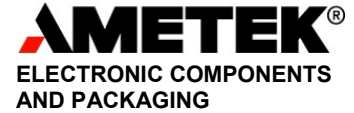




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95 Bismuth – 5 Antimony

Physical Properties of Bulk Solder

| | | |
|----------------------------------|-----------------------|------------------------|
| Solder Alloy Composition | 95Bi5Sb | (weight per cent) |
| Solidus temperature | 282°C | (540°F) |
| Liquidus temperature | 312°C | (594°F) |
| Density | 9.57 | kg/l |
| Young Modulus | 33 | GPa |
| Thermal conductivity | 8.78 | W/(m.K) (est.) |
| Thermal Coefficient of Expansion | 13.3×10^{-6} | K ⁻¹ (est.) |
| Electrical Resistivity | 1.25 | μΩ cm (est.) |
| Hardness Brinell | 33 | MPa |

Typical impurity levels for the min. 99.99%-purity electronic grade alloy are less than:

Pb: 0.005, Ni: 0.003, Al: 0.005, Bi: 0.005,
Fe: 0.005, Zn: 0.005, As: 0.002, Cd: 0.001 and
In: 0.005

Application information:

The alloy is brittle and should not be used in applications in which plastic deformation of the joint is required. The alloy can be used for flux-less soldering, for which 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, inert or N₂/H₂ atmosphere.

Soldering temperature for reflow (measured in the joint), should be minimal at or above 310-330°C for 20 seconds, depending the mass of the assembly and the type of furnace used. This assumes either very clean, soldering surfaces or the presence of a reducing agent (flux) or reducing atmosphere during the soldering cycle. If and when the components are slightly oxidized, a combination with flux or reducing atmosphere and higher temperatures and/or longer soldering temperatures is required.

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