



# 2010 Minerals Yearbook

---

TIN

---

# 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 Lisa D. Miller, 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 2010, 25 firms consumed 91% of the primary tin used domestically. The major uses were as follows: metal containers, 19%; solders, 18%; transportation, 16%; construction, 10%; and other, 37%. The estimated value of primary tin metal consumed domestically was \$689 million. Industry stocks declined by 9% compared with those at yearend 2009.

In 2010, approximately 13,600 metric tons (t) of tin scrap, most of it from old scrap was produced (table 5). About 16% of the tin consumed in the United States was recycled metal.

World tin mine output declined slightly compared with that in 2009, and world primary tin smelter production increased by 3% compared with that in 2009 (tables 1, 9, 10). Of the 18 countries in which tin was mined, the top 5 accounted for 90% of the total world tin production of 277,000 t. China was the leading producer (43% of world output), followed by Indonesia (20%), and Peru (12%).

Industry analysts considered the world tin market in 2010 to have a moderate deficit of supply relative to consumption. The composite tin price increased by 48% from that of 2009. World tin reserves were estimated to be 5.2 million metric tons (Mt), about 15 times the estimated world primary tin consumption of 350,000 t. Most tin reserves were in Asia and South America.

## Legislation and Government Programs

In fiscal year 2008, the Defense Logistics Agency (DLA) suspended the public sales of tin pending additional study; DLA has sold no tin since then. The Annual Materials Plan (AMP) for fiscal year 2010 was set at 4,000 t of tin. The AMP for fiscal year 2011 was reduced to zero as tin was established as a “goal” material, to be held in reserve and was not available for sale. As of December 31, 2010, the tin inventory was 4,020 t, all of which was stored at the DLA’s depot in Hammond, IN (K. Watt Lough, DLA Strategic Materials, written. commun., September 21, 2011).

On December 17, 2010, the “Reduction of Lead in Drinking Water Act” (Public Law 111–380) was passed by the U.S. Congress and was signed into law by the President on January 4, 2011. The law becomes effective January 4, 2014, allowing ample time for manufacturers to comply. The law lowers the national standard for lead in faucets, pipe fittings, and pipes to 0.25% from 8.0% and harmonizes lead standards across the country. Tin industry officials believed the lower lead standard could promote greater use of tin in plumbing fixtures because many fixtures are comprised of alloys of lead and tin. The new fixtures, pipes, and solders that join them were expected to be lower in lead, and higher in tin (Plumbing Manufacturers International, 2011).

## Production

**Mine.**—Tin was not mined in the United States in 2010. Until 1993, a few small tin mines had operated sporadically in the United States; no tin mine production data have been reported to the U.S. Geological Survey (USGS) since that year.

**Secondary.**—The United States was the world’s leading producer of secondary or scrap tin. Most secondary tin was generated during manufacturing processes from various scrapped alloys of tin and recycled in those same alloy industries. Secondary tin from recycled fabricated parts was used in many kinds of products and was a particularly important source of tin for the manufacture of brass, bronze, and solder.

## Consumption

In 2010, domestic production from scrap was estimated to be 13,600 t, just slightly more than that in 2009 (table 5). Domestic consumption data for tin were developed by the USGS from a voluntary survey of tin consumers. Of the 110 firms to which a survey form was sent, 72 responded, including the major consumers. Data for the nonrespondents were estimated based on prior-year reporting.

The total number of metal cans shipped domestically was 130 billion in 2010 compared with 129 billion in 2009. 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 markets (Can Manufacturers Institute, 2011, p. 20).

Researchers at Purdue University (West Lafayette, IN) announced the development of a potential new tool for medical diagnostics, testing food and water contamination, and for use in crime scene forensics. The technique uses a combination of light and electric fields to position droplets on a specific region of a sensor so that particles such as bacteria, viruses, and DNA, which are contained inside the drops, can be analyzed. The technology features electrodes made of indium and tin oxide, is transparent and electrically conductive, and is used in consumer electronics in touch-screen displays (Venere, 2010).

## Prices

The Platts Metals Week average composite price for tin metal increased by 48% from that in 2009. Industry observers attributed the significant price increase to a rebound in consumption following the 2008–09 world economic crisis, restocking, continued growth in consumption in several of the world’s developing economies, and the role played by the world’s investment funds. The London Metal Exchange Ltd. remained the principal trading site for tin.

## Foreign Trade

U.S. imports of refined tin, which supplied most domestic tin requirements, increased by 7% compared with those of 2009 (table 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, Malaysia, and Indonesia, in descending order. Refined tin exports were significantly less than imports (tables 6, 8).

## World Review

Analysts at Société Générale (Paris, France) issued a report predicting that world tin demand would increase in 2010 based mostly on improved global sales for electronic items, with Government stimulus packages in China offering particular support. The analysts expected tin demand to increase by 8% to 9% during 2010, supported by growth in the Chinese domestic appliance market and the beginnings of demand recovery in Europe, Japan, and North America. A Chinese Government program aimed at stimulating replacement demand for household appliances in nine Provinces increased consumption in 2009. The global tin market recorded a surplus of 12,900 t in 2009, according to the World Bureau of Metal Statistics (American Metal Market, 2010c).

