



# 2012 Minerals Yearbook

---

TIN [ADVANCE RELEASE]

---

# TIN

By James F. Carlin, Jr.<sup>1</sup>

**Domestic survey data and tables were prepared by Linda M. White, statistical assistant, and the world production tables were prepared by Glenn J. Wallace, 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 2012, 25 firms consumed 89% of the primary tin used domestically. The estimated value of primary tin metal consumed domestically was \$690 million. Industry stocks increased by 4% compared with those at yearend 2011 (table 1).

In 2012, approximately 13,500 metric tons (t) of tin was recovered from scrap, most of it from old scrap. About 12% of the tin used in the United States was recovered domestically from recycled metal (table 5).

World tin mine production was 243,000 t, a decrease of 5% from that in 2011. Of the 18 countries in which tin was mined, 6 countries accounted for 91% of the total production. China was the leading producer (45% of world output), followed by Indonesia (17%), Peru (11%), Bolivia (8%), Brazil (6%) and Burma (4%). World primary tin smelter production was 304,000 t, a decrease of 5% from that in 2011 (tables 9, 10).

The composite tin price in 2012 decreased by 18% from that in 2011 (table 1). World tin reserves were estimated to be 4.9 million metric tons (Mt), about 14 times the estimated 2012 world primary tin consumption of 360,000 t. Most tin reserves were in Asia and South America.

## Legislation and Government Programs

In fiscal year 2008, the Defense National Stockpile Center (DNSC), suspended sales of tin from the National Defense Stockpile (NDS) pending an additional study. Since then, the Defense Logistics Agency (DLA), Strategic Materials (formerly DNSC) has not sold any tin and has determined that the entire inventory shall be held in reserve. Therefore, the Annual Materials Plan (AMP) for fiscal years 2012–14 sales was set at zero. The AMP for potential upgrading of the tin inventory was set at 804 t for fiscal years 2012–14. As of yearend 2012, the NDS tin inventory was 4,020 t, which was stored at the DLA's depot located in Hammond, IN (Andrew Green, DLA, Strategic Materials, written commun., August 27, 2013).

The "Reduction of Lead in Drinking Water Act" (Public Law No. 111–380) was signed into law on January 4, 2011. The law, which becomes effective on January 4, 2014, lowers the national standard for allowable lead in faucets, pipe fittings, and pipes to 0.25%. The previous national standard was 8.0%. Industry sources noted that the bill harmonizes lead standards across the country. The lower lead standard may promote greater use of tin in plumbing fixtures because many fixtures contain alloys of lead and tin, especially in solders (Plumbing Manufacturers International, 2011).

## Production

A significant quantity of alloy tin scrap was generated during manufacturing processes and was recycled in those same industries. Secondary tin recovered from obsolete 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.

The Steel Recycling Institute (Pittsburgh, PA), funded by the North American 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 71% in 2011, up from 67% in 2010. This percentage has generally increased each year since 1990 (Steel Recycling Institute, 2012).

## Consumption

In 2012, domestic consumption of new and old scrap was estimated to be 13,500 t, about the same as that in 2011 (table 5). Domestic consumption data for tin were developed by the USGS from a voluntary survey of tin consumers. Of the 129 firms to which a survey form was sent, 50 responded, accounting for 39% of estimated reported consumption. Data for the nonrespondents were estimated based on prior-year reporting.

The total number of metal cans shipped domestically was 124 billion in 2012, the same as that in 2011. Steel (essentially tinplate and tin-free steel) dominated in the food, pet, and general line can markets, and aluminum accounted for 100% of the beverage can market (Can Manufacturers Institute, 2013, p. 20).

Arkema Inc. (King of Prussia, PA) announced the planned sale of its tin stabilizer business to PMC Group Inc., a manufacturer of plastics based in Mount Laurel, NJ. Arkema had been a leading user of tin both domestically and internationally (Arkema Inc., 2012).

RG Steel, LLC (Sparrows Point, MD), the fourth-leading domestic producer of flat-rolled steel, which filed for Chapter 11 bankruptcy protection on May 31, received court approval to sell some of its assets. An agreement was reached for Environmental Liability Transfer Inc., Commercial Development Co., and Hilco Trading Co. to buy RG Steel's Sparrows Point plant, one of the leading single-site steelmaking facilities in the United States, with an annual capacity of 3.9 Mt, for about \$73 million. The Sparrows Point plant had been a leading domestic producer of tinplate and was a leading domestic user of tin (Bathon, 2012).

