PRODUCT DATA SHEET

AuSn Preforms

for Die-Attach Application

Introduction

Indalloy®182 (80Au/20Sn) has a melting point of 280°C (556°F). It can be made into solder preforms with various options to address specific applications. Gold-tin solder preforms are 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 high tensile strength and high corrosive resistance, or in step soldering applications where the preform will not melt during a subsequent low-temperature reflow process. This alloy is suitable for fluxless soldering as well. For these reasons, **Indalloy®182** solder preforms are an obvious choice for die bonding applications.

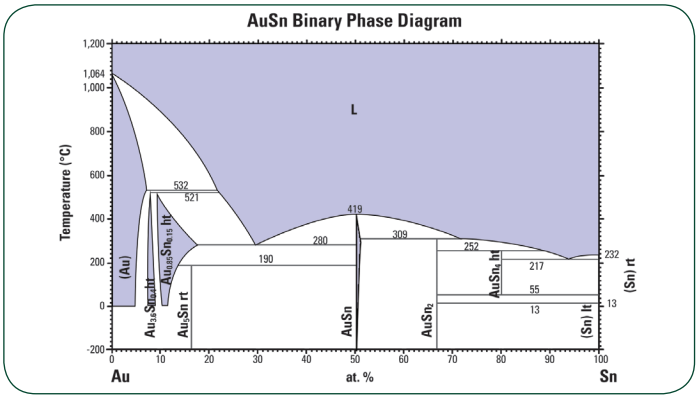
The inherent attributes of AuSn alloys are preferable for high power die. However, some attributes must be engineered into the preform in order to optimize performance: **Alloy Chemistry, Geometry,** and **Packaging**.

Features

- High-temperature strength, high-melting point solder
- Corrosion resistant
- Compatible with other precious metals

Alloy Chemistry

AuSn has a sensitive eutectic phase, which can be altered by Au-rich metallizations. This can result in areas that do not wet or flow properly. Adjustments can be made to accommodate these metallizations, resulting in joint characteristics optimized for high-reliability and performance.



Geometry

Guidelines for preform geometry can be derived from the die size. Generally, 90–100% of the die size will indicate the preform x and y dimensions. As for thickness, a thinner bondline is desirable, but not when reliability is sacrificed. The most critical attribute for die bonding application is flatness. Due to process constraints, fixturing can be difficult and time consuming. Allowing the die to float freely on the preform can be advantageous. If the preform is not flat, it can skew the die at reflow and fail. Processing is the key to preserving flatness.

Packaging

Packaging in waffle trays is the pack method for many die-attach applications. Another similar pack method that can be used is tape & reel. Both of these methods are used for automated assembly and offer excellent protection for transit and storage. Die-attach preforms can come in many sizes, so flexibility in design is important. We have an extensive library of trays and tape available.

Industry Partnerships

Without this, we would not be able to engineer preforms that cater to the die-attach process. Indium Corporation partners with die bonding equipment manufacturers to ensure our preforms are engineered to work with their equipment from assembly through reflow.

Conclusion

AuSn preforms are an excellent choice for die-attach to ensure good performance and reliability. The correct preform characteristics and packaging ensure repeatable success in a production process. Each application has its own set of parameters; designing a preform and its packaging to meet those requirements is essential.

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 Corporations'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

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Contact our engineers today: **askus@indium.com**
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