ITRI Ltd. (Frogmore, United Kingdom) signed an agreement with the International Conference on the Great Lakes Region to collaborate on tin traceability and due-diligence programs in central Africa. Both organizations are working to limit opportunities for armed groups in the region to benefit financially from the production and trade of minerals. New U.S. regulations on the trade of material from conflict zones were designed to require reporting on products derived from minerals from Congo (Kinshasa) and surrounding countries. The agreement initially would address traceability for columbite-tantalum (coltan), cassiterite, wolframite, or their derivatives (the raw materials for tantalum and niobium, tin, and tungsten, respectively), and gold (Davies, 2010).

According to the ITRI, the top 12 world producers of refined tin in 2010 were, in descending order:

1. Yunnan Tin Group Co., Ltd. (China)
2. PT Timah Tbk (Indonesia)
3. Malaysia Smelting Corp. (Malaysia)
4. Minsur S.A. (Peru)
5. Thailand Smelting and Refining Co. Ltd. (Thaisarco)  
(Thailand)
6. Liuzhou China Tin Group Co. Ltd. (China)
7. Yunnan Chengfeng Non-Ferrous Metals Co., Ltd. (China)
8. Empresa Metalúrgica Vinto (Bolivia)
9. Metallo Chimique N.V. (Belgium)
10. Geijiu Zi-Li Ltd. (China)
11. PT Koba Tin (Indonesia)
12. Jiangxi Nanshan Tin Co. Ltd. (China)

The ITRI's International Tin Conference held in Vancouver, British Columbia, Canada, in May included information on global tin supply and demand (CRU Tin Monitor, 2010b).

China has rapidly transformed from a large net exporter of tin to a net importer, with supply increasingly constrained by raw materials availability, despite increased recycling.

Tin consumption began to show signs of increasing in 2010. Global solder shipments in the first quarter of 2010 were 55% higher than in the first quarter of 2009. However, there were some concerns about tin use—there was a strong risk of substitutions in PVC stabilizers.

Investment in new mine production was moderate. Yunnan Tin Corp., Timah, Minsur, and Metals X Ltd. (East Perth, Western Australia, Australia) have made investments in future supply, and some new producers like JSC Syrymbet (Almaty, Kazakhstan) could start up within the next 2 years. However, most other projects discussed had not even reached the feasibility stage.

Artisanal mining and “conflict minerals,” which account for one-half of current world tin mine supply, can be seen as a development opportunity and a means of breaking out of the poverty cycle for undeveloped countries. There was growing pressure from non-Government organizations and Governments to restrict tin supply from some sources, notably parts of Congo (Kinshasa), as part of the “conflict minerals” situation.

According to the most recent survey conducted by ITRI, global refined tin consumption was estimated to have increased by almost 13% in 2010 to 360,000 t. Industrial and electronic solders together accounted for almost 54% of refined tin demand, having grown by an estimated 22,300 t in 2010. Solder, primarily for electronic applications, has consistently accounted for more than 50% of the tin end-use market since 2005. The estimated world tin use figure suggests that tin consumption was higher than previously expected following the recent global financial crisis, with the 2010 figures approximately the same as those of 2006. The study indicated that China's tin use had reached a new record level of 147,000 t, although consumption in the rest of the world was about 25,000 t less than its 2006 peak. The ITRI estimated that the world's tin consumers used about 59,000 t of secondary (scrap) tin in 2009, and estimated that figure to have increased slightly to 60,000 t in 2010, with China accounting for more than 75% of the world total. The ITRI data came from 171 companies worldwide, representing more than 47% of estimated refined tin usage (Metal-Pages, 2011).

**Australia.**—Stellar Resources Ltd. (Melbourne, Victoria) raised \$21 million, which was expected to be used to resume drilling at its Gurlays deposit on the west coast of Tasmania and to carry out resource evaluation work at the nearby Heemskirk project, which it jointly owns with Gippsland Ltd. (Claremont, Western Australia). Magna Mining NL (West Perth) signed an agreement with Troycgold Investment Pty. Ltd. (Buddina, Queensland) to help develop a tin tailings project in Russia (ITRI Ltd., 2010e).

Venture Minerals Ltd. (Subiaco, Western Australia) announced that drilling at its Mt. Lindsay tin-tungsten project in Tasmania increased the estimates of contained tin by 28%. The latest resource included a series of zones in skarn mineralization, extending over a strike length of 3.9 kilometers. The drilling and resource estimate were completed in preparation for a prefeasibility study for which the firm was fully funded with \$28 million in cash following a recent funding campaign. Venture

estimated indicated tin reserves at Mt. Lindsay to be 6.2 Mt at a grade of 0.4% tin and inferred tin reserves to be 4.2 Mt at a grade of 0.4% tin (Mining Journal, 2010).

