USGS
science for a changing world

2008 Minerals Yearbook

TIN [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

July 2010

TIN

By James F. Carlin, Jr.

Domestic survey data and tables were prepared by Linda M. White, statistical assistant, and the world production tables were prepared by Linder Roberts, international data coordinator.

Tin has not been mined in the United States since 1993; consequently, the country was reliant on imports and recycling for its tin needs. In 2008, 25 firms consumed 68% of the primary tin used domestically. The major uses were as follows: solders, 29%; metal containers, 21%; transportation, 14%; construction, 11%; and other, 25%. The estimated value of primary tin metal consumed domestically was $575 million. Industry stocks declined by 6% compared with those at yearend 2007 (table 1). The Defense Logistics Agency (DLA), which manages the National Defense Stockpile (NDS), sold 60 metric tons (t) of pig tin from the NDS during 2008.

Approximately 13,600 t of tin, most of it from old scrap, was recycled (table 5). About one-fifth of the tin consumed in the United States was recycled metal. The recycling rate for steel cans was 65%, the same as that in 2007, and compared with 56% in 1995 and 15% in 1988 (Richard Tavoletti, Steel Recycling Institute, written commun., March 1, 2010).

World tin mine output decreased slightly compared with that in 2007, and world primary tin smelter production decreased by 5% compared with that of 2007 (tables 1, 9, 10). Of the 20 countries in which tin was mined, the top 5 accounted for 92% of the total world tin production of 299,000 t. China was the leading producer (37% of world output), followed by Indonesia (33%) and Peru (13%). Industry analysts considered the world tin market in 2008 to have a slight deficit of supply relative to consumption. The composite tin price increased by 26% from that of 2007, in part owing to investment fund buying. World tin reserves were estimated to be 5.6 million metric tons (Mt), about 17 times the estimated annual world primary tin consumption of 350,000 t. Most tin reserves are in Asia and South America.

Legislation and Government Programs

In 2008, the DLA sold 60 t of tin under the basic ordering agreement and the long-term negotiated contract formats. The effect of proposed NDS tin sales on domestic markets was assessed by the Market Impact Committee, which is comprised of several Federal agencies, including the U.S. Geological Survey (USGS). The fiscal year annual materials plan for tin was set at 12,000 t. In August 2008, the Defense National Stockpile Center (DNSC) issued a press release indicating that sales of tin would be suspended until further notice. As of December 31, 2008, the tin inventory was 3,850 t, all of which was stored at the DNSC's depot in Hammond, IN (David Pinealt, Defense Logistics Agency, written commun., March 29, 2010).

Production

Mine.—Tin was not mined in the United States in 2008. Until 1993, a few small tin mines had operated sporadically in the United States. However, USGS canvasses confirm that there has been no primary domestic tin production since that year.

Secondary.—Industry analysts considered the United States to be the world's leading producer of secondary or scrap tin. Most secondary tin has been generated during manufacturing from various scrapped alloys of tin and recycled in those same alloy industries. Secondary tin from recycled fabricated parts has been used in many kinds of products and is a particularly important source of tin for the manufacture of brass and bronze and solder.

The Steel Recycling Institute (Pittsburgh, PA), funded by the domestic steel industry, continued to promote the collection, preparation, and transportation of steel can scrap. The domestic recycling rate for steel cans, most of which are made from tinplate, was 65.2% in 2008, up slightly from 65.0% in 2007 and 63.4% in 2006, and compared with 58.4% in 2000, and 24.6% in 1990.

Consumption

In 2008, domestic consumption of primary tin decreased by 3% compared with that in 2007 (tables 1, 2). Domestic consumption data for tin were developed by the USGS from a voluntary survey of tin consumers. Of the 122 firms to which a survey form was sent, 67 responded, including the major consumers. Data for the nonrespondents were estimated based on prior-year reporting.

The total number of metal cans shipped was 132 billion in 2008 compared with 135 billion in 2007. The Can Manufacturers Institute no longer provides a categorization by types of can (for example, aluminum versus steel). Steel (essentially tinplate and tin-free steel) dominated in the food, pet, and general line can markets, and aluminum held 100% of the beverage can market (Can Manufacturers Institute, 2008, p. 20).

Severstal North American Inc. (Dearborn, MI) announced that it had acquired Esmark Inc. (Wheeling, WV), which owned the Wheeling-Pittsburgh Steel Corp. tin mill in Wheeling. Earlier in 2008, Severstal finalized acquisition of the Sparrows Point, MD, steel plant and tin mill. Severstal's parent organization is based in Cherepovets, Vologda, Russia. Wheeling-Pittsburgh Steel was an important producer of tinplate and a substantial tin user (Canmaker, The, 2008).

