

PRODUCT DATA SHEET

PoP Paste Indium9.88-HF

Package-on-Package

Introduction

PoP Paste Indium9.88-HF is a no-clean solder paste designed for use in package-on-package (0.4mm and larger) applications. **PoP Paste Indium9.88-HF** has a rheology designed to provide a long-lasting dipping process.

Features

- Halogen-free - no intentionally added halogens
- Eliminates defects due to package-warping
- Air reflow
- Rheology optimized for both dipping and package-retention
- Designed for use with both SAC305 and Sn63/Pb37 alloys
- Excellent solderability
- Long pot life
- Suitable for use down to 0.4mm pitch

Physical Properties

Properties	Value	Test Method
Flux Type Classification	ROLO	J-STD-004 (IPC-TM-650: 2.3.32 and 2.3.33)
Typical Viscosity	240kcps	ANSI/IPC-TM650
SIR (Ohms, after reflow)	Pass (>10 ⁸ after 7 days @ 85 °C & 85% RH)	ANSI/IPC-TM650
Typical Tack Strength	61g	ANSI/IPC-TM650
Shelf Life	6 months from DOM	Viscosity Change/ Microscope Examination
Working Life	8 hours at room temperature	Internal Test Method

Table 2. Alloy properties.

Indalloy® Number	Alloy Composition	Melting Point		Melting Point		Density	Tensile Strength	Young's Modulus	Elongation
		Liquidus	Solidus	Liquidus	Solidus				
		°C	°C	°F	°F				
106	63Sn/37Pb	183	183	361	361	8.40	7500	4.35	37
256	96.5Sn/3.0Ag/0.5Cu	220	217	428	423	7.40	7200	2.41	19.3

Alloys

PoP Paste Indium9.88-HF is available in two alloy configurations: tin-lead, eutectic (63Sn/37Pb), and SAC305 (96.5Sn/3.0Ag/0.5Cu). Table 2 shows the alloy properties.

Application

Solder paste is applied to the spheres in a doctor-bladed dipping process (Figure 1).

- Typical package-on-package applications only need dipping to 25-45% of the sphere height.

Care must be taken to avoid contaminating the bottom of the package itself with PoP paste, as this may cause bridging defects.

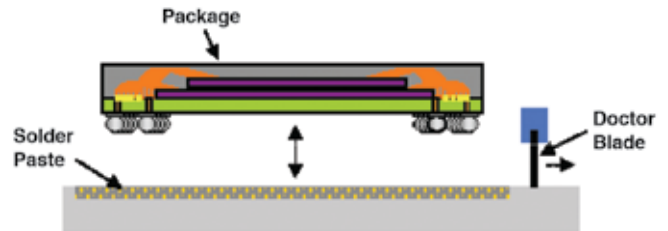


Figure 1. Dipping process.

Consistent solder paste volumes are reproducibly attained from dipping 0.4mm or higher pitch packages in **PoP Paste Indium9.88-HF**. Figure 2 is an example of a PoP process where a 0.5mm pitch BGA package has been dipped in 8mil thickness (~50% of ball height).

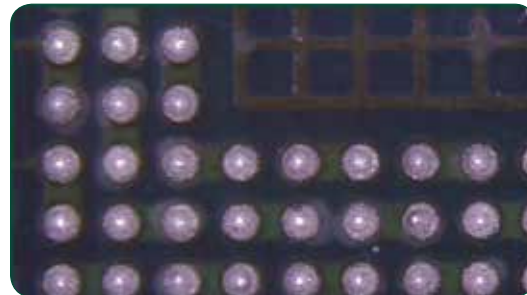


Figure 2. Bottom view of 0.5mm pitch BGA package after dipping in **PoP Paste Indium9.88-HF**.

- Typical package-on-package applications only need dipping to 25-45% of the sphere height.

From One Engineer To Another®



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Packaging

PoP Paste Indium9.88-HF is available in airless (bubble-free) packaging. For automated dispense applications:

- 100g (30cc) syringes with an air-pressure plunger
- Other packaging may be available to meet specific requirements. Consult with Indium Corporation Sales or Technical Service staff for details.