All the assets controlled by Van Dieman Mines Plc (North Sydney, New South Wales) have been put up for sale. The company filed for bankruptcy in February 2009 following continuing startup problems, and its major shareholder would not supply additional funds. The firm's Endurance and Scotia projects had a planned production capacity of 1,300 metric tons per year (t/yr) of tin-in-concentrate (CRU Tin Monitor, 2010a).

Consolidated Tin Mines Ltd. (North Cairns, Queensland) announced that it had been granted a mineral development license for the Windermere project by the Queensland government after a 2-year wait, enabling it to add that resource to its adjacent Mt. Garnet project near Cairns. Windermere has a reported resource of 2.1 Mt grading 0.55% tin, increasing Mt. Garnet's total resource to 7.3 Mt grading 0.60% tin. Consolidated acquired Windermere from Metals X's subsidiary Bluestone Nominees Pty. Ltd. in February 2008. A scoping study in July 2010 indicated that without the addition of the Windermere resource, a centralized Mt. Garnet plant would have the potential to process 700,000 t/yr of tin ore to produce 22,900 t of tin metal in concentrate (Platts Metals Week, 2010).

Metals X concluded the sale of 50% of its Tasmanian assets for \$44 million to form a joint venture between its subsidiary Bluestone Mines Tasmania Pty. Ltd. (Renison Bell, Tasmania) and YT Parksong Australia Holding Pty. Ltd. (Yunnan Province, China). The joint venture was expected to operate as Bluestone Mines Tasmania Joint Venture Pty. Ltd. Metals X's Renison operations were operating at a production rate of 8,000 t/yr of tin-in-concentrate (ITRI Ltd., 2010b).

**Bolivia.**—Empresa Minera Huanuni (Oruro) began a tender process for the construction of a much larger tin concentrator that would increase ore throughput to 3,000 metric tons per day (t/d) from 1,200 t/d. The expansion plan was originally approved in 2009. The expansion project will require a \$40 million investment, to be provided by the company that wins the tender and Government-owned mining organization Corporación Minera de Bolivia (La Paz). The Huanuni tin mine produced almost 10,000 t of tin-in-concentrate in 2009 and is estimated to be at least equal to that in 2010 (CRU Tin Monitor, 2010a).

EMV announced that work would be underway in September 2010 to install an Ausmelt tin smelter at its Vinto site, with completion due by August 2011 and startup expected by September 2011. The Vinto tin smelter produced 13,000 t of refined tin in 2010. Vinto selected the Ausmelt style of tin smelter to improve the efficiency of the smelting operation (ITRI Ltd., 2010f; Shahriari, 2010).

**Canada.**—Adex Mining Inc. (Toronto, Ontario) announced that it may start mining tin and indium at its Mount Pleasant property in southwestern New Brunswick. A decision on moving ahead with the mine, which would be North America's first new tin mine in several decades, was expected by yearend 2010 but hinged on signing an offtake deal. Adex ran a variety of pilot production programs in 2010. The company's preliminary economic assessment showed the site's north zone could produce 3,200 t/yr of tin, or about 1% of global supply, for about 12 years, while indium production could total about 40 t/yr or

roughly 10% of the global supply. The mine could also produce about 4,000 t/yr of zinc (American Metal Market, 2010a).

**China.**—Yunnan Tin Group, the world's leading tin producer, announced plans to double tin ore throughput from its Laochang ore deposit to 3,000 t/d during the next 9 years. The company planned a three-stage process for the expansion of the Laochang field, its leading mine. The first stage would increase the mine's ore treatment rate to 1,500 t/d by 2012. The second-stage expansion would take output to 2,000 t/d by 2014, and the ultimate goal of 3,000 t/d would be achieved by 2019. Yunnan also planned to boost mine production by the development of Wuchangping project in Hunan Province. Yunnan produced 59,200 t of refined tin in 2010 (ITRI Ltd., 2010g).

China Tin Group Co. Ltd. (Liuzhou, Guangxi Province) planned to have a public offering of its shares early in 2011. Officials at Guangxi Nonferrous Metals Group Ltd. (Guangxi, Zhuang Province), which owned China Tin, stated that the parent company would include its own antimony, silver, tin, and zinc production assets in China Tin. The parent company would submit the public offering application to the China Securities Regulatory Commission in October 2010 and expected to raise up to \$368 million through the public float. Simultaneously, Guangxi signed a series of agreements on overseas projects, mainly in southeast Asia, including establishing offices in Laos to explore for antimony, copper, gold, lead, potash, tin, and zinc. China Tin has the leading tin reserves in China (ITRI Ltd., 2010c).