AGC Flat Glass North America Inc. (Alpharetta, GA) (a subsidiary of Japan's Asahi Glass Co. Ltd.) announced that it would close three factories and a production line—a float glass and coating plant in Victorville, CA, a coating facility in Hampton, IA, a float glass plant in St. Augustin, Quebec, Canada, and a production line at its Greenland, TN, manufacturing plant by yearend 2008. The company attributed the closings to a severe decline in the housing market in North

America. The float glass industry utilizes a method of floating molten glass over a huge vat of molten tin, and this industry was an important user of tin (Glass Magazine, 2008a).

Zeledyne LLC (Allen Park, MI), a newly formed, privately held company, announced that it had finalized the purchase of Ford Motor Co.'s glass business. The sale included float glass-making plants in Nashville, TN, and Tulsa, OK (Glass Magazine, 2008b).

ITRI Ltd. (Uxbridge, United Kingdom) issued a new study "Tin to 2012," identifying the need for accelerated investment in new tin mine projects to meet future world demand. The report was the first tin annual review from the 75-year-old organization's recently established Statistics and Market Studies unit. According to the study, the tin market has been oversupplied during the past several decades, mostly as a result of successive booms in small-scale mining. However, increasing restrictions on these operations and strong growth in world consumption during the past decade have changed the oversupply situation. Two countries, China and Indonesia, accounted for more than 70% of global tin mine production. China was on the verge of becoming a net importer of tin as its domestic demand ramped up, and small-scale production in Indonesia has declined. World tin consumption has increased at a rate of 4% per year in the past decade, a dramatic increase from its long-term rate. Growth rates may dip during the next few years, partly because the transition to high tin content lead-free solders will probably slow and also because higher prices may constrain usage in both existing and potential new applications. In the next year or two, world supply and demand for tin were expected to be fairly evenly balanced. There was no shortage of tin in 2008, and the world's tin reserves were adequate to maintain long-term supplies, but supply problems could take place in 2010 to 2012, according to ITRI (Metals Place, 2008e).

Prices

The Platts Metals Week average composite price for tin metal increased by 26% from that in 2007, in part owing to investment fund buying. The London Metal Exchange Ltd. (LME) remained the principal trading site for tin.

Foreign Trade

U.S. imports of refined tin, which supplied most domestic tin requirements, increased by 5% compared with those of 2007 (tables 7, 8). Imports of tin in all forms (metal, ore and concentrate, scrap, and waste) remained duty free, and were held in U.S. warehouses by trading firms until sold to customers. Foreign-owned trading firms tended to dominate the marketing of imports. U.S. imports of tin came mostly from Peru, Bolivia, China, Malaysia, and Thailand, in descending order. Refined tin exports were significantly less than imports (tables 6, 8).

World Review

ITRI estimated that total (primary and secondary) world tin consumption in 2007 was 450,000 t, of which 20% was secondary tin. ITRI reported that solder accounted for 53% of tin consumption in 2007 and that electronic solder alone accounted for 44% of all refined tin usage (Platts Metals Week, 2008c).

Asia was the world's most active region for tin mill product capacity expansion during 2008. Tinplate producers in China, India, and Thailand were especially active, providing additional production capacity for domestic use and the opportunity for exports.

Australia.—Kangaroo Metals Ltd. (Perth, Western Australia, Australia) started mining and processing operations at its Riverside Alluvial tin mine in Tasmania. Kangaroo selected Thailand Refining and Smelting Co. Ltd. (Thaisarco) (Phuket, Thailand) to smelt the tin concentrate (Kangaroo Metals Ltd., 2008).

Metals X Ltd. (East Perth), through its wholly owned subsidiary Bluestone Mines Tasmania Pty. Ltd., implemented a restart strategy for the Renison tin project in Tasmania. The project had been on care-and-maintenance status since October 2005, when tin prices fell to less than $6,000 per metric ton. With the world tin price stabilized, recovering to more than $17,000 per metric ton, the company was on track to restart operations during 2008. The Renison project was built around the Renison Bell underground tin mine and Renison tin concentrator, and was to include material from the nearby Mount Bischoff open pit to generate a blended feedstock, with the underground mine providing about two-thirds of the feedstock. The Mount Bischoff open pit had a planned life of about 3 years (TIN World, 2008b).

Stellar Resources Ltd. (Melbourne) acquired a 60% interest in the Zeehan tin project in northwest Tasmania from Western Metals Ltd. (West Perth). The remaining 40% ownership was held by Gippsland Ltd. (Claremont, Western Australia). The Zeehan tin project has a reported resource estimate of 7.3 Mt at 0.69% tin, which Stellar thought represented the largest known underground tin resource in Australia (Platts Metals Week, 2008b).

