PRODUCT DATA SHEET

Indium8.9HF SnPb

Solder Paste

Features

- Halogen-free per EN14582 test method
- High transfer efficiency through small apertures (≤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 (% by weight)	
Name	Composition	T3	T4
Sn63	Sn63/Pb37	90%	89.5%
Indalloy® 100	Sn62.6/Pb37/Ag0.4	90%	89.5%

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 2 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.

Industry Standard Test Results and Classification			
Flux Classification	ROL0	Typical Solder Paste Viscosity for SAC305 T4.5 (Poise)	1,700
Based on the testing required by the current revision of IPC J-Standard-004.		Conforms with all requirements from the current revision of PIC J-Standard-005.	
Halogen-free and low-halogen per J-004, IEC, and JEDEC requirements.	<<1,000ppm Cl <<1,000ppm Br		

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

From One Engineer To Another®

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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 20mil 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/sec
Squeegee Pressure	0.018–0.027kg/mm of blade length
Underside Stencil Wipe	Start at once per every five prints and decrease frequency until optimum value is reached.
Squeegee Type/Angle	Metal with appropriate length/~60°
Separation Speed	5–20mm/sec or per equipment manufacturer's specifications
Solder Paste Stencil Life	Up to 12 hours (at 30–60% RH and 22–28°C)

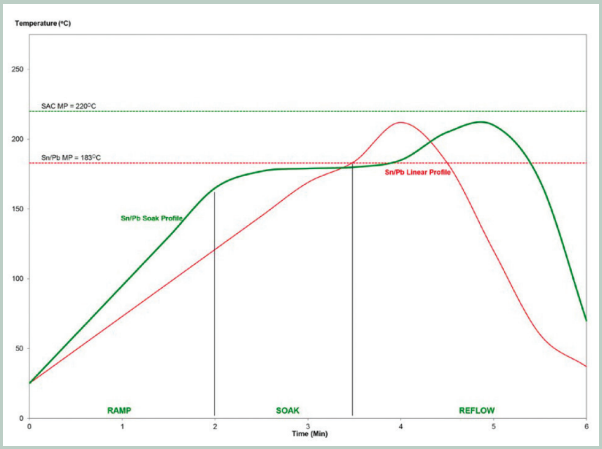
Cleaning

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.

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/sec	0.5–2.5°C/sec	To minimize solder balling, beading, hot slump
Soak Zone Profile (optional)	30–90sec	30–120sec	May minimize BGA/CSP voiding
	140–150°C	130–170°C	
Time Above Liquidus (TAL)	45–60sec	30–100sec	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/sec	0.5–6°C/sec	Rapid cooling promotes fine grain structure
Reflow Atmosphere	Air or N_2		N_2 can aid with material performance on small components

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

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