---

<sup>1</sup>Deceased.

## Prices

The Platts Metals Week average composite price for tin metal decreased by 18% from that in 2011. The London Metal Exchange Ltd. (LME) remained the principal trading site for tin, and in 2012, the LME average tin price was \$9.57 per pound (table 1).

## Foreign Trade

U.S. imports of refined tin, which supplied most domestic tin requirements, increased by 7% compared with those of 2011 (table 8). Imports of tin in all forms (metal, ore and concentrate, scrap, and waste) remained duty free. Foreign-owned trading firms tended to dominate the marketing of imports. U.S. imports of tin came mostly from Peru, Indonesia, Bolivia, and Malaysia, in descending order of quantity imported. Refined tin exports were significantly less than imports (tables 6, 8).

## World Review

ITRI Ltd. (Frogmore, United Kingdom) released findings from its latest worldwide annual tin use and recycling survey that was ongoing since 2005 as part of the ITRI Sustainability Project. Some of the findings were as follows: world tin consumption in 2010 was 362,000 t, slightly higher than that in 2009, but preliminary estimates for 2011 indicated that consumption declined slightly to 360,000 t; the market share accounted for by solders declined to about 52% in 2011 from a peak of 54% in 2007; global tin use for tinplate has remained stable at about 60,000 metric tons per year (t/yr) for the past 6 years; China accounted for an estimated 43% of global tin consumption in 2011; companies typically held tin stocks equivalent to a 3- to 5-week supply at the end of 2010, which was equivalent to total world stock of 30,000 t (ITRI Ltd., 2012d).

The U.S. Consumer Electronics Association (Arlington, VA) forecast that global consumer electronics sales would increase by 5% to exceed \$1 trillion for the first time in 2012. The electronics sector accounted for about one-half of world tin demand (Consumer Electronics Association, 2012).

According to a survey by ITRI (2012c), the world's 10 leading refined tin producers and their production in 2011 were Yunnan Tin Group Co., Ltd. (China), 56,200 t; Malaysia Smelting Corp. Bhd. (Malaysia), 40,300 t; PT Timah (Persero) Tbk (Indonesia), 38,100 t; Minsur S.A. (Peru), 30,200 t; Thailand Smelting and Refining Co. Ltd. (Thailand), 23,900 t; Yunnan Chengfeng Non-Ferrous Metals Co., Ltd. (China), 15,400 t; Guangxi China Tin Group Co. Ltd., 15,400 t; Empresa Metalúrgica Vinto S.A. (Bolivia), 11,000 t; Metallo Chimique International N.V. (Belgium), 10,000 t; and Yunnan Gejiu Zi-Li Ltd. (China), 8,600 t.

**Australia.**—Venture Minerals Ltd. (West Perth, Western Australia) announced that it had completed a Bankable Feasibility Study on its Mount Lindsay tin-tungsten project in Tasmania. The capital cost of the project was estimated at \$202 million (A\$198 million), based on an expanded processing capacity of 1.75 million metric tons per year (Mt/yr) of ore. The expected mine life was 9 years. Operating costs per metric ton of ore from open pit and underground mining were estimated

at \$60 and the proven and probable reserves were estimated at 14 Mt grading 0.2% tin, containing 30,000 t of tin (Venture Minerals Ltd., 2012).

**China.**—The Chinese Ministry of Finance and State Administration of Taxation raised the resources tax on six minerals, including tin. The resource tax on tin was increased to as much as 20 yuan per ton, which the agency calculated amounted to a twentyfold increase for tin (Bloomberg.com, 2012).

The local government in Yunnan Province announced that new metal resources were discovered during the past 2 years. The resources included an estimated 160,000 t of tin (American Metal Market, 2012).

Tin mine production in Guangxi and Yunnan Provinces, accounting for 53% of reported production in China in 2011, was substantially lower in 2012. Tin mine closures caused by cadmium contamination and drought-related water shortages reduced feedstocks for the country's tin smelters. The two large tin mines located in Guangxi Province, Gaofeng and Tongkeng, with a total capacity of 9,000 t/yr and owned by Liuzhou China Tin Group Co. Ltd. (Liuzhou, Guangxi Province), were closed for 1 month. Although these mines reopened, smaller tin mines located in Guangxi Province were still awaiting government permission to reopen at yearend (ITRI Ltd., 2012a).

