Tin industry

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Overview

Tin is a non-ferrous metal obtained chiefly from the mineral cassiterite, which in its purest form contains ~78% tin.

Tin's primary applications include solder, tinplate, batteries, alloys and chemicals.

The estimated world tin production stood at 290,000 metric tonnes in CY2017, registering a marginal growth of 0.7% Y-o-Y. China, Burma and Indonesia are the largest tin producing nations globally, cumulatively contributing ~70% to the world tin production.

Total world tin reserves in CY2017 were estimated to be 4.8 mn metric tons. China has the largest tin reserves globally, estimated at 1.1 mn metric tons, accounting for 23% of the global tin reserves.

Tin in India is currently mined in Bastar and Dantewada districts of Chhattisgarh, with production of just 15,650 kgs from Apr'17-Feb'18.

In FY17, India imported 68 tonnes of tin ores and concentrates from Lao Pd Rd, Thailand, Kenya and Guinea.

Outlook

The depleting reserves among leading tin producing nations are a reason of concern for the growing demand and future consumption of tin. World reserves, principally in western Africa, south-east Asia, Australia, Bolivia, Brazil, Indonesia, need to be developed with adequate investments, so as to sustain recent annual production rates well into the future, with growing demand from the global electronics market.

We expect international tin prices at the end of CY2018 between USD 18,700/tonne – 19,000.

We expect global tin production to touch 300,000 metric tonnes by CY2019, contributed by Russia's decision to develop its tin production in coming years.

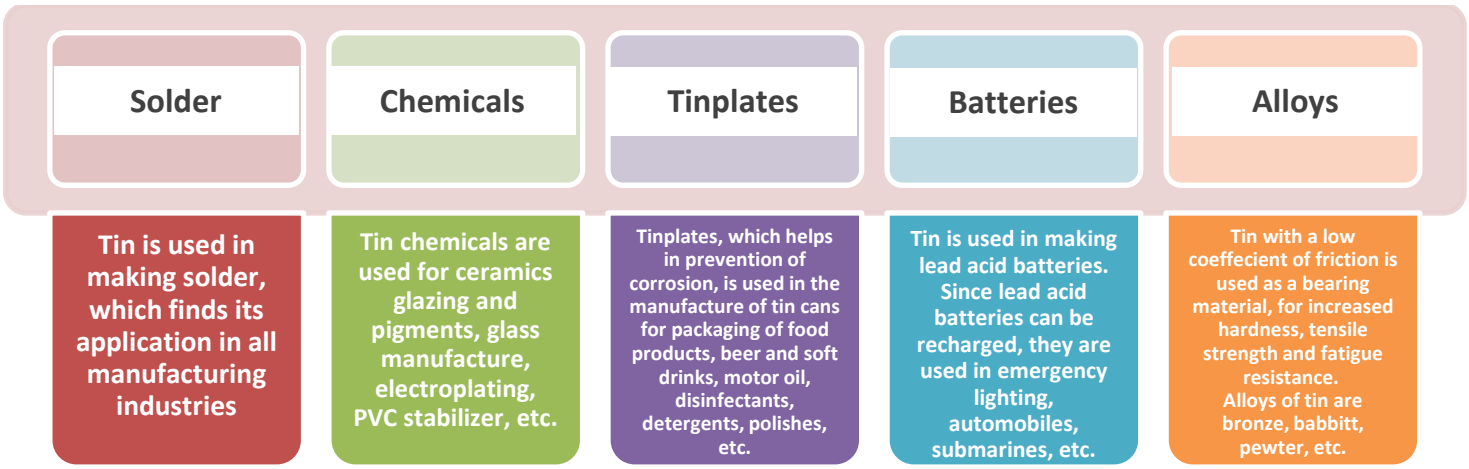
Introduction

Tin is a non-ferrous metal obtained chiefly from the mineral cassiterite, which in its purest form contains ~78% tin. It is the 49th most abundant element in the Earth's crust, representing 2 parts per million (ppm), compared with 75 ppm for zinc, 50 ppm for copper, and 14 ppm for lead.

Applications of tin

Tin is primarily used to coat other metals to prevent corrosion, because of its property of not being easily oxidized in air. Tin's main applications include alloys, tin plating, solder, batteries and manufacturing of chemical compounds. Tin became the primary metal (>60%) in solder, after the use of lead in electronics was banned.

