COMETAL

Your Door to Raw Materials & Markets

Tin

Description

Tin is a chemical element denominated Sn (Latin “Stannum”) and has the atomic number Z = 50. The most important tin ore is Cassiterite, SnO_2. There are no known high quality deposits of this mineral. Most of the world’s tin ore is obtained from low quality alluvial deposits. There are two allotropic forms of tin: white and gray tin.
Tin is obtained from Cassiterite, where it appears as tin dioxide. This mineral is ground and tin dioxide enriched by flotation, then heated with coke in a reverberatory furnace, in which the metal is obtained by carbothermic reduction.

Properties

Physical Properties		Electronic Properties	
Name	Tin	Valence	2, 4
Atomic Number	50	Electro negativity	1.96
Symbol	Sn	Covalent Radius	1.41
Atomic Weight	118.69	Ionic Radius	0.71
Density (g/ml)	7.30	Atomic Radius	1.62
Boiling Point ºC	2602	Atomic Structure	$[Kr]4d^{10}5s^{2}5p^{2}$
Melting Point ºC	231.9	Ionization Potential (eV)	7.35

Tin melts at a low temperature, it has high fluidity when melted and also has a high boiling point; it also presents a significant corrosion resistance to many media. Tin reacts with both strong acids and alkalis, but it is relatively resistant to near-neutral solutions. Normally, when it is exposed to a corrosion process, it does not release hydrogen gas, and the corrosion rate is governed by the supply of oxygen or other oxidizing agents. In its absence, the corrosion is negligible when it is exposed to air, due to a thin layer of tin oxide formation, thus achieving a good surface protection.

Salts having an acid reaction in solution, such as aluminium chloride and ferric chloride, break down tin in the presence of oxidants or air. Most of the non-aqueous liquids such as oils, alcohols or chlorinated hydrocarbons have no important effects on tin. Tin and simple inorganic salts are not toxic, but some organostannic compounds are.

Tin is neither classified as a hazardous substance by EU Regulations, nor is it classified as a dangerous good for transportation.

Uses

- Protective coatings against corrosion.
- Manufacturing of brass.
- Soldering.
- Manufacturing of ceramic enamels.

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