**Egypt.**—Gippsland Ltd. (Claremont, Western Australia, Australia) announced plans to increase production of tin-in-concentrate at its Abu Dabbab alluvial tin mine in Egypt to 720 t/yr starting in February 2013. Mining at this placer deposit began in the spring of 2012 (ITRI Ltd., 2012b).

**Germany.**—Steel producer Rasselstein GmbH (Andernach) announced that it was renamed ThyssenKrupp Rasselstein GmbH effective February 12. The main component of Rasselstein's steel plant located in Andernach was a tin mill (electrolytic tin plating of steel coils). The Andernach facility contained the only tin mill in Germany, and was also considered to be the world's leading tinplate producer. Almost 80% of its tinplate was exported (ThyssenKrupp Rasselstein GmbH, 2012).

**Indonesia.**—The country's state-controlled tin producer, PT Timah (Persero) Tbk (Bangka), announced that it expected its tin output to remain unchanged in 2013 at the reduced level of 30,000 t as the company limited production to boost profits. Timah aimed to reduce production costs in 2013 to about \$15,000 per metric ton of tin from \$16,000 to \$18,000 in 2012. Timah's first deep-water bucket-wheel dredge was expected to start operation early in 2013 and two more similar vessels could be commissioned in 2013 if the first one proves successful. Timah was also expanding its ore processing capacity to allow for better recovery of byproduct minerals. Timah planned to develop an industrial zone on Bangka Island, which would host its second tin chemicals plant. Timah also received permission in principle to explore a 10,000-hectare site in southern Burma (ITRI Ltd., 2012e).

Malaysia Smelting Corp. Bhd. (Kuala Lumpur, Malaysia) (MSC), the world's second-ranked tin smelter, sold a significant stake that it had held in PT Koba Tin (Jakarta) to Optima Synergy Resources Ltd. The sale reduced MSC's ownership in Koba Tin to 30%. MSC had held a 75% stake in Koba Tin through its fully owned subsidiary Bemban Corp. Ltd. The

remaining 25% stake was held by Indonesian tin producer PT Tambag Timah (Pangkal Pinang). Koba Tin produced 6,350 t of refined tin in 2011, well below its annual capacity of 25,000 t at its plant on Bangka Island (Platts Metals Week, 2012).

**Malaysia.**—MSC reached an agreement with the Perak State government on a new mining lease for its wholly owned subsidiary Rahman Hydraulic Tin Sdn Bhd. (RHT), which would expire in 2030. RHT operated the leading tin mine in Malaysia, producing 1,800 t/yr of tin-in-concentrate. MSC acquired RHT in 2004 and has since invested in exploration and rehabilitation (Malaysia Smelting Corp. Bhd., 2012).

**Morocco.**—Kasbah Resources Ltd. (South Perth, Western Australia, Australia) signed a joint-venture agreement to sell Toyota Tsusho Corp. (Nagoya, Japan) a 20% interest in the Achmmach tin project in Morocco for \$16 million, with receipt of the final payment on June 30, 2012. Toyota Tsusho was entitled to a minimum 20% offtake of tin produced at Achmmach. Kasbah would continue to manage and operate the joint venture. Toyota Tsusho traded approximately 8% of global tin production and more than 50% of all tin consumed in Japan (Kasbah Resources Ltd., 2012).

## Outlook

Worldwide demand for primary tin was expected to increase at moderate annual rates. The rate of increase, however, could increase if new applications continue to find acceptance in the marketplace, especially in the electronics (solder) field. Higher tin prices that have prevailed in recent years, however, discourage use in new applications.

A report from Bryon Capital Markets Ltd. (Toronto, Ontario, Canada) predicted an increase in demand and prices for tin. The report indicated that the increased demand would come from solders that must meet the Restriction of Hazardous Substances (RoHS) directives implemented in the European Union (EU) in 2006. The directive recognized that a large proportion of waste from electronic devices would never be recycled and that the materials within these devices, including cadmium, hexavalent chromium, lead, and mercury, would eventually dissipate into the environment. As a result, the EU decreed that substances like solder, at least within devices intended for sale within the region, must not contain any of these hazardous materials. Following the directive, in 2006, the search for a new solder component standard in the electronics industry began, resulting in a new alloy of silver and tin. Bryon Capital noted that from 2004 to 2011, the price of tin rose markedly. Many electronics manufacturers decided to use lead-free solders on all versions of their products, whether shipping to regions in which RoHS regulations pertain or not because it was logistically simpler. The report observed that a shortfall of tin supply was of particular concern, because increases in tin mine production have been modest. The report suggested that world noninvestment demand for tin could increase from about 362,000 t in 2011 to more than 544,000 t by 2020 (Sterescu, 2012).