Van Dieman Mines Plc (London, United Kingdom) announced that its Scotia tin-sapphire project in Tasmania was expected to be in production by March 2008. The mine's startup, which was expected to produce 700 metric tons per year (t/yr) of tin-in-concentrates, had been delayed owing to permitting issues. A second tin project, the Endurance Tin Mine, with a similar capacity, was expected to be onstream by yearend 2008. The tin concentrates from both mines would be shipped to the Thaisarco tin smelter. The company controlled additional tin deposits in Tasmania, which it planned to develop later (CRU International Ltd., 2008a).

Bolivia.—The Government-owned mining organization, Corporación Minera de Bolivia (Comibol) (La Paz), announced plans to invest $155 million in the mining sector in 2009, triple the amount invested in 2008. A large portion of the 2009 investment would go into Bolivia's leading tin mine, the Huanuni Tin Mine in the Oruro Department. About $21.5 million was expected to be spent to develop reserves at the lower levels of the mine and in preparatory work to triple milling capacity to 3,000 metric tons per day. Comibol planned to increase tin production capacity at Huanuni to more than 13,000 t/yr by 2010 from 7,670 t/yr in 2007 (Metals Place, 2008f).

Empresa Metalurgica Vinto (Oruro) signed contracts with Ausmelt Ltd. (Melbourne, Australia) for the construction of a new tin smelter at Vinto's Oruro plant. A contract for $2 million was signed and a second for $3 million for equipment and services was expected to follow later in 2008. The new Ausmelt tin smelter would have a production capacity of 38,000 t/yr of tin concentrate, or 18,000 t/yr of refined tin metal. This would be the second Ausmelt plant to be installed by a major South American tin producer. Funsur S.A. (Pisco, Peru) installed one around 2003. Yunnan Tin Co. Ltd. (YTC) (Kunming, Yunnan Province, China) also used the Ausmelt process. Vinto officials noted that this would be the first major modernization at the facility since it was built about 1978. The Ausmelt furnace would replace existing reverberatory furnaces. Vinto produced 9,400 t of refined tin in 2007 (Metals Place, 2008a).

Glencore International Ltd. (Baar, Switzerland) and the Bolivian Government worked toward an agreement on a 50–50 joint venture to operate two tin and zinc mines as well as finally settling compensation terms for the nationalization of the Vinto tin smelter that took place in February 2007. The joint venture would include the Colquiri tin and zinc mine in La Paz and the Porco zinc, lead, and silver mine in Potosi. The Colquiri Mine produced about 2,500 t/yr of tin-in-concentrate, and until 2007, all the mine's output was treated at the Vinto smelter. Both operations were leased by Glencore's Bolivian subsidiary (Sinchi Wayra) from the state mining organization (Metals Place, 2008c).

Brazil.—The Brescia Group (Lima, Peru), which owns Peru's only tin producer, announced plans to buy the Pitinga tin mine in Brazil for $467 million. The purchase would be made through a Brazilian firm, Serra de Madeira Participacoes, of which Brescia's subsidiary Minsur SA owned 50%. Serra concluded a deal to buy the mining company Mineracao Taboca S.A. (Manaus), which operates the Pitinga tin mine. Mineracao Taboca is a subsidiary of the Paranapanema Group (Rio de Janeiro). Brescia's purchase of Pitinga was considered somewhat unique because historically most transactions between the two countries involved Brazilian companies buying Peruvian assets (Platts Metals Week, 2008a).

China.—The Ministry of Commerce announced that the export quota for tin and tin products in 2009 would be 23,000 t, a decrease of 30% compared with that in 2008 (China Metal Market—Lead, Zinc & Tin, 2008).

Liuzhou China Tin Group Co. Ltd. (Liuzhou, Guangxi Province) closed a tin ore processing plant after a tailings discharge resulted in arsenic poisoning of 136 local villagers. The affected people in the village of Xialontun in Guangxi Province were treated for poisoning and were all released from the hospital. The incident was attributed to heavy rains causing the tin waste ponds to overflow into the local river. Liuzhou was China's second leading integrated tin producer and produced 13,200 t of refined tin in 2007 (CRU International Ltd., 2008d).

YTC announced that it would repay $6 million of debts incurred by its Singapore Tin Industries joint-venture tin refinery, in which it owns a 42% stake, with local partner KJP International Pte. Ltd. holding the balance. The refinery was established in 2006, but struggled to obtain Indonesian tin feed for refining. Tin output decreased from 8,740 t in 2006 to 2,900 t in 2007, and the plant was inactive for much of 2008 (CRU International Ltd., 2008b).

Congo (Kinshasa).—On February 25, the Minister of Mines announced the suspension of all mining activity in the tin-ore-rich Walikale District of North Kivu Province, a major source of tin exports, because of violence in the area. The suspension was aimed at restoring order to Walikale's mining sector. North Kivu Province has been the scene of military conflict for more than a decade, with the Government's army and various illegal armed factions vying for control of mines. North Kivu Province and South Kivu Province reportedly exported a total of 7,000 t of tin ore in 2006, although some analysts estimated the figure to be about 12,000 t (Metals Place, 2008b).