**Indonesia.**—The Indonesian tin smelter consortium, Banka Belitung Timah Sejahtera PT (BBTS) (Pangkalpinang), announced that it expected its tin output to fall by 40% in 2010, to about 12,000 t owing to excessive rain. BBTS observed that the authorities continued to monitor independent tin miners, resulting in less tin ore to process (American Metal Market, 2010b). Timah announced production figures indicating that, increasingly, offshore tin mining was contributing more to its production. Timah produced 40,400 t of tin in 2010 (ITRI Ltd., 2010d).

**Malaysia.**—MSC, one of the world's leading tin smelters, issued a prospectus to list its shares on the Singapore Stock Exchange. Currently MSC is listed on the Bursa Malaysia (the Malaysian stock market). The stock offering proceeds were expected to be used to acquire plant machinery and to develop new mines through selective acquisition of suitable mining concessions or leases, as well as of mining projects and assets primarily in Indonesia and Malaysia. MSC operated two tin smelting facilities—Bangka Island (Indonesia) and Butterworth (Penang). The Butterworth operation has a production capacity of about 35,000 t/yr of refined tin, and the Bangka operation has a capacity of 25,000 t/yr of refined tin. MSC was a 75%-owned subsidiary of The Straits Trading Co., Ltd. (Singapore), which is listed on the Singapore Stock Exchange (Platts Metals Week, 2011).

**Morocco.**—Kasbah Resources Ltd.'s (South Perth, Western Australia, Australia) Achmmach tin project in Morocco was reportedly on track toward the completion of a prefeasibility study on bulk underground mining of the deposit in the second quarter of 2011. The mine was expected to produce 6,000 t/yr of tin-in-concentrate during a phase I mine life of 6 years, based on the mining of 800,000 t/yr of ore grading 1% tin. A drilling program continued to firm up the resource toward a target of 10 Mt. As of August 2010, the inferred and indicated resource

was 7 Mt with a grade of 0.8% tin. Kasbah Resources may use open pit mining for some shallow deposits (ITRI Ltd., 2010a).

**Russia.**—Novosibirsk Integrated Tin Works (NOK) (Novosibirsk), Russia's sole refined tin producer, sought to declare bankruptcy. Reportedly NOK's total debt was \$38 million, of which more than one-third was overdue. NOK's refined tin production has steadily declined to very low levels in recent years, as most tin mines in Russia have closed. (CRU International Ltd., 2010).

**Spain.**—Solid Resources Ltd. (Sherwood Park, Alberta, Canada) announced that Spain's Ministry of Industry, Tourism, and Trade would cover 20% of the cost of the 2010 exploration program at the Doade-Presqueira property in the northwestern corner of Spain, which was the maximum allowable. Earlier drilling in 2003–05 identified lithium, tantalum, and tin in potentially economic quantities (ITRI Ltd., 2010f).

**United Kingdom.**—Wolf Minerals Ltd. (West Perth, Western Australia, Australia) continued progress at its Hemerdon Ball tungsten and tin project in Devon. Recent activity included metallurgical test work to confirm the process flowsheet design, plant design, engineering work, and drilling of six water monitoring bores to determine the hydrogeology of the ore body. Wolf planned a 3-million-metric-ton-per-year processing plant for the project, which officials anticipated could result in production of 500 t/yr of tin-in-concentrate (Wolf Minerals Ltd., 2010).

## Outlook

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 increase in a few years if new applications continue to find acceptance in the marketplace. Higher tin prices such as those that have prevailed in recent years, limit use in new applications.

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. The August 2008 cessation of tin sales from the National Defense Stockpile, unless revised, would end tin supply from this source. Domestic tin requirements were expected to continue to be met primarily through imports.

## References Cited

- American Metal Market, 2010a, Adex seeks tin, indium offtake partner: American Metal Market, v. 118, no. 29–5, July 23, p. 10.
- American Metal Market, 2010b, Indonesian tin consortium: American Metal Market, v. 118, no. 50–1, December 13, p. 8.
- American Metal Market, 2010c, Tin demand seen growing up to 9 percent this year: American Metal Market, v. 118, no. 10–2, October 2, p. 9.
- Can Manufacturers Institute, 2011, Annual report—2010–11: Washington, DC, Can Manufacturers Institute, 23 p.
- CRU International Ltd., 2010, CRU Week in the News: CRU International Ltd., June 10. (Accessed June 10, 2010, via <http://www.crumonitor.com>.)
- CRU Tin Monitor, 2010a, Industry news: CRU Tin Monitor, June, p. 10.
- CRU Tin Monitor, 2010b, International tin conference round-up: CRU Tin Monitor, June, p. 9.
- Davies, Janie, 2010, ITRI teaming up with ICGLR on African tin traceability: American Metal Market, v. 118, no. 50–2, December 14, p. 9.
- ITRI Ltd., 2010a, Achmmach project update: Frogmore, United Kingdom, ITRI Ltd. news release, September 1. (Accessed March 2, 2011, at [http://www.itri.co.uk/pooled/articles/BF\\_NEWSART/view.asp?Q=BF\\_NEWSART\\_320615](http://www.itri.co.uk/pooled/articles/BF_NEWSART/view.asp?Q=BF_NEWSART_320615).)

