-9945, WF-9958

Note: Other products may be applicable. Please consult one of Indium Corporation's Technical Support Engineers.

Packaging

Indium8.9HF is currently available in 500g jars or 600g cartridges. Packaging for enclosed print head systems is also readily available. Alternate packaging options may be available upon request.

Storage and Handling Procedures

Refrigerated storage will prolong the shelf life of solder paste. Solder paste packaged in cartridges should be stored tip down.

Storage Conditions (unopened containers)	Shelf Life
<10°C	6 months

Solder paste should be allowed to reach ambient working temperature prior to use. Generally, paste should be removed from refrigeration at least two hours before use. Actual time to reach thermal equilibrium will vary with container size. Paste temperature should be verified before use. Jars and cartridges should be labeled with date and time of opening.

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Industry Standard Test Results and Classification

Flux Classification	ROLO	Typical Solder Paste Viscosity for SAC305 T4.5 (Poise)	1700
Based on the testing required by the current revision of IPC J-standard-004.		Conforms with all requirements from the current revision of IPC J-standard-005.	
Halogen-free and Low-Halogen per J-004, IEC and JEDEC requirements	<<1000ppm Cl <<1000-ppm Br		

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

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Printing

Stencil Design:

Electroformed and laser cut/electropolished stencils produce the best printing characteristics among stencil types. Stencil aperture design is a crucial step in optimizing the print process. The following are a few general recommendations:

- Discrete components – A 10–20% reduction of stencil aperture has significantly reduced or eliminated the occurrence of mid-chip solder beads. The “home plate” design is a common method for achieving this reduction.
- Fine pitch components – A surface area reduction is recommended for apertures of 20 mil pitch and finer. This reduction will help minimize solder balling and bridging that can lead to electrical shorts. The amount of reduction necessary is process dependent (5–15% is common).
- For optimum transfer efficiency and release of the solder paste from the stencil apertures, industry standard aperture and aspect ratios should be adhered to.

Printer Operation	
Solder Paste Bead Size	~20-25mm in diameter
Print Speed	25-100mm/second
Squeegee Pressure	0.018-0.027Kg/mm of blade length
Underside Stencil Wipe	Start at once per every 5 prints and decrease frequency until optimum value is reached
Squeegee Type/Angle	Metal with appropriate length / ~60 degrees
Separation Speed	5-20mm/second or per equipment manufacturer's specifications
Solder Paste Stencil Life	Up to 12 hours (at 30-60% RH and 22-28°C)

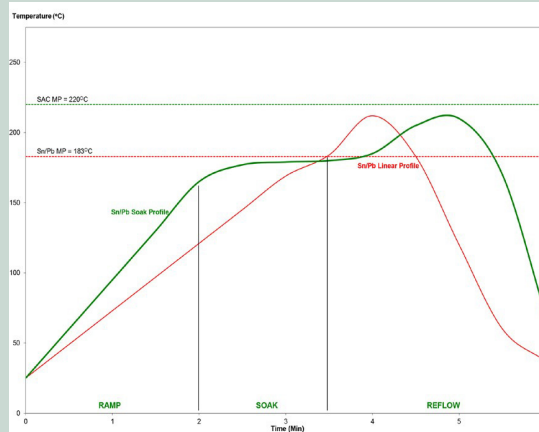
Cleaning

Indium8.9HF is designed for no-clean applications, however the flux can be removed if necessary by using a commercially available flux residue remover.

Stencil Cleaning is best performed using isopropyl alcohol (IPA) as a solvent. Most commercially available stencil cleaners work well.

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. Start with the linear profile, then move to the optional soak profile if needed.

Note: All parameters are for reference only. Modifications may be required to fit process and design.

Reflow Profile Details	SnPb Parameters		Comments
	Recommended	Acceptable	
Ramp Profile (Average Ambient to Peak) - Not the Same as Maximum Rising Slope	0.5–1°C/Second	0.5–2.5°C/Second	To minimize solder balling, beading, hot slump
Soak Zone Profile (Optional)	30–90 Seconds	30–120 Seconds	May minimize BGA/CSP voiding
	140–150°C	130–170°C	
Time Above Liquidus (TAL)	45–60 Seconds	30–100 Seconds	Needed for good wetting/reliable solder joint
Peak Temperature	198–213°C	195–233°C	As measured with thermocouple
Cooling Ramp Rate	2–6°C/Second	0.5–6°C/Second	Rapid cooling promotes fine grain structure
Reflow Atmosphere	Air or N ₂		N ₂ can aid with material performance on small components.

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