PRODUCT DATA SHEET

Indium6.2

Water-Soluble Solder Paste

Features

- Exceptional printing
- Unprecedented stencil life
- Wide humidity tolerance
- Extraordinary tack time and strength
- Wide reflow profile window
- Excellent wetting capability
- Superior fine-pitch soldering ability
- Ultra-low voiding
- Halogen-free

Alloys

Indium Corporation manufactures low oxide spherical powder composed of eutectic SnPb and SnPbAg 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	25–45µ
Sn62/Pb36/Ag2	89.5%	80–86%	0.001–0.0018"

Packaging

Standard packaging for stencil printing applications includes wide-mouth 500g jars and 700g cartridges. For dispensing applications, 10cc 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 **Indium6.2** is 4 months when stored at -20° to +5°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.

Safety Data Sheets

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

Placement

The high tack value of **Indium6.2** 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
J-STD-004 (IPC-TM-650)	
Flux Type Classification	ORM0
Halide Tests Elemental Analysis (Br, Cl, F)	0%
SIR	Pass
Bellcore Electromigration	Pass

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 (Sn63, 89.5%, Type 3) Malcolm (10rpm)	2,500 poise
Slump Test	Pass
Solder Ball Test	Pass
Typical Tackiness	40g
Wetting Test	Pass

From One Engineer To Another®

INDIUM® CORPORATION®

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Indium6.2 Water-Soluble Solder Paste

Printing

Stencil Design:

The sharp, brick-shaped print definition of **Indium6.2** enables the process of fine-pitch applications. The unprecedented stencil life of this product virtually eliminates waste of solder paste. Furthermore, the outstanding humidity tolerance of this product allows consistent printing performance from 20% to greater than 70% R.H., even after 16 hours idle time. After 48 hours exposure at 70% R.H., no slump can be detected, thus assuring satisfactory performance for fine-pitch applications under a wide range of humidity.

Printer Operation:

The following are general recommendations for stencil printer optimization for **Indium6.2**. Adjustments may be necessary based on specific process requirements:

- Solder Paste Bead Size: 20–25mm diameter
- Print Speed: 25–150mm/sec
- 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 at 20 to at least 70% R.H. and 22-28°C

Wetting

Indium6.2 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 atmospheres. The solder joints yielded are very shiny and smooth, including those of ultrafine-pitch components. **Indium6.2** has ultra-low voiding performance. With optimal process conditions, void-free solder joints can be achieved, including joints of BGAs and CSPs.

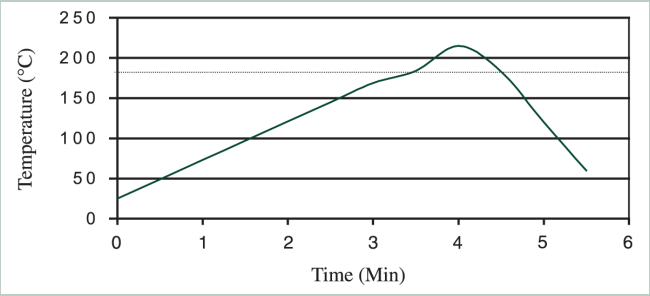
Cleaning

Residue Cleaning: Indium6.2 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.

Reflow

Recommended Profile:



The profile shown here is designed for **Indium6.2** with Sn63/Pb37 and Sn62/Pb36/Ag2 under both air and nitrogen reflow atmospheres. It serves as a general guideline in establishing a reflow profile for these alloys.

Heating Stage:

A linear ramp rate of approximately 0.5–1.5°C/second allows gradual evaporation of volatile flux constituents and prevents defects such as solder balling/beading and bridging as a result of hot slump. It also prevents unnecessary depletion of fluxing capacity when using higher temperature alloys.

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 is 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 of <4°C/second is desired to form a fine grain structure. Slow cooling will form a large grain structure, which typically exhibits poor fatigue resistance. If excessive cooling of >4°C/second is used, both the components and the solder joint can be stressed due to a high CTE mismatch.

In the event of significant uneven thermal mass distribution, a profile with up to 2 minutes soaking at 170°C may be used to reduce the temperature gradient and to minimize any possible tombstoning. Adjustments in time and temperature to these profiles may be necessary based on specific process requirements and the use of alloys with different melting temperatures. The wide humidity tolerance of **Indium6.2** allows consistent reflow performance from 20% to greater than 70% R.H.

Contact our engineers today: askus@indium.com
Learn more: www.indium.com

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