World tin reserves appeared to be adequate to meet foreseeable demand. Secondary sources of tin were likely to become an even more important component of supply,

especially in the United States. Domestic tin requirements were expected to continue to be met primarily through imports.

## References Cited

- American Metal Market, 2012, Wealth of new metal resources found in Yunnan: American Metal Market, v. 120, no. 10–4, March 8, p. 11.
- Arkema Inc., 2012, Arkema announces a project divestment of its tin stabilizer business: King of Prussia, PA, Arkema Inc. news release, July 10. (Accessed October 24, 2012, at [http://www.arkema.com/sites/group/en/press/pr\\_detail.page?p\\_filepath=/templatedata/Content/Press\\_Release/data/en/2012/120710\\_arkema\\_announces\\_a\\_project\\_for\\_the\\_divestment\\_of\\_its\\_tin\\_stabilizer\\_business.xml](http://www.arkema.com/sites/group/en/press/pr_detail.page?p_filepath=/templatedata/Content/Press_Release/data/en/2012/120710_arkema_announces_a_project_for_the_divestment_of_its_tin_stabilizer_business.xml).)
- Bathon, Michael, 2012, RG Steel sells Sparrows Point, other assets for \$94 million: Businessweek.com, August 15. (Accessed August 16, 2012, at <http://www.businessweek.com/news/2012-08-15/rg-steel-sells-sparrows-point-other-assets-for-94-million>.)
- Bloomberg.com, 2012, China raises resource tax on iron ore, tin, molybdenum: Bloomberg.com, February 17. (Accessed March 13, 2012, at <http://www.bloomberg.com/news/2012-02-17/china-raises-resources-tax-on-iron-tin-molybdenum-production.html>.)
- Can Manufacturers Institute, 2013, Annual report—2012–13: Washington, DC, Can Manufacturers Institute, 23 p.
- Consumer Electronics Association, 2012, Global consumer tech device spending to surpass \$1 trillion in 2012: Arlington, VA, Consumer Electronics Association news release, January 10. (Accessed April 24, 2012, at [http://www.ce.org/News/News-Releases/Press-Releases/2012-Press-Releases/Global-Consumer-Tech-Device-Spending-to-Surpass-\\$1.aspx](http://www.ce.org/News/News-Releases/Press-Releases/2012-Press-Releases/Global-Consumer-Tech-Device-Spending-to-Surpass-$1.aspx).)
- ITRI Ltd., 2012a, China mine production still constrained: Frogmore, United Kingdom, ITRI Ltd. news release, March 21. (Accessed July 5, 2012, at [https://www.itri.co.uk/index.php?option=com\\_zoo&task=item&item\\_id=2380&Itemid=143](https://www.itri.co.uk/index.php?option=com_zoo&task=item&item_id=2380&Itemid=143).)
- ITRI Ltd., 2012b, Gippsland increases tin production forecast: Frogmore, United Kingdom, ITRI Ltd. news release, November 29. (Accessed March 7, 2013, at [https://www.itri.co.uk/index.php?option=com\\_zoo&task=item&item\\_id=2604&Itemid=149](https://www.itri.co.uk/index.php?option=com_zoo&task=item&item_id=2604&Itemid=149).)