Chart 1: Important applications of tin

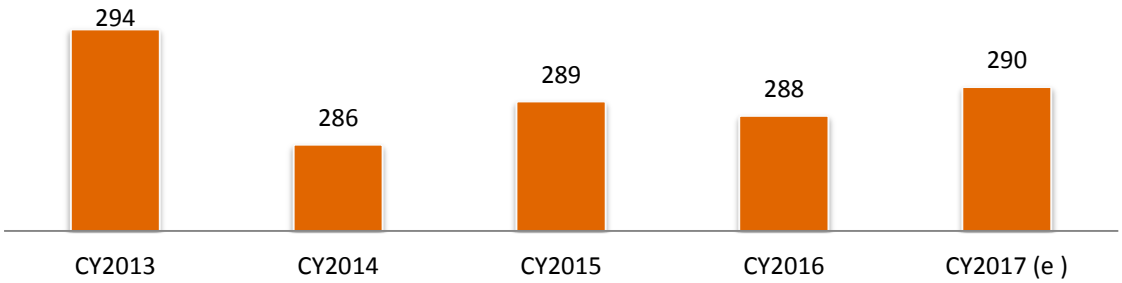


Source: Industry

Global production

The estimated world tin production stood at 290,000 metric tonnes in CY2017, registering a marginal growth of 0.7% Y-o-Y. China, Burma and Indonesia are the largest tin producing nations globally, cumulatively contributing ~70% to the world tin production. Minor producers are Brazil, Bolivia, Peru, Australia, Congo, Vietnam, Malaysia, etc.

Chart 2: World tin production ('000 metric tonnes)



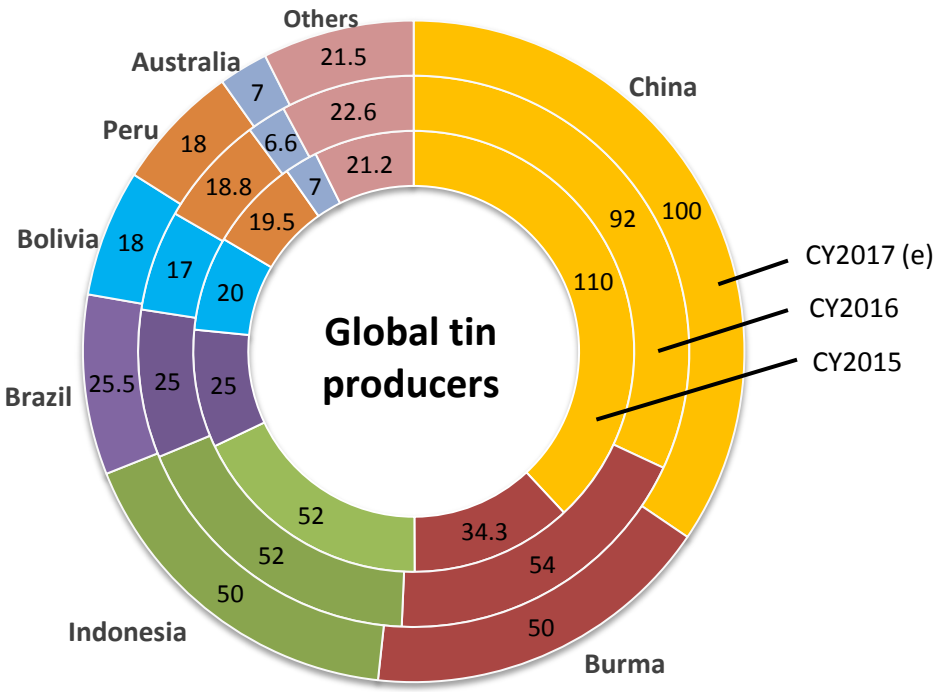
(e) : estimated
Source: U.S. Geological Survey

China is the world's largest producer and consumer of tin. Prior to CY2008, China was a net exporter of tin. But after a 10% export duty came into effect in early CY2008, China turned to be a net importer. In CY2017, the duty was scrapped and China was allowed to import without paying VAT as long as the imported material was used to produce the metal for export. China's imports of tin in concentrate from Burma had reportedly increased to 70,000 tons in CY2017, as a result of improved processing equipment in the Burma's Man Maw mine. Due to pressures of controlling pollution emissions in China, the average tin content of concentrate imported from Burma increased to ~23%, compared with the CY2016 average tin content of ~13%.

Despite Russia possessing the 6th largest tin reserves globally, mining and production of the metal is not particularly well developed. In CY2017, the total tin production in Russia stood at just 1,000 metric tons, compared with reserves of 350,000 metric tons. In Aug-17, the Russia announced plans to develop two tin deposits in eastern Russia, and approved a tax exemption on tin produced in Russia until CY2022. Russia's Ministry of Energy projected that these and other Government-instituted incentives could improve Russia's tin production tenfold.