- ITRI Ltd., 2010b, Bluestone JV deal settled: Frogmore, United Kingdom, ITRI Ltd. news release, March 18. (Accessed March 18, 2010, at [http://www.itri.co.uk/pooled/articles/BF\\_NEWSART/view.asp?Q=BF\\_NEWSART\\_318402](http://www.itri.co.uk/pooled/articles/BF_NEWSART/view.asp?Q=BF_NEWSART_318402).)
- ITRI Ltd., 2010c, China Tin and parent plan overseas projects and IPO: Frogmore, United Kingdom, ITRI Ltd. news release, September 15. (Accessed September 15, 2010, at [http://www.itri.co.uk/pooled/articles/BF\\_NEWSART/view.asp?Q=BF\\_NEWSART\\_320789](http://www.itri.co.uk/pooled/articles/BF_NEWSART/view.asp?Q=BF_NEWSART_320789).)
- ITRI Ltd., 2010d, Timah's offshore drive continues: Frogmore, United Kingdom, ITRI Ltd. news release, August 31. (Accessed March 2, 2011, at [http://www.itri.co.uk/pooled/articles/BF\\_NEWSART/view.asp?Q=BF\\_NEWSART\\_320608](http://www.itri.co.uk/pooled/articles/BF_NEWSART/view.asp?Q=BF_NEWSART_320608).)
- ITRI Ltd., 2010e, Tin projects round-up: Frogmore, United Kingdom, ITRI Ltd. news release, November 24. (Accessed December 8, 2010, at [http://www.itri.co.uk/pooled/articles/BF\\_NEWSART/view.asp?Q=BF\\_NEWSART\\_321499](http://www.itri.co.uk/pooled/articles/BF_NEWSART/view.asp?Q=BF_NEWSART_321499).)
- ITRI Ltd., 2010f, Vinto Ausmelt construction begins: Frogmore, United Kingdom, ITRI Ltd. news release, September 21. (Accessed March 2, 2011, at [http://www.itri.co.uk/pooled/articles/BF\\_NEWSART/view.asp?Q=BF\\_NEWSART\\_320851](http://www.itri.co.uk/pooled/articles/BF_NEWSART/view.asp?Q=BF_NEWSART_320851).)
- ITRI Ltd., 2010g, Yunnan Tin to expand mine production: Frogmore, United Kingdom, ITRI Ltd. news release, June 23. (Accessed July 7, 2010, at [http://www.itri.co.uk/pooled/articles/BF\\_NEWSART/view.asp?Q=BF\\_NEWSART\\_319840](http://www.itri.co.uk/pooled/articles/BF_NEWSART/view.asp?Q=BF_NEWSART_319840).)
- Metal-Pages, 2011, ITRI sees strong recovery in tin consumption: Metal-Pages, January 27. (Accessed February 16, 2011, via <http://www.metal-pages.com/>.)
- Mining Journal, 2010, Mt. Lindsay tin boost: Mining Journal, November 26, p. 10.
- Platts Metals Week, 2010, Consolidated gets tin site OK: Platts Metals Week, v. 81, no. 37, September 13, p. 8–9.
- Platts Metals Week, 2011, MSC to list on Singapore exchange: Platts Metals Week, v. 82, no. 1, January 3, p. 12.
- Plumbing Manufacturers International, 2011, Reduction in lead bill is signed into law by President Obama: Plumbing Manufacturers International press release, January 6, 2 p. (Accessed February 3, 2011, at <http://www.pmihome.org/i4a/pages/index.cfm?pageID=3504>.)
- Shahriari, Sara, 2010, Bolivia's Vinto smelter to boost tin production 54% in 2011, Minister says: Bloomberg.com, July 6, 2010, 1 p. (Accessed February 1, 2012, at <http://www.bloomberg.com/news/2010-07-06/bolivia-s-vinto-smelter-to-boost-tin-production-54-in-2011-minister-says.html>.)
- Venere, Emil, 2010, New method manipulates particles for sensors, crime scene testing: West Lafayette, IN, Purdue University news release, June. (Accessed November 5, 2010, at [http://www.purdue.edu/newsroom/research/2010/story-print-deploy-layout\\_1\\_6157\\_6157.html](http://www.purdue.edu/newsroom/research/2010/story-print-deploy-layout_1_6157_6157.html).)
- Wolf Minerals Ltd., 2010, Hemerdon Ball tungsten and tin project update: Wolf Minerals Ltd. news release, April 20, 6 p. (Accessed April 30, 2010, at [http://www.wolfminerals.com.au/images/pdf/0137\\_asx\\_hemerdon\\_project\\_update\\_rl.pdf](http://www.wolfminerals.com.au/images/pdf/0137_asx_hemerdon_project_update_rl.pdf).)

