

Common Elements

Bismuth

Low melting when alloyed with Sn/Pb or In. Expands 3.32% on solidification. Non-toxic.

Antimony

Increases tensile strength of solders. Poor conductor of heat and electricity.

Tin

Excellent wetting characteristics. Low strength alone but when alloyed becomes stronger.

Aluminum

Offers good corrosion resistance and good strength when alloyed with Zn or Si.

Gallium

Has one of the longest liquid ranges for metals. Has low vapor pressure.

Silver

Exhibits the highest electrical and thermal conductivity of all metals.

Germanium

When alloyed with Au or Al will reduce MP and increase strength. Contributes to poor solder wettability.

Indium

Improves wetting of Pb/Ag solders. Resists alkaline corrosion. Bonds glass, quartz and glazed ceramics.

Cadmium

Increases corrosion resistance of solders. Increases service temperature and strength of solder.

Gold

Highly conductive and corrosion resistant. High melting point is reduced when alloyed with Sn, Si or Ge.

Lead

Economical material, soft and ductile. Offers increased strength when alloyed with other elements. Toxic.

Silicon

When used with Au or Al will reduce MP, increase strength and improve wettability.

Copper

(in SnPb alloys) slight increase in spread rate, lowers melting temperature

Zinc

(in SnPb alloys) lowers spreading rate; when soldering to Al, used to reduce the electrical potential difference.

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