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ELECTRONIC COMPONENTS
AND PACKAGING

92.5 Lead - 5Tin - 2.5 Silver

Physical Properties of Bulk Solder

Solder Alloy Composition	92.5Pb-5Sn-2.5Ag (weight per cent)
Melting range	287-296°C
Density	11.01 Mg/m ³
Thermal conductivity	0.25 W/cm K ⁻¹
Electrical conductivity	5.5% IACS
Coefficient of Thermal Expansion	25.0 x 10 ⁻⁶ K ⁻¹
Tensile strength (est.)	35 GNm ⁻²
Bonding strength	20 GNm ⁻²

Typical impurity levels for electronic grade are less than:

Au: 0.05	Cu: 0.08	Ni: 0.01	Al: 0.0005
Bi: 0.001	Fe: 0.02	Zn: 0.0003	As: 0.0003
Cd: 0.002	In: 0.10		

The 92.5Pb2.5Ag5Sn-alloy is widely used for the manufacture of semiconductor components. It combines a higher melting range, with good mechanical strength and thermal fatigue properties. The 5% tin and the 2.5 Ag additions assure a good wetting to copper leads and Au-flash coated Si-chips in die-attach applications. The melting temperature range is wide enough to permit two-or even three-step soldering. The higher melting range makes the alloy also very suitable for fluxless soldering in an inert or reducing atmosphere.

Thanks to the high-Pb the alloy is a high-temperature tin-, silver-bearing solder with good thermal fatigue properties. It is used extensively in the assembly of diodes and rectifiers in belt furnaces with a forming gas mixture (N₂, H₂) or cracked anhydrous ammonia (75%H₂, 25%N₂).

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