

SOLDER WIRE

TECHNICAL DATASHEET



COINING's Solder Wire

COINING produces uniquely designed, die-attach Solder Wire completely in-house with a proprietary process that limits wire surface oxidation, and prevents particles, blisters, drawing media or other substances. Our blister-free wire ensures a constant wire feed onto the die, creating a clean and consistent puddle for proper die attaching.

The benefits of our Pb-based Solder Wire include:

- Resistance to thermal fatigue
- High melting temperature
- Minimal level of impurities
- Reduces production down-time for cleaning of the spanker in production

Introduction

High-Pb alloys ($\geq 85\%$ Pb) are the preferred material for the fast and low-cost production of power components. The benefits of high Pb alloys include resistance to thermal fatigue, high melting temperature and the absence of building intermetallics with most electronics materials.

High Pb alloys are produced with a minimal level of impurities, voids-free and minimal surface oxidation, which are prime requirements for zero-default die-attach of power electronics. The high-purity level of the various alloys not only greatly reduces production down-time for cleaning of the spanker in production, but also assures good electrical and thermal conductivity between die and substrate in the end-use.

Applications

- Semiconductors
- Power modules
- Automotive

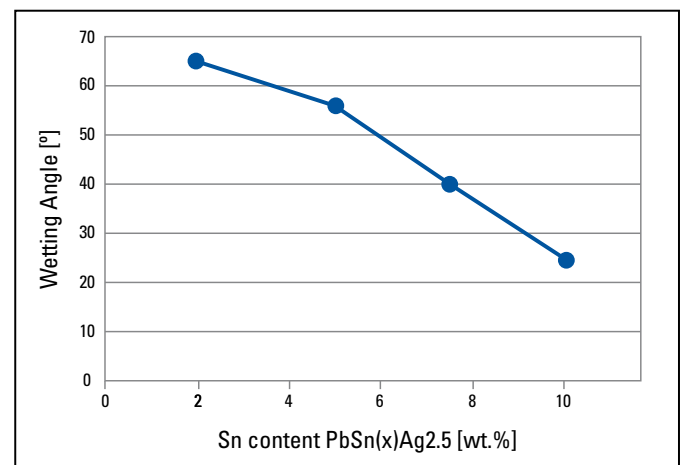
Processing and capabilities

COINING offers a range of standard die-attach alloys with the ability to co-develop product specific new alloys and has the capability to add if needed dopants to the alloy for controlling the wetting angle on various substrate materials. By controlling the wetting angle

and the dimensions of the puddle of molten solder, the occurrence of voids can be largely eliminated.

RoHS Compliance

It is expected that because of the unique material properties of high-lead alloys, the exemption of 7(a) of lead in high melting temperature type solders ($\geq 85\%$ Pb) will be extended in the foreseeable future. Although, for some applications alternative solutions have been developed, there is no drop-in replacement for all applications identified.



SOLDER WIRE

TECHNICAL DATASHEET



Sizes

Standard Wire Ø: 0.020" (0.508mm) and 0.030" (0.762mm) Standard Spools: Multiple spooling options are available. Contact COINING Engineering to discuss your requirements.

Available Alloy Compositions

	Sn63Pb37	Sn96.5Ag3.0Cu0.5	Sn96.5Ag3.5	Sn95Ag5	Sn99.3Cu0.7
Solidus (°C)	183	217	221	221	227
Liquidus (°C)	183	218	221	240	227
Density (gm/cm ³)	8.4	7.37	7.37	7.5	7.2
Thermal conductivity (W/m/K)	50	50	50	50	70
Electrical resistivity (μΩ-cm)	14.99	12.5	12.3	13.7	13.5
CTE (10 ⁻⁶ /K)	23.9	21.6	21.6	21	21
RoHS Compliant	No	Yes	Yes	Yes	Yes

Material Specification

Pb97.5Ag1.5Sn1: Melting-point; 309°C, Thermal conductivity; 0.23 W/cm K⁻¹, Electrical conductivity; 6.0% IACS, C.T.E; 30 x 10⁻⁶ K⁻¹, Bonding Strength: 20 GNm⁻².

Pb95.5Ag2.5Sn2: Melting-range; 299-304°C, Thermal conductivity; 0.28 W/cm K⁻¹, Electrical conductivity; 5.7% IACS, C.T.E; 25.0 x 10⁻⁶ K⁻¹, Bonding Strength: 18 GNm⁻².

Pb93.5Sn5Ag1.5: Melting-range; 294-306°C, Thermal conductivity; 0.22 W/cm K⁻¹, Electrical conductivity; 5.2% IACS, C.T.E; 25.0 x 10⁻⁶ K⁻¹, Bonding Strength: 18 GNm⁻².

Pb92.5Sn5Ag2.5: Melting-range; 287-296°C, Thermal conductivity; 0.25 W/cm K⁻¹, Electrical conductivity; 5.5% IACS, C.T.E; 25.0 x 10⁻⁶ K⁻¹, Bonding Strength: 20 GNm⁻².

Contact Us

Ask An Engineer a technical question, by simply scanning the QR code and drop us a line.



AMETEK COINING

15 Mercedes Drive, Montvale, NJ 07645, UNITED STATES

E: coining.info@ametek.com | T: +1 201 791 4020

www.ametek-coining.com