The Government reportedly planned to ban exports of tantalum, tin, and tungsten raw materials from the Provinces of Maniema, North Kivu, and South Kivu, starting in January 2009. Government officials thought that adding value to those materials domestically would enable the country to reap the most benefits from them. Currently most tin concentrate leaving Congo (Kinshasa) grades about 65% tin (CRU International Ltd., 2008c).

Kiva Resources Ltd. (Port Louis, Mauritius) abandoned plans to develop industrial-scale mining of tin at the Bisiye deposit in North Kivu Province because of continuing military instability in the area. Bisiye had been the main location of artisanal mining in recent years. Kiva's board of directors blocked plans to spend $28 million developing Bisiye, one of Congo (Kinshasa)'s leading tin deposits 200 kilometers (km) west of North Kivu's capital, Goma. Kiva Resources instead planned to focus its attention on the more stable Katanga Province, where it was exploring a 3,000-square-kilometer concession near Manono, one of the main historic centers of tin production in the country (Metals Place, 2008b).

Egypt.—Mena Glass, through its fully owned subsidiary Sphinx Glass Co. (Cairo), signed a $143 million agreement with Ianua S.p.A. (Padova, Italy) for the engineering, plant construction, assembly, and supervision of a new greenfield float glass manufacturing facility. Sphinx Glass' greenfield plant would be in Sadat City, about 70 km north of Cairo and had licensed production technologies from PPG Industries Inc. (Pittsburgh, PA). The plant would have a production capacity of 600 metric tons per day of glass. The glass, with thickness between 2 and 19 millimeters, would be manufactured for use in the automotive and construction sectors. The float glass process uses a substantial amount of tin (Glass Magazine, 2008c).

Indonesia.—PT Timah Tbk (Bangka), the world's second ranked tin producer, announced plans to build two downstream facilities by yearend 2008. Its solder factory on Kundur Island, Riau Province, was planned for an October 2008 startup, and would have a production capacity of 2,000 t/yr of solder wire. The second factory would produce tin chemicals to be used mostly in the plastics field. It was expected to be operational by yearend 2008, and would have a capacity of 10,000 t/yr (Metals Place, 2008h).

PT Timah planned to produce 45,000 t of refined tin in 2008, 23% lower than the record output of 58,000 t in 2007. Twenty-five percent of Timah's output was sold to traders and the rest to end users around the world (CRU International Ltd., 2008f).

A consortium of seven small Indonesian tin smelters announced that they stopped production in October because of falling tin prices. They indicated that the stoppage could continue until yearend 2008. The consortium operated in Indonesia's main tin-producing region of Bangka, Belitung Province, Sumatra Island, and had a combined production capacity of 5,000 metric tons per month (t/mo) of ingots, although actual production had been about 3,000 t/mo (Metals Place, 2008d).

Malaysia.—Malaysia Smelting Corp. (MSC) (Kuala Lumpur, Kuala Lumpur Federal Territory) announced the signing of an agreement between its 60%-owned subsidiaries PT Tenaga Anugerah and PT Sarana Marina (both in Indonesia) that would allow it to start offshore tin production in 2008. MSC's main tin holding in Indonesia was its 75% stake in PT Koba Tin, which has onshore mining operations and a smelter on Bangka Island (TIN World, 2008a).

Poland.—Fenix Metals Ltd. (Tarnobrzeg) started producing at its 3,500-t/yr capacity secondary tin refinery. Fenix began business in 2004 as a secondary tin smelter and solder producer. The new installation would enable Fenix to supply more pure tin and lead-free solder products. The vacuum distillation plant was installed by the inventor of the technology—Dan Engineering Co. (Copenhagen, Denmark). Dan Engineering was the majority shareholder in Fenix with Stoop N.V. of Belgium, also a partner (CRU International Ltd., 2008e).

Thailand.—Rising demand for steel cans prompted investment plans by the country's two tinplate producers. The country's largest producer, Thai Tinplate Manufacturing Co. Ltd. (Samut Prakam), announced plans to spend $6 million to increase its tin-free steel production capacity by 30% to 156,000 t/yr by yearend 2008. The company also operated three tinplating lines with a combined capacity of 400,000 t/yr. The second tinplate producer, Siam Tinplate Co. Ltd. (Bangkok), was proceeding with the construction of a second tinplate line, due to be completed by July 2009, which would increase its capacity to 270,000 t/yr. Analysts estimated the Thai tinplate market to have been 570,000 t in 2007 and projected it to be 700,000 t in 2011 (Metals Place, 2008g).