## 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.

TABLE 1  
SALIENT TIN STATISTICS<sup>1</sup>

		2006	2007	2008	2009	2010
United States:						
Production, secondary, contained tin <sup>e</sup>	metric tons	11,600	12,200	11,700	11,100	10,900
Exports, refined tin	do.	5,490	6,410	9,800	3,170	5,630
Imports for consumption, refined tin	do.	43,300	34,600	36,300	33,000	35,300
Consumption, contained tin:						
Primary	do.	29,200	23,700	23,100	24,800 <sup>r</sup>	25,300
Secondary	do.	8,480	7,490	6,250	7,750	4,820
Stocks, yearend, U.S. industry, contained tin	do.	7,890	9,100	8,560	7,070 <sup>r</sup>	6,410
Prices, average, contained tin:						
New York, NY, market	cents per pound	419.49	679.50	864.53	641.62	954.13
Platts Metals Week composite	do.	565.12	899.48	1,128.97	837.08	1,239.64
London, United Kingdom	do.	398.00	659.05	836.76	615.15	925.15
Kuala Lumpur, Malaysia	do.	397.69	658.42	837.70	609.34	922.17
World, production, contained tin:						
Mine	metric tons	293,000 <sup>r</sup>	303,000 <sup>r</sup>	257,000	264,000 <sup>r</sup>	265,000 <sup>e</sup>
Smelter:						
Primary	do.	320,000	327,000	316,000 <sup>r</sup>	323,000 <sup>r</sup>	333,000 <sup>e</sup>
Secondary	do.	19,000 <sup>r</sup>	18,500 <sup>r</sup>	17,900 <sup>r</sup>	17,200 <sup>r</sup>	17,100 <sup>e</sup>
Undifferentiated	do.	50	--	--	--	--

<sup>e</sup>Estimated. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits, except prices.

TABLE 2  
U.S. CONSUMPTION OF PRIMARY AND SECONDARY TIN<sup>1</sup>

(Metric tons of contained tin)

	2009	2010
Stocks, January 1 <sup>2</sup>	8,940	6,210
Net receipts during year:		
Primary	26,200	25,100
Secondary	5,930 <sup>r</sup>	2,910
Scrap	2,170	1,920
Total receipts	34,300	29,900
Total available	43,200	36,100
Tin consumed in manufactured products:		
Primary	24,800 <sup>r</sup>	25,300
Secondary	7,750	4,820
Total	32,600	30,100
Intercompany transactions in scrap	285	1
Total processed	32,900	30,100
Stocks, December 31 (total available less total processed)	10,300	6,000

<sup>r</sup>Revised.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes tin in transit in the United States.

TABLE 3  
U.S. CONSUMPTION OF TIN, BY FINISHED PRODUCT<sup>1</sup>

(Metric tons of contained tin)

Product	2009			2010		
	Primary	Secondary	Total	Primary	Secondary	Total
Alloys, miscellaneous <sup>2</sup>	1,960	W	1,960	2,460	W	2,460
Babbitt	291 <sup>r</sup>	31	322 <sup>r</sup>	288	W	288
Bar tin	245	--	245	W	W	W
Bronze and brass	950 <sup>r</sup>	1,250 <sup>r</sup>	2,200 <sup>r</sup>	1,230	1,240	2,460
Chemicals	9,290	W	9,290	9,470	W	9,470
Solder	5,110	W	5,110	3,880	3,460	7,340
Tinning	340	--	340	387	--	387
Tinplate <sup>3</sup>	6,130	--	6,130	6,920	W	6,920
Other <sup>4</sup>	532	6,470	7,000	684	127	811
Total	24,800 <sup>r</sup>	7,750	32,600	25,300	4,820	30,100

<sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data; included with "Other." -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes terne metal.

<sup>3</sup>Includes secondary pig tin and tin acquired in chemicals.

<sup>4</sup>Includes britannia metal, collapsible tubes and foil, jewelers' metal, pewter, tin powder, type metal, and white metal.

TABLE 4  
U.S. INDUSTRY YEAREND TIN STOCKS<sup>1</sup>

(Metric tons)

	2009	2010
Plant raw materials:		
Pig tin:		
Virgin <sup>2</sup>	5,180 <sup>r</sup>	4,880
Secondary	571 <sup>r</sup>	164
In process <sup>3</sup>	856	857
Total	6,610 <sup>r</sup>	5,900
Additional pig tin:		
Jobbers-importers	266	319
Afloat to United States	190	190
Total	456	509
Grand total	7,070 <sup>r</sup>	6,410

<sup>r</sup>Revised.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes tin in transit in the United States.