Out of the total estimated world production of 290,000 metric tonnes in CY2017, China contributed the largest share of ~33%, followed by Burma and Indonesia each contributing 50,000 metric tonnes or ~17%, Brazil with 25,500 metric tonnes or ~9%, etc. Burma noted an almost 5 times growth in the past 5 years from ~11,000 metric tonnes in CY2013 to ~50,000 metric tonnes in CY2017.

Chart 3: Global tin producers ('000 metric tonnes)



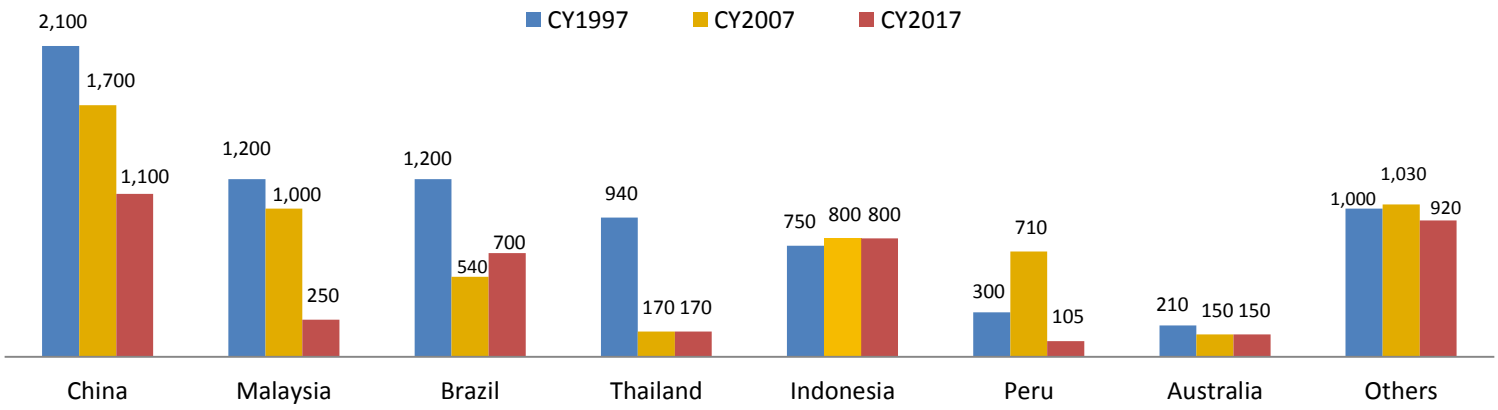
(e) : estimated
Source: U.S. Geological Survey

Reserves

Total world tin reserves in CY2017 were estimated to be 4.8 mn metric tons, implying that the current production is ~6% of the total estimated reserves. China has the largest tin reserves globally, estimated at 1.1 mn metric tons, accounting for 23% of the global tin reserves.

The total world reserves witnessed an overall reduction of ~38% from CY1997-2017. As seen in chart 4, major tin producing nations such as China, Malaysia and Brazil have witnessed a sharp drop in tin reserves from CY1997-2017, with Malaysia and Thailand witnessing the biggest fall of ~80% each, while, Indonesia's tin reserves have increased marginally by 6% during the period. Amongst the other nations, Russia's tin reserves stood at 0.35 mn metric tons in CY2017, increasing by ~17% from 0.3 mn tonnes in CY2007.

Chart 4: Global tin reserves ('000s metric tons)

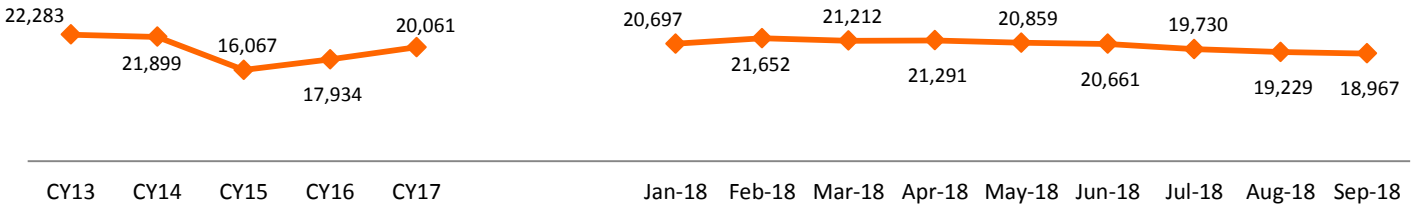


Source: U.S. Geological Survey

International price trend

A drop in global tin prices in CY14 and CY15 can be attributed to the doubling of production in Burma, to support China's imports of tin ores. China's imports of tin ores from Burma superseded imports of tin metal from Indonesia during the period. Global tin prices in CY17 and CY18 (uptoAug-18) are seen to be largely stable.

