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ELECTRONIC COMPONENTS  
AND PACKAGING

## **Data Sheet: 90 Tin-10 Gold**

### **Physical Property Information:**

Solder Alloy Composition	90Sn-10Au (weight per cent)
Eutectic melting point	217°C
Density	7.38 Mg m <sup>-3</sup>
Coefficient of Thermal Expansion (CTE)	14 ppm/°C
Thermal Conductivity	50.5 W m <sup>-1</sup> K <sup>-1</sup>
Electrical Resistivity	15.2 μΩ cm

### **Mechanical Properties:**

<b>Ultimate Tensile Strength:</b>	103 MPA (ksi)
<b>Yield strain:</b>	6 %

Typical impurity levels for electronic grade are less than:

Pb: 0.08, Ni: 0.01, Al: 0.005, Bi: 0.10,  
Fe: 0.02, Zn: 0.003, As: 0.03, Cd: 0.002 and  
In: 0.10

### **Application:**

Soldering temperature for reflow should be minimal at or above 250°C for 20 seconds. This assumes either very clean, soldering surfaces or the presence of a deoxidizing agent or atmosphere during the soldering cycle. If and when the components are slightly oxidized, a combination with flux and higher temperatures and/or longer soldering temperatures is required.

Alternatively, the alloy can be reflowed below 250°C when special conditions for substrates (i.e. Au-plating over Ni-) and longer temperatures above melting point are being met.

The alloy can be used for flux-less soldering, when the soldering substrates materials are free of oxides and/or oily residues. Common practice for flux-free soldering is:

Nickel-plated substrates (1.5-2.5μm) protected with an Au-flash (0.2-0.5μm) and soldering in vacuum or inert atmosphere.

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