<sup>3</sup>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<sup>1</sup>

(Metric tons)

Type of scrap	Gross weight of scrap								
	Stocks, January 1	Receipts	Consumption			Stocks, December 31	Tin recovered <sup>e</sup>		
			New	Old	Total		New	Old	Total
2009:									
Copper-base scrap:									
Ingot makers	3,660	60,200	10,900	49,400	60,300	3,640	373	2,180	2,560
Brass mills <sup>2</sup>	--	W	W	W	W	--	1,170	W	1,170
Foundries and other plants	1,670	22,300 <sup>r</sup>	16,300 <sup>r</sup>	5,800 <sup>r</sup>	22,100 <sup>r</sup>	1,940 <sup>r</sup>	W	147 <sup>r</sup>	147 <sup>r</sup>
Total	XX	XX	XX	XX	XX	XX	1,550	2,330	3,870
Lead-base scrap	16,500	1,160,000	29,000	1,140,000	1,170,000	11,700	760	8,740	9,500
Tin-base scrap <sup>3</sup>	W	W	W	W	W	W	W	W	W
Grand total	XX	XX	XX	XX	XX	XX	2,310	11,100	13,400
2010:									
Copper-base scrap:									
Ingot makers	3,640	61,200	12,500	48,300	60,800	4,020	433	2,170	2,600
Brass mills <sup>2</sup>	--	W	W	--	W	--	1,400	W	1,400
Foundries and other plants	1,940	17,500	15,300	2,690	18,000	1,470	W	98	98
Total	XX	XX	XX	XX	XX	XX	1,830	2,270	4,100
Lead-base scrap	11,700	1,130,000	32,600	1,090,000	1,120,000	19,000	855	8,640	9,500
Tin-base scrap <sup>3</sup>	W	W	W	W	W	W	W	W	W
Grand total	XX	XX	XX	XX	XX	XX	2,680	10,900	13,600

<sup>e</sup>Estimated. <sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data. XX Not applicable. -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Consumption is assumed to be equal to receipts.

<sup>3</sup>Includes tinplate and other scrap recovered at detinning plants.

TABLE 6  
U.S. EXPORTS OF TIN IN VARIOUS FORMS<sup>1</sup>

	2009		2010	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Ingots and pigs	3,170	\$22,200	5,630	\$35,900
Tin scrap and other tin-bearing material except tinplate scrap (gross weight) <sup>2</sup>	11,600	46,200	15,600	70,300
Tinplate and terneplate (gross weight) <sup>2</sup>	224,000	175,000	209,000	171,000

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>Includes rods, profiles, flakes, tubes, and pipes.

Source: U.S. Census Bureau.



TABLE 7  
U.S. IMPORTS FOR CONSUMPTION OF TIN IN VARIOUS FORMS<sup>1</sup>

	2009		2010	
	Quantity (metric tons, gross weight)	Value (thousands)	Quantity (metric tons, gross weight)	Value (thousands)
Dross, skimmings, scrap residues, tin alloys, n.s.p.f. <sup>2</sup>	81,300	\$23,400	58,000	\$30,700
Miscellaneous <sup>3</sup>	XX	36,200	XX	53,200
Tin compounds	601	8,180	753	13,300
Tinplate and terneplate	295,000	366,000	464,000	500,000
Tinplate scrap	27,100	5,190	68,000	14,300

XX Not applicable.

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>Not specifically provided for.

<sup>3</sup>Includes tinfoil, tin powder, flitters, metallics, and other manufactures n.s.p.f.

Source: U.S. Census Bureau.

TABLE 8  
U.S. IMPORTS FOR CONSUMPTION OF UNWROUGHT TIN METAL,  
BY COUNTRY<sup>1</sup>

Country	2009		2010	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Belgium	82	\$647	11	\$241
Bolivia	6,300	82,300	6,060	120,000
Brazil	1,050	13,600	75	1,260
Canada	30	260	89	1,630
Chile	121	1,870	641	13,100
China	1,210	14,500	887	17,900
Germany	20	391	--	--
India	64	779	(2)	5
Indonesia	3,220	16,100	3,970	37,900
Japan	--	--	1	52
Malaysia	169	1,190	4,500	90,100
Peru	20,300	266,000	16,500	322,000
Singapore	451	5,650	996	18,100
Switzerland	25	382	1	11
Thailand	15	158	1,310	30,900
United Kingdom	(2)	7	(2)	11
Vietnam	--	--	225	4,020
Other	1	5	(2)	5
Total	33,000	404,000	35,300	658,000

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 9  
TIN: WORLD MINE PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Metric tons)