Chart 5: International price trend of tin at LME (USD/mt)



Source: World Bank

Indian scenario

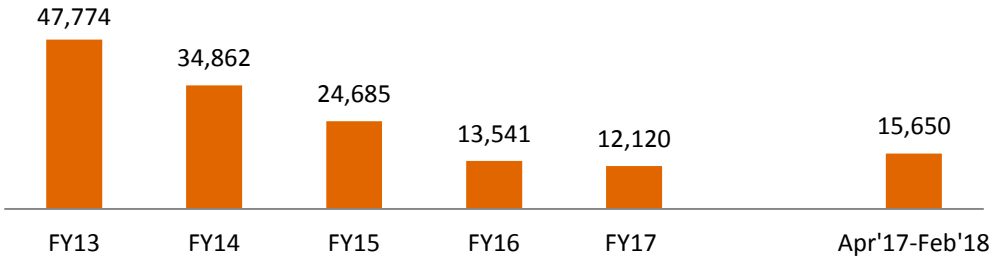
Occurrences of tin are reported in the states of Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Odisha, Rajasthan and West Bengal. However, currently tin mining takes place only in Bastar and Dantewada districts of Chhattisgarh.

Scrap tin has long been an important factor in meeting domestic needs, supplying about 20% of total tin demand. Scrap tin originates both from de-tinned tinplate and various alloyed forms of tin.

Production

Domestic production has seen a fall from FY13 to FY17, but noted a slight recovery in FY18, where total production stood at ~15,650 kgs from Apr'17- Feb'18.

Chart 6: Production trend of tin concentrates (kgs)



Source: Indian bureau of mines

Table 1: Five principal tin concentrate mines in FY17

Name of mine	Location of mine
Bastar	Village Bastar, District Bastar, Chhattisgarh
Bade Bacheli (17.087 Ha)	Village Bade Bacheli, District Dantewada, Chhattisgarh
Bade Bacheli (36.067 Ha)	Village Bade Bacheli, District Dantewada, Chhattisgarh
Bade Bacheli (7.739 Ha)	Village Bade Bacheli, District Dantewada, Chhattisgarh
Bade Bacheli (5.314 Ha)	Village Bade Bacheli, District Dantewada, Chhattisgarh

Source: Indian bureau of mines

Trade

Imports

As our domestic tin production is marginal, the domestic consumption is supported mainly by imports. In FY17, India imported 68 tonnes of tin ores and concentrates from Lao Pd Rd, Thailand, Kenya and Guinea.

Chart 7: Indian imports of tin ores and concentrates in FY17 (tonnes)

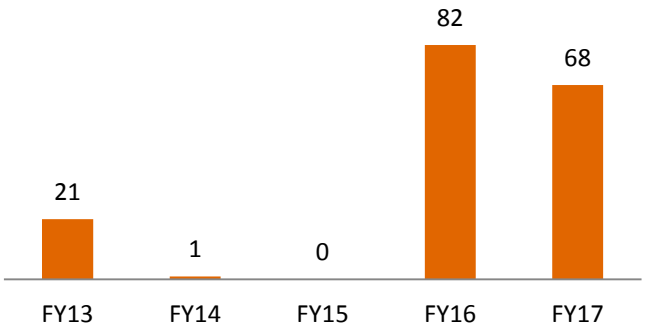
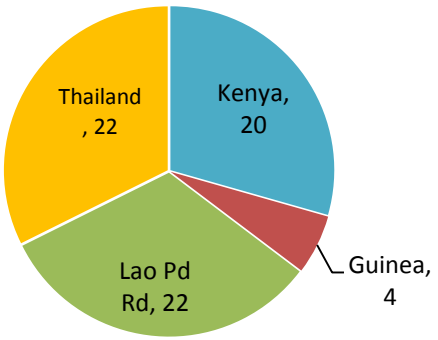


Chart 8: Country wise Indian imports of tin ores and concentrates (tonnes)



Source: Indian bureau of mines

Domestic price trend

Chart 9: Price trend of tin ingot in Delhi (Rs./ kg)