Outlook

Domestic demand for primary tin worldwide was expected to increase moderately in the near term, at a rate of about 3% per year. That rate, however, could double in a few years if new applications—especially those in which tin is substituted for toxic materials, such as lead-free solders—continue to find acceptance in the marketplace.

World tin reserves appeared to be adequate to meet foreseeable demand. Secondary sources of tin were likely to remain an important component of supply, especially in the United States. National Defense Stockpile tin stocks were expected to be exhausted by yearend 2009 at the current rate of sales. The August 2008 cessation of tin sales from the NDS, unless revised, will halt tin supply from this source. Domestic tin requirements were expected to continue to be met primarily through imports.

References Cited

Canmaker, The, 2008, Russia's Severstal to buy Esmark: The Canmaker, v. 21, August, p. 8–9.

Can Manufacturers Institute, 2008, Annual report and can shipments report: Washington, DC, Can Manufacturers Institute, 23 p.

China Metal Market—Lead, Zinc & Tin, 2008, MOFCOM—Tin export quota down by 30% in 2009: China Metal Market—Lead, Zinc & Tin, no. 143, November, p. 13–14.

CRU International Ltd., 2008a, CRU Week in the News: CRU International Ltd., February 21. (Accessed February 21, 2008, via http://www.crumonitor.com.)

CRU International Ltd., 2008b, CRU Week in the News: CRU International Ltd., September 25. (Accessed September 26, 2008, via http://www.crumonitor.com.)

CRU International Ltd., 2008c, CRU Week in the News: CRU International Ltd., October 9. (Accessed October 9, 2008, via http://www.crumonitor.com.)

CRU International Ltd., 2008d, CRU Week in the News: CRU International Ltd., October 16. (Accessed October 16, 2008, via http://www.crumonitor.com.)

CRU International Ltd., 2008e, CRU Week in the News: CRU International Ltd., October 23. (Accessed October 23, 2008, via http://www.crumonitor.com.)

CRU International Ltd., 2008f, CRU Week in the News: CRU International Ltd., October 30. (Accessed October 30, 2008, via http://www.crumonitor.com.)

Glass Magazine, 2008a, AGC to restructure: Glass Magazine, v. 58, no. 6, June, p. 7.

Glass Magazine, 2008b, Domestic news: Glass Magazine, v. 58, no. 6, June, p. 14.

Glass Magazine, 2008c, International briefs: Glass Magazine, v. 58, no. 2, February, p. 15.

Kangaroo Metals Ltd., 2008, Riverside alluvial tin plant to commence full operations: Perth, Western Australia, Australia, Kangaroo Metals Ltd. news release, June 23, 3 p.

Metals Place, 2008a, Ausmelt plant for Vinto: Metals Place, February 28. (Accessed March 3, 2008, at http://metalsplace.com/news/articles/18023/ausmelt-plant-for-vinto/.)

Metals Place, 2008b, Congo suspends mining in tin ore-rich Walikale: Metals Place, February 25. (Accessed February 27, 2008, at http://metalsplace.com/news/articles/17926/congo-suspends-mining-in-tin-ore-rich-walikale-area/.)

Metals Place, 2008c, Glencore and Bolivian government near final deal on mines, smelter: Metals Place, July 12. (Accessed July 15, 2008, at http://metalsplace.com/news/articles/21265/glencore-and-bolivian-government-near-final-deal-on-mines, smelter/.)

Metals Place, 2008d, Indonesian tin smelters halt output on low prices: Metals Place, October 22. (Accessed October 23, 2008, at http://metalsplace.com/news/articles/23092/indonesia-tin-smelters-halt-output-on-low-prices/.)

Metals Place, 2008e, ITRI report calls for increased investment in tin mining: Metals Place, February 20. (Accessed February 21, 2008, at http://metalsplace.com/news/articles/17800/itri-report-calls-for-increased-investment-in-tin-mining/.)

Metals Place, 2008f, State investment in Bolivian projects to triple: Metals Place, October 2. (Accessed October 7, 2008, at http://metalsplace.com/news/articles/22594/state-investment-in-bolivian-projects-to-triple/.)

Metals Place, 2008g, Thai market for tin mill products growing: Metals Place, February 29. (Accessed March 3, 2008, at http://metalsplace.com/news/articles/18052/thai-market-for-tin-mill-products-growing/.)

Metals Place, 2008h, Timah to construct upstream factories to expand business: Metals Place, July 8. (Accessed July 9, 2008, at http://metalsplace.com/news/articles/21175/timah-to-construct-upstream-factores-to-expand-business

Platts Metals Week, 2008a, Peru's Brescia to buy Brazil tin mine: Platts Metals Week, v. 79, no. 39, September 29, p. 4.

Platts Metals Week, 2008b, Stellar buys Tasmanian tin stake: Platts Metals Week, v. 79, no. 12, March 24, p. 7.

