Product Data Sheet

Indium9.72 Die Attach Solder Paste

Features

- Ultra-low voiding with minimal profiling
- Vacuum packed, bubble-free
- Reliable miss-free, clog-free dispensing
- Consistent dispensing deposit level
- Superior wetting
- Compatible with all common metal finishes
- Excellent cleanability

Introduction

Indium9.72 is a dispensing solder paste designed and formulated specifically for die attach processes. Considerable care has been taken to produce a product that gives reliable dispensing of a consistent size deposit in automated dispensing equipment.

Normally used with high temperature alloys, **Indium9.72** is designed for reflow in a forming gas or nitrogen atmosphere. This product has superior wetting capabilities and offers low voiding with minimal attention to profiling.

Alloys

Indium Corporation manufactures low oxide spherical powder composed of SnPb, SbSnPb and SnPbAg 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[1]
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.

Technical Support

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

Material Safety Data Sheet

The MSDS for this product can be found online at http://www.indium.com/msds

OVER→

BELLCORE AND J-STD TESTS & RESULTS

Test	Result
J-STD-004 (IPC-TM-650)	
• Flux Type Classification	ROL1
• Presence of Halide Fluoride Spot Test	Pass
• Elemental Analysis	<0.5% of equivalent of Cl of flux
• Post Reflow Flux Residue (ICA Test)	<5% of solder paste
• Corrosion	Pass
• SIR (Post Clean)	Pass, 10^9 Ohms
• Acid Value (Typical)	60

Test	Result
J-STD-005 (IPC-TM-650)	
• Typical Solder Paste Viscosity (Pb88/Sn10/Ag2, Type 3, 88%) and (Pb92.5/Sn5/Ag2.5, Type 3, 88%)	
Brookfield (TF 5 RPM)	300 kcps
Brookfield (R7 10 rpm)	175 kcps
• Slump Test	Pass
• Solder Ball Test	Pass
• Wetting Test	Pass
• Standard Metal Load	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 **Indium9.72** 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 4 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

Indium9.72 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

Indium9.72 is designed for use in a forming gas or nitrogen (100 ppm oxygen or less) atmosphere.

Cleaning or Residue Removal

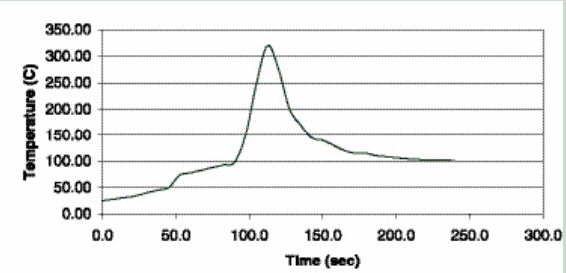
The post reflow residue of **Indium9.72** can be removed with commercially available solvents such as Kyzen Ionox FCR or Zestron CE at 60 to 65°C. The vehicle is capable of high temperature alloy reflow without charring but in case of overheating, any charred residue can be removed with the aid of ultrasonic or mechanical agitation.

Quality

Indium Corporation is dedicated to producing the highest quality die attach solder paste. **Indium9.72** 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 forming gas or 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.

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