- ITRI Ltd., 2012c, The top ten tin producers in 2011: Frogmore, United Kingdom, ITRI Ltd. news release, February 22. (Accessed May 15, 2012, at [http://www.itri.co.uk/index.php?option=com\\_zoo&task=item&item\\_id=2361&Itemid=143](http://www.itri.co.uk/index.php?option=com_zoo&task=item&item_id=2361&Itemid=143).)
- ITRI Ltd., 2012d, Tin use survey key points: Frogmore, United Kingdom, ITRI Ltd. news release, May 23. (Accessed October 25, 2012, at [https://www.itri.co.uk/index.php?option=com\\_zoo&task=item&item\\_id=2437&Itemid=143](https://www.itri.co.uk/index.php?option=com_zoo&task=item&item_id=2437&Itemid=143).)
- ITRI Ltd., 2012e, Timah reveals production and investment plans: Frogmore, United Kingdom, ITRI Ltd. news release, November 22. (Accessed March 7, 2013, [https://www.itri.co.uk/index.php?option=com\\_zoo&task=item&item\\_id=2593&category\\_id=3&Itemid=143](https://www.itri.co.uk/index.php?option=com_zoo&task=item&item_id=2593&category_id=3&Itemid=143).)
- Kasbah Resources Ltd., 2012, Toyota Tsusho to acquire interest in Achmmach tin project: South Perth, Western Australia, Australia, Kasbah Resources Ltd. press release, March 12, 3 p. (Accessed July 6, 2012, at [http://www.kasbahresources.com/cms/index.php/investor-centre/asxreleases.html/819\\_1087938\[1\].pdf](http://www.kasbahresources.com/cms/index.php/investor-centre/asxreleases.html/819_1087938[1].pdf).)
- Malaysia Smelting Corp. Bhd., 2012, Development at wholly-owned subsidiary, Rahman Hydraulic Tin Sdn Bhd.: Kuala Lumpur, Malaysia, Malaysia Smelting Corp. Bhd. news release, March 26. (Accessed July 7, 2012, at <http://ir.chartnexus.com/msmelt/onenew.php?id=22315&type=Announcement>.)
- Platts Metals Week, 2012, MCS selling bigger stake in Koba: Platts Metals Week, v. 83, no. 28, July 9, p. 16.
- Plumbing Manufacturers International, 2011, Reduction in lead bill is signed into law by President Obama: Rolling Meadows, IL, Plumbing Manufacturers International press release, January 6. (Accessed February 3, 2011, at <http://www.pmihome.org/i4a/pages/index.cfm?pageID=3504>.)
- Steel Recycling Institute, 2012, 2011 overall steel recycling rate hits all-time high: Pittsburgh, PA, Steel Recycling Institute news release, November 15, 2 p. (Accessed August 30, 2013, at [http://www.recycle-steel.org/~media/Files/SRI/Releases/Release 2011 Steel Recycling Rates Announced.pdf](http://www.recycle-steel.org/~media/Files/SRI/Releases/Release%202011%20Steel%20Recycling%20Rates%20Announced.pdf).)
- Sterescu, Deborah, 2012, Silver and tin—2 new critical electric metals, says Bryon Capital: Proactive Investors, North America Inc., April 23. (Accessed August 15, 2012, at <http://www.proactiveinvestors.com/companies/news/28075/silver-and-tin-2-new-critical-electric-metals-says-byron-capital--28075.html>.)

