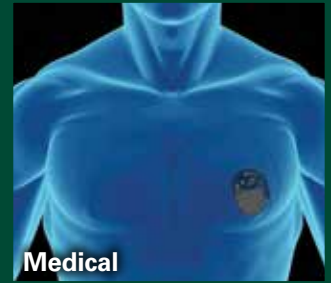


Advantages of Using Gold Solder



Advantages of Gold-Based Solder

- Highest tensile strength of any solder
- High melting point is compatible with subsequent reflow processes
- Pb-free and RoHS compliant
- Superior thermal conductivity
- Resistant to corrosion
- Superior thermal fatigue resistance
- Good joint strength
- Excellent wetting properties
- Resistant to oxidation

Critical Market Segments and Applications

- Implantable medical devices
- High-power semiconductor devices
- RF and microwave devices
- High-reliability military/aerospace applications
- Optoelectronics and laser applications
- Extreme conditions downhole drilling applications
- Specialty MEMS packaging applications

Typical uses:

- High-reliability joining and sealing
- Fluxless soldering processes
- Hermetic sealing
- Joining gold-plated surfaces



Gold Solder Forms: Preforms, Paste, Wire, Ribbon, Ingot, Shot, Sphere

Form No. 98946 R0

From One Engineer To Another®

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Advantages of Using Gold Solder

Soldering Process Options

- **Vacuum soldering**
 - Fluxless, void-free soldering
- **Die-attach**
 - High process temperature
- **Reflow**
 - Convection, infrared, induction
- **Laser soldering**
 - Targeted soldering
- **Vapor phase reflow**
 - Uniform heating
- **Manual soldering**
 - Solder iron, hot plate, ultrasonic, dipping



Factors to consider in using gold-based solders in your process

- A low oxygen atmosphere may be required if the application is flux-free.
- Some applications require pressure to promote good, void-free reflow on horizontal surfaces.
- In step soldering, or other processes that may require rework, soldering to gold-plated surfaces results in an intermetallic that melts at a higher temperature than the original alloy. When using the AuSn alloy, this can be addressed by using high tin-containing alloys.
- Alternative methods, such as scrubbing, forming gas or formic acid, may be needed for oxide removal of the soldered surface.

Gold Alloy Options

Indalloy®	Solidus (°C)	Liquidus (°C)	Thermal Conductivity (W/mK)	Tensile Strength (PSI)	Shear Strength (PSI)	Thermal Expansion Coefficient @20°C (PPM/°C)
100.0 Au	1064	1064	3.18	20,000	–	14
80Au/20Sn*	280	280	57	40,000	40,000	16
88Au/12Ge	356	356	44	26,835	26,825	13
96.8Au/3.2Si	363	363	27	36,975	31,900	12

AuSn Compared to Standard Solders

Indalloy®	Solidus (°C)	Liquidus (°C)	Thermal Conductivity (W/mK)	Tensile Strength (PSI)	Shear Strength (PSI)	Thermal Expansion Coefficient @20°C (PPM/°C)
80Au/20Sn*	280	280	57	40,000	40,000	16
96.5Sn/3.5Ag	221	221	33	5,800	2,700	30
63Sn/37Pb	183	183	50	7,500	6,200	25
58Bi/42Sn	138	138	19	8,000	500	15

* Other compositions such as 79Au/21Sn also available

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