Platts Metals Week, 2008c, Tin use falls in Q4—ITRI: Platts Metals Week, v. 79, no. 51, December 22, p. 17.

TIN World, 2008a, MSC invests in Indonesian mining venture: TIN World, no. 21, Spring, p. 6.

TIN World, 2008b, Renison restart projected for 2008: TIN World, no. 21, Spring, p. 6.

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

Recycling—Metals. Ch. in Minerals Yearbook, annual.
Tin. Ch. in Mineral Commodity Summaries, annual.
Tin. Ch. in United States Mineral Resources, Professional Paper 820, 1973.
Tin. International Strategic Minerals Inventory Summary Report, Circular 930–J, 1990.
Tin. Mineral Industry Surveys, monthly.
Tin Resources of the World, Bulletin 1301, 1969.

Other

Canadian Mining Journal.
Resource World.
Resources Recycling.
Roskill Information Services Ltd.
Tin. Ch. in Mineral Facts and Problems, U.S. Bureau of Mines Bulletin 675, 1985.
Wall Street Journal, The.
Waste Age.

TABLE 1
SALIENT TIN STATISTICS[1]

		2004	2005	2006	2007	2008
United States:						
Production, secondary, contained tin[e]	metric tons	5,240	11,700	11,600	12,200 [r]	11,500
Exports, refined tin	do.	3,650	4,330	5,490	6,410	9,800
Imports for consumption, refined tin	do.	47,600	37,500	43,300	34,600	36,300
Consumption, contained tin:						
Primary	do.	36,700	31,400	29,200	23,700	22,900
Secondary	do.	7,990	9,170	8,480	7,490	6,250
Stocks, yearend, U.S. industry, contained tin	do.	8,980	8,080	7,890	9,100	8,560
Prices, average, contained tin:						
New York, NY, market	cents per pound	409.37	360.94	419.49	679.50	864.53
Platts Metals Week composite	do.	547.30	483.05	565.12	899.48	1,128.97
London, United Kingdom	do.	385.00	334.00	398.00	659.05	836.76
Kuala Lumpur, Malaysia	do.	385.11	333.55	397.69	658.42	837.70
World, production, contained tin:						
Mine	metric tons	302,000 [r]	297,000 [r]	290,000 [r]	303,000 [r]	299,000 [e]
Smelter:						
Primary	do.	295,000	324,000	319,000 [r]	324,000 [r]	307,000 [e]
Secondary	do.	11,700	20,100 [r]	19,100	18,600 [r]	17,700 [e]
Undifferentiated	do.	200 [e]	200	50	--	--

[e]Estimated. [r]Revised. do. Ditto. -- Zero.
[1]Data are rounded to no more than three significant digits, except prices.

TABLE 2

U.S. CONSUMPTION OF PRIMARY AND SECONDARY TIN[1]

(Metric tons of contained tin)

	2007	2008
Stocks, January 1[2]	7,230	8,760
Net receipts during year:		
Primary	25,600	22,700
Secondary	4,950	4,300
Scrap	3,030	2,410
Total receipts	33,600	29,400
Total available	40,800	38,200
Tin consumed in manufactured products:		
Primary	23,700	22,900
Secondary	7,490	6,250
Total	31,100	29,200
Intercompany transactions in scrap	505	402
Total processed	31,700	29,600
Stocks, December 31 (total available less total processed)	8,980 r	8,460

rRevised.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes tin in transit in the United States.

TABLE 3

U.S. CONSUMPTION OF TIN, BY FINISHED PRODUCT[1]

(Metric tons of contained tin)

	2007			2008		
Product	Primary	Secondary	Total	Primary	Secondary	Total
Alloys, miscellaneous[2]	1,880	W	1,880	1,980	235	2,210
Babbitt	604	W	604	556	36	592
Bar tin	788	W	788	767	--	767
Bronze and brass	1,110	1,690	2,800	1,130	1,330	2,460
Chemicals	6,070	W	6,070	5,440	W	5,440
Collapsible tubes and foil	W	W	W	W	W	W
Solder	4,970	5,460	10,400	5,110	W	5,110
Tinning	451	--	451	395	--	395
Tinplate[3]	7,010	--	7,010	6,840	--	6,840
Tin powder	W	W	W	W	W	W
Type metal	W	W	W	W	W	W
White metal[4]	W	W	W	W	W	W
Other	777	339	1,120	720	4,650	5,370
Total	23,700	7,490	31,100	22,900	6,250	29,200

W Withheld to avoid disclosing company proprietary data; included with "Other." -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes terne metal.

[3]Includes secondary pig tin and tin acquired in chemicals.

[4]Includes pewter, britannia metal, and jewelers' metal.