ThyssenKrupp Rasselstein GmbH, 2012, Rasselstein now known as ThyssenKrupp Rasselstein: Andernach, Germany, ThyssenKrupp Rasselstein GmbH press release, February 16, 1 p. (Accessed May 15, 2012, at <http://www.thyssenkrupp-rasselstein.com/main/press/press-releases/mitteilungen/160212.html?L=1>.)

Venture Minerals Ltd., 2012, Bankable feasibility study delivers more than \$550 million in net revenue—Mt Lindsay tin/tungsten project: Subiaco, Western Australia, Australia, Venture Minerals Ltd. press release, November 7, 6 p. (Accessed March 7, 2013, at [http://www.ventureminerals.com.au/images/documents/VMS0305\\_BFS\\_delivers\\_more\\_than\\_550\\_million\\_in\\_Net\\_Revenue\\_-\\_07\\_November\\_2012.pdf](http://www.ventureminerals.com.au/images/documents/VMS0305_BFS_delivers_more_than_550_million_in_Net_Revenue_-_07_November_2012.pdf).)

## SOURCES OF INFORMATION

### U.S. Geological Survey Publications

Historical Statistics for Mineral and Material Commodities in the United States, Data Series 140.

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<sup>1</sup>

		2008	2009	2010	2011	2012
United States:						
Production, secondary, contained tin <sup>c</sup>	metric tons	11,700	11,100	11,100	11,000	11,200
Exports, refined tin	do.	9,800	3,170	5,630	5,450	5,560
Imports for consumption, refined tin	do.	36,300	33,000	35,300	34,200	36,900
Consumption, contained tin:						
Primary	do.	23,100	24,800	25,300	25,200	24,500
Secondary	do.	6,250	7,750	4,820	3,280 <sup>r</sup>	3,240
Stocks, yearend, U.S. industry, contained tin	do.	8,560	7,070	6,410	5,880 <sup>r</sup>	6,140
Prices, average, contained tin:						
New York, NY, market	cents per pound	864.53	641.62	954.13	1,215.90	989.60
Platts Metals Week composite	do.	1,128.97	837.08	1,239.64	1,574.67	1,283.37
London, United Kingdom	do.	836.76	615.15	925.15	1,184.05	957.26
Kuala Lumpur, Malaysia	do.	837.70	609.34	922.17	1,187.54	958.00
World, production, contained tin:						
Mine	metric tons	260,000 <sup>r</sup>	238,000 <sup>r</sup>	255,000 <sup>r</sup>	256,000 <sup>r</sup>	243,000 <sup>c</sup>
Smelter:						
Primary	do.	316,000 <sup>r</sup>	310,000 <sup>r</sup>	318,000 <sup>r</sup>	320,000 <sup>r</sup>	304,000 <sup>c</sup>
Secondary	do.	17,900	17,200	17,200	17,100 <sup>r</sup>	17,200 <sup>c</sup>
Total	do.	334,000	327,000	335,000	337,000	321,000 <sup>c</sup>

<sup>c</sup>Estimated. <sup>r</sup>Revised. do. Ditto.

<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, contained tin)

	2011	2012
Stocks, January 1 <sup>2</sup>	5,830 <sup>r</sup>	5,800
Net receipts during year:		
Primary	25,200	24,800
Secondary	2,840 <sup>r</sup>	2,810
Scrap	916	879
Total receipts	29,000 <sup>r</sup>	28,500
Total available	34,800 <sup>r</sup>	34,300
Tin consumed in manufactured products:		
Primary	25,200	24,500
Secondary	3,280 <sup>r</sup>	3,240
Total	28,500 <sup>r</sup>	27,700
Intercompany transactions in scrap	462	454
Total processed	28,900 <sup>r</sup>	28,200
Stocks, December 31 (total available less total processed)	5,880 <sup>r</sup>	6,140

<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, contained tin)

Product	2011			2012		
	Primary	Secondary	Total	Primary	Secondary	Total
Alloys, miscellaneous <sup>2</sup>	2,700	W	2,700	2,950	W	2,950
Babbitt	281	34	315	247	34	281
Bar tin	W	W	W	W	W	W
Bronze and brass	2,600	1,210	3,810	1,250	1,210	2,460
Chemicals	9,990	W	9,990	9,860	W	9,860
Solder	2,190 <sup>r</sup>	1,910 <sup>r</sup>	4,100 <sup>r</sup>	2,990	1,910	4,900
Tinning	552	--	552	467	--	467
Tinplate <sup>3</sup>	6,230	W	6,230	6,090	W	6,090
Other <sup>4</sup>	632	125	757	648	85	733
Total	25,200	3,280 <sup>r</sup>	28,500 <sup>r</sup>	24,500	3,240	27,700

<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 terre 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)

	2011	2012
Plant raw materials:		
Pig tin:		
Primary <sup>2</sup>	5,060	5,280
Secondary	621 <sup>r</sup>	622
In process <sup>3</sup>	107	103
Total	5,790 <sup>r</sup>	6,000
Additional pig tin:		
Jobbers-importers	299	739
Afloat to United States	193	173
Total	492	912
Grand total	6,280 <sup>r</sup>	6,920

<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 only include tin content of scrap.