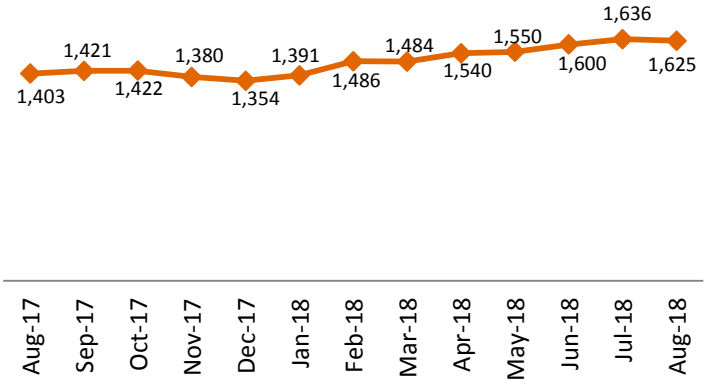
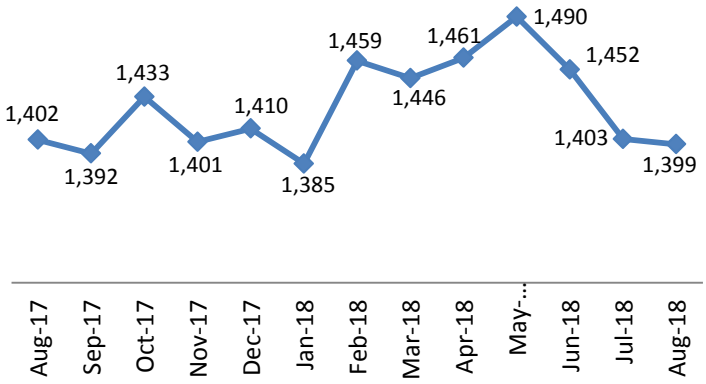


Chart 10: Price trend of tin ingot in Mumbai (Rs./kg)



Source: CMIE

Tinplate

One of the largest applications of tin is in manufacture of tinplate (steel sheet coated with tin), which accounts for ~40% of total world tin consumption. Tinplate finds its usage across a wide range of end uses viz; food (edible oil, processed fruits & vegetables), non-food (paints & chemicals, aerosol sprays, battery) and beverages. Tinplate is most suited for packaging processed edibles owing to its excellent barrier properties.

In the domestic market, overall tinplate consumption grew by 5% in FY18 to 647,000 tons, of which about 41% were met through imports. The imports declined 7% Y-o-Y in FY18, with a ~15% Y-o-Y increase in domestic production. The share of imports reduced to ~41% in FY18 from ~46% in FY17, with domestic production share increasing to ~59% in FY18 from ~54% in FY17.

Chart 11: Imports of tinplate to India (tons)

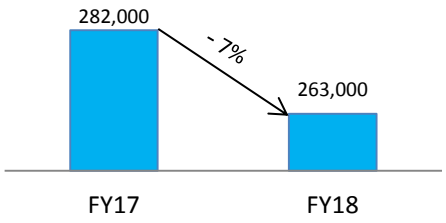


Chart 12: Domestic production of tinplate (tons)

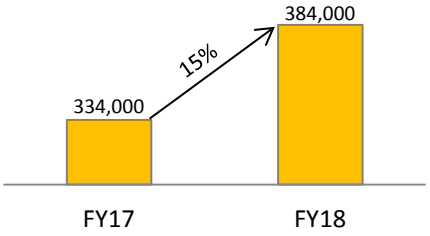
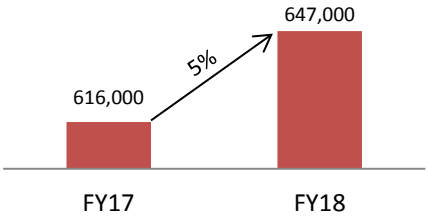


Chart 13: Domestic consumption of tinplate (tons)



Source: The tinplate company of India Ltd. annual report FY18

The per capita consumption of tinplate in India is low as compared to its peers. High growth in modern retail, FDI in multi-brand retail combined with Government's thrust on the food processing industries augurs well for the growth of the packaging industry in India.

The customs duty for tinplate continues to be relatively low and is not a significant barrier to the dumping of tin mill products into India mainly from USA, Europe and Japan (under Free Trade Agreement).

Outlook

- The depleting reserves among leading tin producing nations are a reason of concern for the growing demand and future consumption of tin. World reserves, principally in western Africa, south-east Asia, Australia, Bolivia, Brazil, Indonesia, need to be developed with adequate investments, so as to sustain recent annual production rates well into the future, with growing demand from the global electronics market.

- We do not see China's decision of removing 10% export duty on refined tin having a substantial impact on increase in its exports, rather will encourage more refining of tin in the country.

- We expect international tin prices at the end of CY2018 between USD 18,700/tonne – 19,000.

- We expect global tin production to touch 300,000 metric tonnes by CY2019, contributed by Russia's decision to develop its tin production in coming years.

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