TABLE 4
U.S. INDUSTRY YEAREND TIN STOCKS[1]

(Metric tons)

	2007	2008
Plant raw materials:		
Pig tin:		
Virgin[2]	7,280	6,690
Secondary	502	504
In process[3]	871	865
Total	8,650	8,060
Additional pig tin:		
Jobbers-importers	277	314
Afloat to United States	172	190
Total	449	504
Grand total	9,100	8,560

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes tin in transit in the United States.

[3]Data represent scrap only, tin content.

TABLE 5
U.S. STOCKS, RECEIPTS, AND CONSUMPTION OF NEW AND OLD SCRAP AND TIN RECOVERED, BY TYPE OF SCRAP[1]

(Metric tons)

	Gross weight of scrap								
	Stocks,		Consumption			Stocks,	Tin recovered[e]		
Type of scrap	January 1	Receipts	New	Old	Total	December 31	New	Old	Total
2007:									
Copper-base scrap:									
Ingot makers	3,850 [r]	75,900 [r]	15,100	60,500	75,600	4,200 [r]	531	2,650	3,180
Brass mills[2]	W	W	W	W	W	-- [r]	1,480	W	1,480
Foundries and other plants	1,580 [r]	24,700 [r]	W	W	24,600	1,670 [r]	W	461	461
Total	XX	XX	XX	XX	XX	XX	2,010	3,110 [r]	5,120 [r]
Lead-base scrap	29,400	1,330,000	32,500	1,310,000	1,340,000	25,100	853	9,080	9,940
Tin-base scrap[3]	W	W	W	W	W	W	W	W	W
Grand total	XX	XX	XX	XX	XX	XX	2,860	12,200 [r]	15,100 [r]
2008:									
Copper-base scrap:									
Ingot makers	4,200	70,100	15,300	54,800	70,000	4,260	W	2,420	2,420
Brass mills[2]	--	W	W	--	W	--	1,390	--	1,390
Foundries and other plants	1,670	21,000	16,000	4,970	21,000	1,660	W	144	144
Total	XX	XX	XX	XX	XX	XX	1,390	2,560	3,950
Lead-base scrap	25,100	1,230,000	26,800	1,220,000	1,240,000	16,500	703	8,910	9,610
Tin-base scrap[3]	W	W	W	W	W	W	W	W	W
Grand total	XX	XX	XX	XX	XX	XX	2,100	11,500	13,600

[e]Estimated. [r]Revised. W Withheld to avoid disclosing company proprietary data. XX Not applicable. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Consumption is assumed to be equal to receipts.

[3]Includes tinplate and other scrap recovered at detinning plants.

TABLE 6
U.S. EXPORTS OF TIN IN VARIOUS FORMS[1]

	2007		2008	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Ingots and pigs	6,410	$46,400	9,800	$62,000
Tin scrap and other tin-bearing material except tinplate scrap (gross weight)[2]	13,000	53,300	14,500	65,600
Tinplate and terneplate (gross weight)[2]	194,000	118,000	247,000	192,000

[1]Data are rounded to no more than three significant digits.

[2]Includes rods, profiles, flakes, tubes, and pipes.

Source: U.S. Census Bureau.

TABLE 7
U.S. IMPORTS FOR CONSUMPTION OF TIN IN VARIOUS FORMS[1]

	2007		2008	
	Quantity (metric tons, gross weight)	Value (thousands)	Quantity (metric tons, gross weight)	Value (thousands)
Dross, skimmings, scrap residues, tin alloys, n.s.p.f.[2]	11,700	$25,800	24,200	$33,300
Miscellaneous[3]	XX	38,400	XX	71,100
Tin compounds	448	6,260	800	15,800
Tinplate and terneplate	471,000	369,000	292,000	271,000
Tinplate scrap	6,690	2,050	25,900	7,040

XX Not applicable.

[1]Data are rounded to no more than three significant digits.

[2]Not specifically provided for.

[3]Includes tinfoil, tin powder, flitters, metallics, manufactures, and n.s.p.f.

Source: U.S. Census Bureau.

TABLE 8
U.S. IMPORTS FOR CONSUMPTION OF UNWROUGHT TIN METAL, BY COUNTRY[1]

	2007		2008	
Country	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Belgium	29	$353	8	$185
Bermuda	250	3,600	--	--
Bolivia	4,340	62,900	4,980	92,400
Brazil	2,600	33,200	1,570	25,100
Canada	20	283	4	80
Chile	--	--	100	1,300
China	4,230	52,900	2,380	39,100
Germany	--	--	5	100
Indonesia	1,680	19,300	2,000	28,000
Malaysia	14	144	1,740	33,000
Mexico	--	--	29	273
Netherlands	100	1,060	--	--
Peru	18,700	262,000	20,900	363,000
Singapore	1,730	25,400	706	13,700
Taiwan	15	214	6	37
Thailand	--	--	1,670	36,300
United Kingdom	881	11,700	225	3,880
Other	-- [r]	-- [r]	--	--
Total	34,600	473,000	36,300	636,000