Cleaning

Although designed as a no-clean material, the residue from **PoP Paste Indium9.88-HF** may be cleaned using appropriate cleaning solutions. Please consult with Indium Corporation Technical Service personnel for details.

Storage & Handling

PoP Paste Indium9.88-HF syringes and cartridges should be stored tip down at <10°C for a maximum of six months. Storage temperatures should not exceed 30°C for more than four days. **PoP Paste Indium9.88-HF** should be allowed to stand for at least four hours at room temperature before use.

Once removed from cold storage, the solder paste in a sealed syringe may remain at room temperature for up to seven days before and during use. However, once outside the syringe, its working life is estimated to be eight hours, and may be less under high temperature (>25°C) and humidity (>70%RH) conditions.

The paste should not be subjected to multiple cold/heat cycles or viscosity changes and/or flux separation may occur.

Reflow

Recommended Profile:

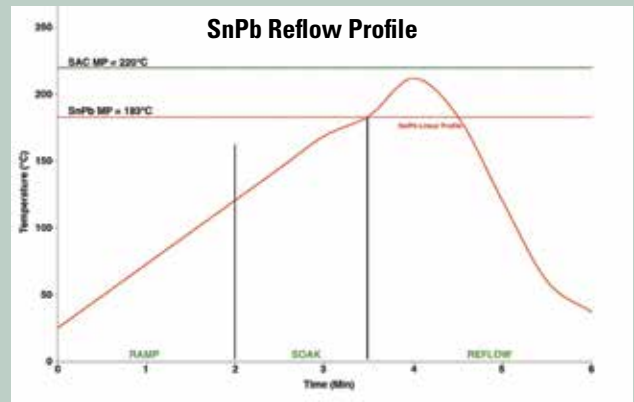
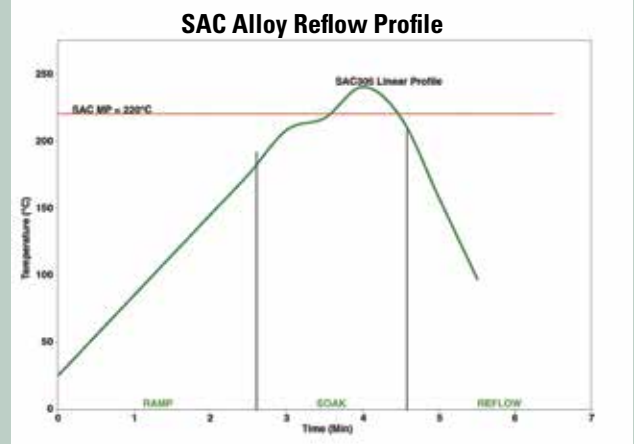


Table 3.

Profile Details	Parameters			Comments
	SAC305	SAC305/Sn63/Sn62	Sn63/Sn62	
Ramp Profile (Average Ambient to Peak) - Not the Same as Maximum Rising Slope	0.5–1°C/Second Recommended 0.5–2.5°C/Second Acceptable			To minimize solder balling, beading, hot slump
Soak Zone Profile	160–180°C/Recommended 150–200°C/Acceptable	30–90 Seconds Recommended 30–120 Seconds Acceptable	140–150°C/Recommended 130–170°C/Acceptable	May minimize BGA/CSP voiding
Time Above Liquidus (TAL)	235–250°C/Recommended 232–270°C/Acceptable	45–60 Seconds Recommended 30–100 Seconds Acceptable	198–213°C/Recommended 195–233°C/Acceptable	Needed for good wetting/ reliable solder joint As measured with thermocouple
Peak Temperature	260°C	—	230°C	
Cooling Ramp Rate	2–6°C/Second Recommended 0.5–6°C/Second Acceptable			Rapid cooling promotes fine grain structure
Reflow Atmosphere	Air or N ₂			N ₂ typically preferred

Safety Data Sheet

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

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