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, December 31	Tin recovered <sup>c</sup>		
	Stocks, January 1	Receipts	Consumption				New	Old	Total
			New	Old	Total				
2011:									
Copper-base scrap:									
Ingot makers	4,780 <sup>r</sup>	63,700 <sup>r</sup>	12,300	51,600	64,000	4,510 <sup>r</sup>	428	2,340	2,760
Brass mills <sup>2</sup>	--	W	W	W	W	W	1,340	W	1,340
Foundries and other plants	1,500	17,400	14,900	2,630	17,500	1,410	W	94	94
Total	XX	XX	XX	XX	XX	XX	1,770	2,430	4,200
Lead-base scrap	19,000	1,120,000	29,000	1,070,000	1,100,000	40,100	761	8,590	9,350
Tin-base scrap <sup>3</sup>	W	W	W	W	W	W	W	W	W
Grand total	XX	XX	XX	XX	XX	XX	2,530	11,000	13,600
2012:									
Copper-base scrap: <sup>c</sup>									
Ingot makers	4,510	64,000	12,500	51,500	64,000	4,510	429	2,330	2,760
Brass mills <sup>2</sup>	W	W	W	W	W	W	1,280	W	1,280
Foundries and other plants	1,410	17,000	14,700	2,390	17,100	1,350	W	91	91
Total	XX	XX	XX	XX	XX	XX	1,710	2,420	4,140
Lead-base scrap	40,100 <sup>e</sup>	1,160,000	25,400	1,130,000	1,160,000	43,700	667	8,730	9,400
Tin-base scrap <sup>3</sup>	W	W	W	W	W	W	W	W	W
Grand total <sup>e</sup>	XX	XX	XX	XX	XX	XX	2,380	11,200	13,500

<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>

Form	2011		2012	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Ingots and pigs	5,450	\$33,300	5,560	\$33,300
Tin scrap and other tin-bearing material except tinplate scrap (gross weight) <sup>2</sup>	21,900	88,200	15,100	66,000
Tinplate and terneplate (gross weight)	216,000	183,000	160,000	132,000

<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>

Form	2011		2012	
	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>	58,600	\$39,400	73,300	\$39,300
Miscellaneous <sup>3</sup>	XX	60,800	XX	35,700
Tin compounds	769	20,200	438	9,400
Tinplate and terneplate	367,000	431,000	428,000	500,000
Tinplate scrap	97,100	28,500	91,300	30,800

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	2011		2012	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Belgium	261	\$7,100	625	\$12,400
Bolivia	5,680	153,000	5,100	110,000
Brazil	676	16,400	2,930	60,100
Canada	35	891	25	582
Chile	60	231	--	--
China	1,490	41,400	174	3,870
Indonesia	4,930	89,000	6,180	89,300
Japan	--	--	5	141
Malaysia	3,980	105,000	4,590	96,000
Peru	14,000	368,000	14,500	304,000
Singapore	645	17,200	424	8,210
Switzerland	(2)	6	(2)	4
Thailand	2,310	55,600	1,750	38,000
United Kingdom	18	423	1	17
Other	101 <sup>†</sup>	2,680	646	13,100
Total	34,200	857,000	36,900	735,000

<sup>†</sup>Revised. -- 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	2008	2009	2010	2011	2012
Australia	1,783	5,630	6,600	5,012 <sup>r</sup>	5,849
Bolivia	17,320 <sup>r</sup>	19,575	20,190	20,373	19,702
Brazil	13,899	9,500	10,400	10,725 <sup>r</sup>	13,667
Burma <sup>3</sup>	800 <sup>r</sup>	1,000 <sup>r</sup>	4,000 <sup>r</sup>	11,000 <sup>r,e</sup>	10,600 <sup>e</sup>
Burundi	21 <sup>r</sup>	12 <sup>r</sup>	12	22 <sup>r</sup>	21 <sup>e</sup>
China <sup>e</sup>	110,000	97,200 <sup>r</sup>	115,000	120,000	110,000
Congo (Kinshasa) <sup>e</sup>	12,600 <sup>r</sup>	9,900 <sup>r</sup>	8,600 <sup>r</sup>	4,800 <sup>r</sup>	3,700
Indonesia	53,228	46,078	43,258	42,000 <sup>e</sup>	41,000 <sup>e</sup>
Laos	551 <sup>r</sup>	598 <sup>r</sup>	925 <sup>r</sup>	674 <sup>r</sup>	762
Malaysia	2,605	2,412	2,668	3,340 <sup>r</sup>	3,726
Mexico	-- <sup>r</sup>	--	--	--	--
Niger <sup>4</sup>	-- <sup>r</sup>	6 <sup>r</sup>	6 <sup>r</sup>	10 <sup>r</sup>	10 <sup>e</sup>
Nigeria <sup>e,5</sup>	185 <sup>r</sup>	400 <sup>r</sup>	520 <sup>r</sup>	570 <sup>r</sup>	570
Peru	39,037	37,503	33,848	28,882	26,105
Portugal	29	34 <sup>r</sup>	22 <sup>r</sup>	39 <sup>r</sup>	42 <sup>p</sup>
Russia	400 <sup>r</sup>	127 <sup>r</sup>	144 <sup>r</sup>	75 <sup>r</sup>	100 <sup>e</sup>
Rwanda <sup>e</sup>	1,600 <sup>r</sup>	2,400 <sup>r</sup>	3,000 <sup>r</sup>	2,900 <sup>r</sup>	1,600
Thailand	215	166	291	282 <sup>r</sup>	124
Uganda, placer	40 <sup>r</sup>	-- <sup>r</sup>	32 <sup>r</sup>	10 <sup>r,e</sup>	--
Vietnam <sup>e</sup>	5,400	5,400	5,400	5,400	5,400
Total	260,000 <sup>r</sup>	238,000 <sup>r</sup>	255,000 <sup>r</sup>	256,000 <sup>r</sup>	243,000