[r]Revised. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 9

TIN: WORLD MINE PRODUCTION, BY COUNTRY[1, 2]

(Metric tons)

Country	2004	2005	2006	2007	2008[e]
Australia	1,196	2,819	1,478	2,071 [r]	1,783 [3]
Bolivia	17,569	18,640	17,669	15,972 [r]	17,319 [3]
Brazil	12,202	11,739	9,528 [r]	12,596 [r]	11,600
Burma[4]	526	708	923	830 [r]	741 [3]
Burundi	9	4	46	2 [r]	21 [3]
China[e]	118,000	126,000	126,000	146,000	110,000
Congo (Kinshasa)[e]	4,900 [r]	4,400 [r]	3,800 [r]	8,900 [r]	11,800
Indonesia	65,772	78,404	80,933	66,137 [r]	96,000
Laos[e]	400 [3]	450	450	450	450
Malaysia	2,745	2,857	2,398	2,263 [r]	2,200
Mexico	24	17	25	25	15
Namibia	15	--	--	--	--
Niger[e]	3,100 [3]	14 [r]	13 [r]	11 [r]	10
Nigeria[e, 5]	1,000	1,300	1,400	1,500	1,500
Peru	67,675	42,145	38,470	39,019	39,037 [3]
Portugal	220	243	25	25	40
Russia[e]	2,500	3,000	3,000	2,500	1,500
Rwanda	190 [r]	170 [r]	470 [r]	899 [r]	1,100 [e]
Spain	231	--	--	--	--
Thailand	586	158 [e]	190	120	120
Uganda	2	2	2	2	2
Vietnam[e]	3,500	3,500 [r]	3,500 [r]	3,500	3,500
Total	302,000 [r]	297,000 [r]	290,000 [r]	303,000 [r]	299,000

[e]Estimated. [r]Revised. -- Zero.

[1]World totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]Table includes data available through July 10, 2009.

[3]Reported figure.

[4]Includes content of tin-tungsten concentrate.

[5]Concentrate gross weight reported, estimated 62% tin content.

TABLE 10

TIN: WORLD SMELTER PRODUCTION, BY COUNTRY[1, 2]

(Metric tons)

Country	2004	2005	2006	2007	2008[e]
Australia:					
Primary	467	594	572	118	-- [3]
Secondary[e]	300	300	400	400	400
Total[e]	767	894	972	518	400
Belgium, secondary[e]	5,000	7,000	6,000	5,000	5,000
Bolivia, primary	13,627	13,841	14,100 [e]	12,251 [r]	12,000
Brazil:					
Primary	11,512	8,986	8,780	9,987 [r]	9,600
Secondary[e]	250	250	250	250	250
Total	11,762	9,236	9,030	10,237 [r]	9,850
Bulgaria, secondary[e]	10	10	10	10	10
Burma, primary[e]	30	30	30	30	30
China, primary[e]	115,000	122,000	132,000	149,000 [r]	129,000
Czech Republic, secondary[e]	100	100	100	100	100
Denmark, secondary[e]	100	100	100	100	75
Greece, secondary[e]	100	100	100	100	75
Indonesia, primary	49,872	65,300	65,357 [r]	64,127 [r]	70,000
Japan, primary	707	754	854	879 [r]	890 [3]
Malaysia, primary	33,914	36,924	22,850	25,263 [r]	23,000
Mexico, primary	25	17	25	25	15
Nigeria, primary[e]	25	25	--	--	--
Norway, secondary[e]	50	50	50	50	50
Peru, primary	41,613	36,733	40,495	36,004	38,865 [3]
Russia:[e]					
Primary	4,570	5,000	4,980	3,800	2,000
Secondary	500	500	500	400	300
Total	5,070	5,500	5,480	4,200	2,300
Rwanda	200 [e]	200	50	--	-- [3]
Spain, secondary[e]	25	10	10	10	10
Thailand, primary	20,800	31,600	27,540	20,400 [e]	20,000
United States, secondary	5,240	11,700	11,600	12,200 [r]	11,500 [3]
Vietnam, primary	2,356	1,766	1,830	2,000	2,000
Grand total	306,000	344,000	339,000 [r]	342,000 [r]	325,000
Of which:					
Primary	295,000	324,000	319,000 [r]	324,000 [r]	307,000
Secondary	11,700	20,100 [r]	19,100	18,600 [r]	17,700
Undifferentiated	200 [e]	200	50	--	--

[e]Estimated. [r]Revised. -- Zero.

[1]World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]Whenever possible, total output has been separated into primary (from ores and concentrates) and secondary (tin metal recovered from old scrap). This table reflects metal production at the first measurable stage of metal output. Table includes data available through July 18, 2009.

[3]Reported figure.