

Product Data Sheet

# Indium9.32 Die Attach Solder Paste

## Features

- Ultra-Low Voiding with Minimal Profiling
- Halide-Free
- Vacuum Packed, Bubble-Free
- Reliable Miss-Free, Clog-Free Dispensing
- Consistent Dispensing Deposit Level
- Superior Wetting
- Compatible with All Common Metal Finishes
- Very Low Residue

## Introduction

**Indium9.32** is a halide-free, no-clean solder paste formulated to leave a completely benign, invisible residue of 0.4% of paste or <5% of flux vehicle. It is designed for reflow in forming gas (4% H<sub>2</sub>/N<sub>2</sub>). This product has superior wetting capabilities compared to most low residue formulations, offers troublefree probe testing and a “no-residue” appearance. **Indium9.32** meets or surpasses all ANSI/J-STD-004, -005 specifications and Bellcore Electromigration test criteria.

## Alloys

Indium Corporation manufactures low oxide spherical powder composed of Sn/Pb, Sb/Sn/Pb and Sn/Pb/Ag in a standard Type 3 mesh size. Other non-standard mesh sizes are available upon request. The weight ratio of the solder powder to the solder paste is referred to as the metal load and is typically 88% for standard alloy compositions.

## Standard Product Specifications

Alloy	Metal Content	Mesh Size	Particle Size	Recommended Needle Size*
Sn10/Pb88/Ag2 Sn5/Pb92.5/Ag2.5 Sn5/Pb95 Sn5/Pb85/Sb10	88%	Type 3	25 to 45 microns (Type 3)	20 gauge*

Note: (1): 20 gauge needle - 0.58 mm or 0.023 in.



## Packaging

Standard packaging for dispensing applications includes 25g fill and 40g fill 10cc, and 100g fill 30cc EFD syringes (Semco syringes also available). Other packaging options may be available upon request.

## 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> <ul style="list-style-type: none"> <li>• Flux Type Classification</li> <li>• Presence of Halide Fluoride Spot Test</li> <li>• Elemental Analysis</li> <li>• Post Reflow Flux Residue (ICA Test)</li> <li>• Corrosion</li> <li>• SIR (Post Clean)</li> <li>• Acid Value (Typical)</li> </ul>	ORLO  Pass Halide-Free  0.4% of solder paste Pass Pass 31.5	<b>J-STD-005 (IPC-TM-650)</b> <ul style="list-style-type: none"> <li>• Typical Solder Paste Viscosity (Pb92.5/Sn5/Ag2.5, Type 3, 88%)</li> <li>• Brookfield (TF 5 rpm)</li> <li>• Brookfield (R7 10 rpm)</li> <li>• Slump Test</li> <li>• Solder Ball Test</li> <li>• Wetting Test</li> <li>• Standard Metal Load</li> </ul>	230 kcps 170 kcps Pass Pass Pass 88%

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

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## Storage and Handling Procedures

Refrigerated storage will prolong the shelf life of solder paste. The shelf life of **Indium9.32** is 6 months at storage temperatures of -20° to +5°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. No heating should be employed.

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. Cartridges or syringes should be labeled with date and time of opening.

## Dispensing

**Indium9.32** is formulated to be applied using automated high speed, high reliability, single point or multi-point dispensing equipment, but will also function in hand held applications. Highly accurate volumes can be dispensed using either pneumatic or positive displacement devices. Optimal dispensing performance is dependent on storage conditions, equipment type and set up.

## Atmosphere

**Indium9.32** is designed to be reflowed in forming gas (4% H<sub>2</sub>/N<sub>2</sub>).

## Cleaning or Residue Removal

The post reflow residue of **Indium9.32** can be removed with commercially available solvents. The vehicle is capable of high temperature alloy reflow without charring but in case of overheating, any charred residue can be removed with the aid of ultrasonic or mechanical agitation.

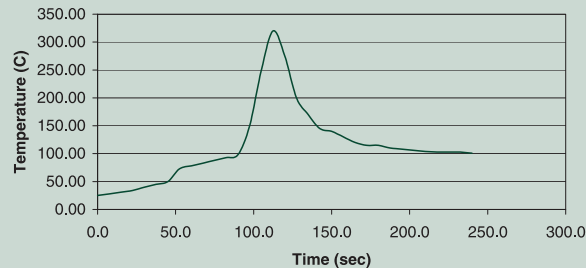
## Quality

The Indium Corporation of America is dedicated to producing the highest quality die attach solder paste.

**Indium9.32** is vacuum packaged by highly trained operators under controlled conditions in unique, specially designed equipment to minimize air bubbles in every syringe and cartridge. Rheology and reflow characteristics as well as metal content and identity are carefully confirmed for each lot. Also, evaluations are performed on each lot to verify dispensing performance.

## Reflow

### Recommended Profile:



The typical profile above is designed for use with Sn10/Pb88/Ag2 or Sn5/Pb92.5/Ag2.5 alloy in a nitrogen atmosphere (100 ppm oxygen or less). It can serve as a general guideline for establishing a profile for your process and should be regarded as a typical example. Adjustments to this profile may be necessary based on assembly size, thermal density, and other factors. Use of other alloys with lower or higher liquidus temperatures will also require changes.

### Heating and Liquidus Stage:

Establish a profile which provides a rapid heating of the assembly to the solder's liquidus temperature. Ramp rates of 1 to 4°C/sec are recommended, but the nature of the assembly should govern the actual rate. To achieve acceptable wetting, and to minimize voiding and intermetallics formation, the profile must include a period of 15 to 30 seconds above the alloy's liquidus, and a peak temperature of 10 to 20°C above liquidus. However, excessive time above liquidus (and/or excessively high temperatures above liquidus) can produce negative consequences including: charred residue, difficult residue removal, excessive intermetallics formation, voiding, and more.

### Cooling Stage:

Cooling after reflow should be as fast as practical. This is desired to form a fine-grained metallic structure. Slow cooling will result in a coarse, large grain structure that will exhibit poor thermal cycling and fatigue resistance.

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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