PRODUCT DATA SHEET

Indium9.32 Low Alpha

Die-Attach Solder Paste

Introduction

Indium9.32 Low Alpha is a halogen-free solder paste formulated to leave a completely benign, invisible residue of 0.4% of paste or <5% of flux vehicle. This product has superior wetting capabilities compared to most low-residue formations, offers trouble-free probe testing, and a "no-residue" appearance. **Indium9.32 Low Alpha** meets or surpasses all ANSI/J-STD-004, -005 specifications, and Bellcore electromigration test criteria.

Features

- Ultra-low voiding with small die (<10 x 10mm)
- Halogen-free
- Airless (bubble-free) packaging
- Reliable, miss-free, clog-free dispensing
- Consistent dispensing deposit size
- Excellent wetting
- Compatible with all common metal finishes
- Ultra-low residue
- Paste alpha emissivity <0.01 counts/hour/cm^2

Standard Product Specifications

Alloy	Metal Content	Mesh Size	Particle Size	Recommended Needle Size[1]
Pb92.5/Sn5/Ag2.5 Pb95/Sn5	88%	Type 3	25–45 microns (Type 3)	20 gauge

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

Packaging

Standard packaging for dispensing applications includes 25g and 40g filled 10cc syringes, and 100g filled 30cc syringes. Other packaging options may be available upon request.

Safety Data Sheets

Please refer to the SDS document within the product shipment, or contact our local team to receive a copy.

Alloys

Indium Corporation manufactures low oxide, high-Pb, low alpha spherical powder 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 dispensing and up to 92% for printing.

Bellcore and J-STD Tests and Results

Test	Result
Elemental Analysis	Halogen-free
Post-Reflow Flux Residue (ICA Test)	0.4% of solder paste
Acid Value (Typical)	31

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

Test	Result
J-STD-005 (IPC-TM-650)	
Typical Solder Paste Viscosity (Pb92.5/Sn5/Ag2.5, Type 3, 88%) Malcolm (10rpm after 5min)	420 poise
Solder Ball Test	Pass
Wetting Test	Pass
Standard Metal Load (dispense)	88.0% (Type 3)

From One Engineer To Another®

INDIUM CORPORATION®

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Storage and Handling Procedures

Refrigerated storage will prolong the shelf life of solder paste. The shelf life of **Indium9.32 Low Alpha** is 6 months at storage temperatures of -20°C–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 Low Alpha 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 upon storage conditions, equipment type, and set up.

Atmosphere

Indium9.32 Low Alpha is designed to be reflowed in a forming gas (4% H_2N_2) or nitrogen atmosphere (100ppm O_2).

Cleaning

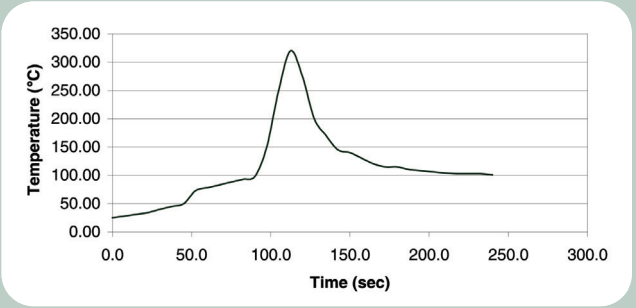
The post reflow residue of **Indium9.32 Low Alpha** can be removed with commercially available solvents. The vehicle is capable of high-temperature alloy reflow without charring, but in case of overheating, any charred residue can be removed with the aid of ultrasonic or mechanical agitation.

Quality

Indium Corporation is dedicated to producing the highest quality die-attach solder paste. **Indium9.32 Low Alpha** is packaged 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 alloys containing greater than 84% lead (Pb) in a forming gas or nitrogen atmosphere. 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 1–4°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 15–30 seconds above the alloy's liquidus, and a peak temperature of 10–20°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.

All of Indium Corporation's solder paste and preform manufacturing facilities are IATF 16949:2016 certified.
Indium Corporation is an ISO 9001:2015 registered company.

Contact our engineers: askus@indium.com
Learn more: www.indium.com
ASIA +65 6268 8678 • CHINA +86 (0) 512 628 34900 • EUROPE +44 (0) 1908 580400 • USA +1 315 853 4900