

## PRODUCT DATA SHEET

# Indalloy<sup>®</sup>182

## Gold-Tin Solder Paste

### Introduction

**Indalloy<sup>®</sup>182** (80Au/20Sn) has a melting point of 280°C (556°F). It can be made into solder paste form with various options to address specific applications. Gold-tin solder paste is generally used in applications that require a high-melting temperature (over 150°C), good thermal fatigue properties, and high-temperature strength. It is also used in applications that require a high tensile strength and high corrosive resistance, or in step soldering applications where the paste will not melt during a subsequent low-temperature reflow process. For these reasons, **Indalloy<sup>®</sup>182** solder paste is widely used in military, aerospace, high-power LED, and medical applications.

### Features

- High-temperature strength, high-melting point solder
- Corrosion resistant
- Compatible with other precious metals
- Superior thermal conductivity
- RoHS compliant

### Flux Vehicles for AuSn Solder Paste

- RMA-SMQ<sup>®</sup>51A
- RMA-SMQ<sup>®</sup>51AC
- NC-SMQ<sup>®</sup>51SC
- Indium3.2 Water-Soluble Solder Paste

Heat stabilized flux vehicles for **Indalloy<sup>®</sup>182** are available in both water-wash, no-clean, and RMA formulations according to the desired method of application and end use of customer. Product data sheets for these fluxes can be found at <http://www.indium.com/sds>

### Particle Size

**Indalloy<sup>®</sup>182** is available in Types 2–7 powder as standard (see list below). Other particle sizes for fine-pitch applications are available upon request. Metal loadings vary from 91 to 94% according to intended application method and particle size. Please speak to an Indium Applications Engineer to determine the best product specification for your needs.

#### Powder Capabilities:

- Type 2 (-200/+325)
- Type 3 (-325/+500)
- Type 5 (-500/+635)
- Type 6 (-635)
- Type 6-SG
- Type 7-SG

**From One Engineer To Another<sup>®</sup>**



### Packaging

**Indalloy<sup>®</sup>182** solder paste is available in jars or syringes. Standard packaging for dispensing applications include 10cc and 30cc syringes. Other packaging options are available upon request.

### Storage and Handling Procedures

Solder paste should be stored refrigerated for maximum shelf life. The precise shelf life of **Indalloy<sup>®</sup>182** solder paste is dependent upon the flux vehicle used. Syringes or cartridges should be stored tip down to prevent excessive flux separation.

Solder paste should be allowed to reach ambient working temperature prior to use. Generally, paste should be removed from refrigeration at least 4 hours before use. Actual time to reach thermal equilibrium will vary with container size. Do not use heat to quicken this process. Paste temperature should be verified before use. Syringes or cartridges should be labeled with the date and time of first use.

### Dispensing

**Indalloy<sup>®</sup>182** solder paste is formulated for automated high-speed, high-reliability, or single- or multi-point dispensing equipment. It also functions well 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.

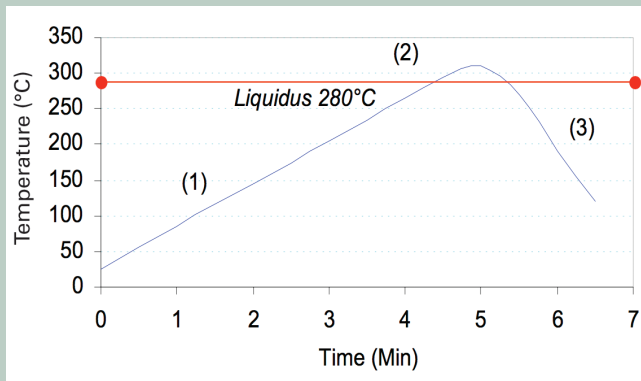


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# Indalloy®182 Gold-Tin Solder Paste

### Reflow

#### Recommended Profile:



This profile will serve as a general guideline in establishing a reflow profile when using a forced air convection oven. Other reflow technologies include, but are not limited to, infrared, hot plate, or induction. These technologies may require significant changes to accommodate different board geometries and densities. Even though the resin systems in the 51 and 3.2 series of vehicles are heat stabilized, the high peak temperatures required by this alloy can lead to caramelizing of residues. In these circumstances it is recommended that an inert atmosphere is used during reflow to simplify post solder flux removal.

#### Heating Stage (1):

A linear ramp rate of 1–2°C/second allows gradual evaporation of volatiles and helps minimize 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 (2):

A minimum peak temperature of 40–50°C above the melting point of the solder alloy is usually needed to achieve excellent wetting and spread to form a quality solder joint. The time above liquidus (TAL) should be 45–90 seconds. A peak temperature and TAL above these recommendations can result in excessive intermetallics formation that can decrease solder joint reliability and lead to increased difficulty in repair on precious metal surfaces. A ramp rate of 2.5–3.5°C/second from liquidus to peak temperature is recommended.

#### Cooling Stage (3):

This stage refers to the temperature range from peak temperature to approximately 50°C below the liquidus temperature where the cooling rate has a negligible effect. A rapid cool down of <math><4^{\circ}\text{C}/\text{second}</math> 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.

### Post Solder Cleaning

Post solder cleaning can be accomplished using a recognized flux removal system. The high process temperatures encountered when using **Indalloy®182** require that the selected cleaning system is robust as residues will be hard and baked on. Simple unblended chemicals such as isopropyl alcohol (IPA) or topical sprays are unlikely to be successful.

### Supporting Data

Full alloy specifications for **Indalloy®182** are available on the Eutectic Gold-Tin Solder product data sheet (Form No. 97800).

### 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.

### Safety Data Sheets

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

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. All Indium Corporation's products and solutions are designed to be commercially available unless specifically stated otherwise.

Contact our engineers today: [askus@indium.com](mailto:askus@indium.com)

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