Country	2006	2007	2008	2009	2010 <sup>e</sup>
Australia	1,478	2,071	1,783	5,630 <sup>r</sup>	7,000
Bolivia	18,444	15,972	17,318 <sup>r</sup>	19,575 <sup>r</sup>	20,190 <sup>3</sup>
Brazil	9,528	11,835	11,000 <sup>r</sup>	10,000 <sup>r</sup>	11,000 <sup>p</sup>
Burma <sup>4</sup>	923	830	741	672	672 <sup>3</sup>
Burundi	46	2	21	20 <sup>r,e</sup>	20
China <sup>e</sup>	126,000	146,000	110,000	115,000	120,000
Congo (Kinshasa) <sup>e</sup>	3,800	8,900	12,300 <sup>r</sup>	10,000 <sup>r</sup>	6,700
Indonesia	80,933	66,137	53,228	55,000 <sup>e</sup>	56,000
Laos	650 <sup>r</sup>	570 <sup>r</sup>	690 <sup>r</sup>	350 <sup>r</sup>	300
Malaysia	2,398	2,263	2,605	2,412 <sup>r</sup>	1,769 <sup>3</sup>
Mexico	25	25	15	-- <sup>r</sup>	--
Niger <sup>e</sup>	13	11	10	-- <sup>r</sup>	--
Nigeria <sup>e,5</sup>	1,400	180	185	183 <sup>r</sup>	180
Peru	38,470	39,019	39,037	37,503	33,848 <sup>3</sup>
Portugal	25	41	29	30 <sup>e</sup>	30
Russia <sup>e</sup>	3,000	2,500	1,500	1,200	1,100
Rwanda	390	740	980	850 <sup>e</sup>	900
Thailand	190	122 <sup>r</sup>	215 <sup>r</sup>	153 <sup>r</sup>	150
Uganda	2	2	2	2 <sup>e</sup>	2
Vietnam <sup>e</sup>	5,400 <sup>r</sup>	5,400 <sup>r</sup>	5,400 <sup>r</sup>	5,400 <sup>r</sup>	5,500
Total	293,000 <sup>r</sup>	303,000 <sup>r</sup>	257,000	264,000 <sup>r</sup>	265,000

<sup>e</sup>Estimated. <sup>p</sup>Preliminary. <sup>r</sup>Revised. -- Zero.

<sup>1</sup>World totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Table includes data available through July 12, 2011.

<sup>3</sup>Reported figure.

<sup>4</sup>Includes content of tin-tungsten concentrate.

<sup>5</sup>Concentrate gross weight reported, estimated 62% tin content.

TABLE 10  
TIN: WORLD SMELTER PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Metric tons)

Country	2006	2007	2008	2009	2010 <sup>c</sup>
Australia:					
Primary	572	118	170	7,637	3,000
Secondary <sup>c</sup>	400	400	400	400	400
Total <sup>c</sup>	972	518	570	8,037	3,400
Belgium, secondary <sup>c</sup>	6,000	5,000	5,000	5,000	5,000
Bolivia, primary	14,089	12,251	12,666	14,995 <sup>r</sup>	14,975 <sup>3</sup>
Brazil:					
Primary	8,780	9,384	10,308	10,550	11,000
Secondary <sup>c</sup>	250	250	250	250	250
Total	9,030	9,634	10,558	10,800	11,300
Bulgaria, secondary <sup>c</sup>	10	10	10	10	10
Burma, primary <sup>c</sup>	30	30	30	30	30
China, primary <sup>c</sup>	132,000	149,000	140,000 <sup>r</sup>	140,000 <sup>r</sup>	150,000
Czech Republic, secondary <sup>c</sup>	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--
Denmark, secondary <sup>c</sup>	100	100	75	75	75
Greece, secondary <sup>c</sup>	100	100	75	75	60
Indonesia, primary	65,357	64,127	53,417	54,000	55,000
Japan, primary	854	879	986	757 <sup>r</sup>	780
Malaysia, primary	22,850	25,263	31,630	36,407	38,737 <sup>3</sup>
Mexico, primary	25	25	15	15	--
Norway, secondary <sup>c</sup>	50	50	50	50	50
Peru, primary	40,495	36,004	38,865	34,503 <sup>r</sup>	36,451 <sup>3</sup>
Russia: <sup>e</sup>					
Primary	4,980	3,800	2,000	1,700	1,400
Secondary	500	400	300	300	300
Total	5,480	4,200	2,300	2,000	1,700
Rwanda	50	--	--	--	-- <sup>3</sup>
Spain, secondary <sup>c</sup>	10	10	10	10	10
Thailand, primary	27,540	23,104	21,860	19,423 <sup>r</sup>	19,000
United States, secondary	11,600	12,200	11,700	11,100	10,900 <sup>3</sup>
Vietnam, primary	2,665	3,369	3,583 <sup>r</sup>	3,046	3,000
Grand total	339,000 <sup>r</sup>	346,000 <sup>r</sup>	333,000 <sup>r</sup>	340,000 <sup>r</sup>	350,000
Of which:					
Primary	320,000	327,000	316,000 <sup>r</sup>	323,000 <sup>r</sup>	333,000
Secondary	19,000 <sup>r</sup>	18,500 <sup>r</sup>	17,900 <sup>r</sup>	17,200 <sup>r</sup>	17,100
Undifferentiated	50	--	--	--	-- <sup>3</sup>

<sup>c</sup>Estimated. <sup>r</sup>Revised. -- Zero.

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

<sup>2</sup>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 12, 2011.

<sup>3</sup>Reported figure.