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Data Sheet: 80 Indium-15 Lead-5 Silver

Physical Properties of Bulk Solder

Solder Alloy Composition	80In15Pb5Ag (weight per cent)
Solidus	149 °C
Liquidus	154 °C
Density	7.85Mg/m ³
Coefficient of Thermal Expansion	28.0 x 10 ⁻⁶ K ⁻¹
Tensile Strength	17.58 MPa (2550PSI)
Shear Bond/Holding Strength	14.82MPa (2150 PSI)
Young's Modulus	n.a. GNm ⁻² (low creep resistance)
Thermal Conductivity	0.43 W/cm.°C
Electrical Conductivity	13% IACS

Typical impurity levels for electronic grade are less than:

Au: 0.05	Cu: 0.08	Ni: 0.01	Al: 0.005
Bi: 0.10	Fe: 0.02	Zn: 0.003	As: 0.03
Cd: 0.002			

Areas of Application

The 80In15Pb5Ag alloy is stronger than most high indium alloys. High-In solders are very ductile and therefore have low creep resistance and good thermal fatigue properties. The Ag-addition helps but tensile-strength values are still lower than Sn-Pb-based solders. This alloy is especially useful for soldering against Au, as leaching is minimized.

In-based solders have a good resistance to alkaline corrosion. However, corrosion resistance in the presence of traces of halide ions is not satisfactory, necessitating the use of hermetic seals or conformal coatings.

Soldering temperature for reflow should be minimal at or above 190°C for a minimal time of 40 seconds. If lower reflow temperatures are needed, it must be compensated with additional time-above-temperature. This assumes either very clean, soldering surfaces and an inert or reducing atmosphere or the presence of a deoxidizing agent/flux during the soldering cycle. If and when the components are slightly oxidized, a combination with higher temperatures and/or longer soldering temperatures is required. For more oxidized surfaces, an appropriate flux must be used.

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