<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>Includes data available through July 16, 2014.

<sup>3</sup>Includes content of tin-tungsten concentrate.

<sup>4</sup>Production of tin was by artisanal miners.

<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	2008	2009	2010	2011	2012 <sup>e</sup>
Australia:					
Primary	170	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--
Secondary <sup>c</sup>	400	400	400	400	400
Total <sup>c</sup>	570	400 <sup>r</sup>	400 <sup>r</sup>	400 <sup>r</sup>	400
Belgium, secondary <sup>c</sup>	5,000	5,000	5,000	5,000	5,000
Bolivia, primary	12,667 <sup>r</sup>	15,006 <sup>r</sup>	15,003 <sup>r</sup>	14,295 <sup>r</sup>	14,517 <sup>3</sup>
Brazil:					
Primary	11,020	8,311	9,098	9,382 <sup>r</sup>	11,955 <sup>3</sup>
Secondary <sup>c</sup>	250	250	250	250	250
Total <sup>c</sup>	11,300	8,560	9,350	9,630 <sup>r</sup>	12,200
Bulgaria, secondary <sup>c</sup>	2 <sup>r</sup>	1 <sup>r</sup>	1 <sup>r</sup>	1 <sup>r</sup>	1
Burma, primary <sup>c</sup>	30	30	30	30	30
China, primary <sup>c</sup>	140,000	140,000	150,000	156,000	148,000
Denmark, secondary <sup>c</sup>	75	75	75	60	50
Greece, secondary <sup>c</sup>	75	75	60	50	50
Indonesia, primary	53,417	51,418	43,832	43,000 <sup>e</sup>	42,000
Japan, primary	956	757	841	947 <sup>r</sup>	950
Malaysia, primary	31,691 <sup>r</sup>	36,407	38,737	40,267	37,792 <sup>3</sup>
Mexico, primary	15	15	--	--	--
Norway, secondary <sup>c</sup>	50	50	50	50	50
Peru, primary	38,865	34,388 <sup>r</sup>	36,451	32,290	24,811 <sup>3</sup>
Russia:					
Primary	1,425 <sup>r</sup>	1,129 <sup>r</sup>	1,081 <sup>r</sup>	526 <sup>r</sup>	500
Secondary <sup>c</sup>	300	300	300	300	200
Total <sup>c</sup>	1,730 <sup>r</sup>	1,430 <sup>r</sup>	1,380 <sup>r</sup>	826 <sup>r</sup>	700
Spain, secondary <sup>c</sup>	10	10	10	10	10
Thailand, primary <sup>c</sup>	21,860 <sup>3</sup>	19,423 <sup>3</sup>	20,000	20,000	20,000
United States, secondary <sup>c</sup>	11,700	11,100	11,100	11,000	11,200
Vietnam, primary	3,583	2,747	3,042	3,000 <sup>e</sup>	3,000
Grand total	334,000	327,000 <sup>r</sup>	335,000 <sup>r</sup>	337,000 <sup>r</sup>	321,000
Of which:					
Primary	316,000 <sup>r</sup>	310,000 <sup>r</sup>	318,000 <sup>r</sup>	320,000 <sup>r</sup>	304,000
Secondary	17,900	17,200	17,200	17,100 <sup>r</sup>	17,200
Undifferentiated	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--

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

<sup>1</sup>World total, 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). Data reflect metal production at the first measurable stage of metal output. Includes data available through July 31, 2014.

<sup>3</sup>Reported figure.