

## TIN

*...Renewed focus on an old favourite*

Chemical Symbol: Sn

***No acceptable substitutes for tin-based solders have been found for high-quality, reliable soldering operations; and in a strategic as well as economic sense, tin may be regarded as an essential metal in this usage.*** Source: *The World Tin Market: Political Pricing and Economic Competition* (W.L.Baldwin)



Artistic Symbol of Tin  
Source: [Metalprices.com](http://Metalprices.com)

### What is Tin?

Tin is a silver-white metal which is soft, highly ductile and malleable. Tin is obtained mainly from the mineral cassiterite (SnO<sub>2</sub>) where it occurs as an oxide. It is a relatively scarce metal compared with some other base metals like copper, lead and zinc.

### Properties

Tin possesses a unique combination of properties, which has led to its use in a wide range of applications. Some of these properties include:

- Resistance to corrosion
- Non-toxicity
- Low melting point
- Ability to readily form alloys

### Main Uses of Tin

Tin's principle uses are in tinplate (coating steel), as an alloy in solders, bronzes, brass and pewter (cooking utensils etc), and, in compound form, in chemicals. It is also used in the flat glass-making process and in frost free windshields.



Ingots of tin metal (Source: [www.itri.co.uk](http://www.itri.co.uk))

### Attraction of Tin Solder

A solder is a fusible metal alloy which is especially useful in electronics and plumbing. The addition of tin enhances the solder's tensile and shear strengths. Historically, solders have mainly consisted of tin and lead however, the growing environmental concerns over lead has meant that there is an increasing focus on tin in solder use.



Tin solder wires (source: [www.fuzing.com](http://www.fuzing.com))

### World Supply & Demand

Over 90% of world tin production (mine and refined) takes place in Asia and South America. The three principal tin mining and refining countries are China, Indonesia and Peru.

Recent growth in tin consumption, and the corresponding increase in tin prices, has largely come from the Chinese electrical appliance and construction industries. The total world consumption of tin is in excess of 300,000 tonnes with Asia, Europe and North America accounting for over 90%. China alone consumes approximately 30% of all tin production.

### Recent Price Movements

Tin prices have surged over the last few years as a result of tightening supply. As at 29 May 2008, the metal was trading at US\$22,600/tonne (A\$23,600 equiv.), up from US\$14,000/tonne a year earlier and US\$8,000/tonne two years ago.



12 Month US\$/lb price chart of Tin

### Traded on the LME

The price of tin is quoted daily on the London Metals Exchange and is a free market price. The metal sits aside other key commodities such as copper, nickel, lead and zinc.

### Future of Tin

Future growth in tin demand is expected to be closely linked to increased solder applications in the electronics and electrical industries as tin replaces lead. The China awakening has led to significant strains on supply, however, the rising tin price in recent times has resulted in the re-opening of several old mines. Despite this, supply is forecast to remain very tight relative to expected consumption levels.