PRODUCT DATA SHEET

Indium6.3

Water-Soluble Solder Paste

Features

- Excellent wetting and solder joint appearance
- Exceptional printing and response-to-pause
- Wide reflow profile window
- Outstanding slump resistance
- Low-voiding
- Halogen-free

Alloys

Indium Corporation manufactures low-oxide spherical powder composed of eutectic Sn/Pb and Sn/Pb/Ag in the industry standard Type 3 mesh size (J-STD-006). Other non-standard mesh sizes are available upon request. The weight ratio of the flux/vehicle to the solder powder is referred to as the metal load and is typically in the range of 80–92% for standard alloy compositions.

Standard Product Specifications

Alloy	Metal Load		Particle Size
Sn63/Pb37	Printing	Dispensing	24–45µm
Sn62/Pb36/Ag2	89.5% (Type 3)	80–86% (Type 3)	0.001–0.0018"

Packaging

Standard packaging for stencil printing applications includes wide-mouth 500g jars and 700g cartridges. For dispensing applications, 10 and 30cc syringes are standard. Other packaging options may be available upon request.

Storage and Handling Procedures

Refrigerated storage will prolong the shelf life of solder paste. The shelf life of **Indium6.3** is 4 months when stored at <10°C. When storing solder paste contained in syringes and cartridges, the packages should be stored with tip down.

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.

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 preforms, wire, ribbon, and paste. Indium Corporation's Technical Support Engineers provide rapid response to all technical inquiries.

Safety Data Sheets

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

Placement

The high tack value of **Indium6.3** assures consistent component holding power. It allows high-speed component placement operation, including use of tall components. Tack remains adequate for over 24 hours over a wide humidity range.

Bellcore and J-STD Tests and Results

Test	Result	Test	Result
J-STD-004 (IPC-TM-650)		**J-STD-005 (IPC-TM-650)**	
Flux Type Classification	ORH0	Typical Solder Paste Viscosity (Sn63, 89.5%, Type 3) Malcolm (10rpm)	1,700 poise
Halide Content (F, Cl, Br)	0.0%	Typical Tackiness	40g*
SIR	Pass	Slump Test	Pass
Wetting Test	Pass	Solder Ball Test	Pass

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

**Pending statistical validation*

From One Engineer To Another®

INDIUM CORPORATION®

PRODUCT DATA SHEET

Indium6.3 Water-Soluble Solder Paste

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:

The following are general recommendations for stencil printer optimization for **Indium6.3**. Adjustments may be necessary based on specific process requirements:

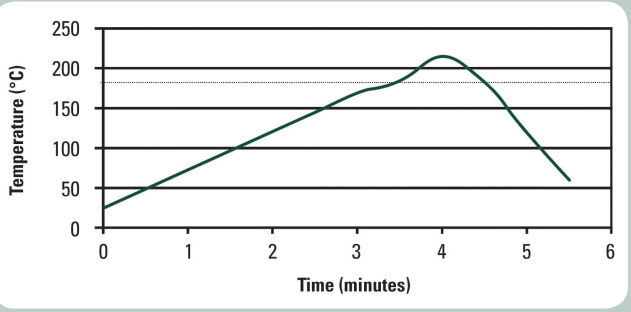
Recommended Printer Operation	
Solder Paste Bead Size	20–25mm in diameter
Print Speed	25–150mm/second
Squeegee Pressure	0.018–0.027kg/mm of blade length
Underside Stencil Wipe	Once every 10–25 prints or as necessary (dry wipe recommended)
Solder Paste Stencil Life	>8 hours @ 20 to at least 70% RH and 22–28°C

Wetting

Indium6.3 exhibits excellent wetting on a wide variety of surface finishes, such as immersion tin, immersion silver, nickel/gold, palladium, alloy 42, HASL, and OSP, under both air and nitrogen reflow atmosphere. The solder joints yielded are very shiny and smooth, including those of ultrafine-pitch components. **Indium6.3** has ultra-low voiding performance. Minimal voiding can be achieved with optimal process conditions.

Reflow

Recommended Profile:



The profile shown here is designed for **Indium6.3** with Sn63/Pb37 and Sn62/Pb36/Ag2 under both air and nitrogen reflow atmosphere. It serves as a general guideline in establishing a reflow profile for these alloys.

Cleaning

Residue Cleaning: **Indium6.3** flux residue is cleanable up to at least 72 hours after reflow and is best cleaned using DI water with a spray pressure of at least 60psi and a temperature of at least 55°C. These parameters are a function of board complexity and cleaner efficiency.

Stencil Cleaning: This is best performed using an automated stencil cleaning system for both stencil and misprint cleaning to prevent extraneous solder particles. Most commercially available stencil cleaners and isopropyl alcohol (IPA) work well.

Heating Stage:

A linear ramp rate of 0.5–2.0°C/second allows gradual evaporation of volatile flux constituents and helps minimize defects such as solder balling and/or beading and bridging resulting from hot slump. It also prevents unnecessary depletion of fluxing capacity when a high peak temperature and extended time above liquidus is used.

Liquidus Stage:

A peak temperature of 25–45°C (215°C shown) above the melting point of the solder alloy is needed to form a quality solder joint and achieve acceptable wetting due to the formation of an intermetallic layer. If the peak temperature is excessive, or the time above liquidus greater than the recommended 45–90 seconds, flux charring, excessive intermetallic formation and damage to the board and components can occur.

Cooling Stage:

A rapid cool down is desired to form a fine-grain structure. Slow cooling will form a large grain structure, which typically exhibits poor fatigue resistance. The acceptable cooling range is 0.5–6.0°C/second (2.0–6.0°C/second is ideal).

Contact our engineers today: 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

ISO 9001 REGISTERED

INDIUM CORPORATION®