

# 2013 Minerals Yearbook

**TIN [ADVANCE RELEASE]** 

# TIN

# By Charles S. Anderson

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Tin has not been mined in the United States since 1993; consequently, the country is reliant on imports and recycling for its tin needs. In 2013, the estimated value of primary tin metal consumed domestically was \$590 million. Approximately 13,500 metric tons (t) of tin was recovered from scrap, most of it from old scrap (table 5). About 18% of the tin used in the United States was recovered domestically from recycled metal. Industry stocks decreased by 5% compared with those at yearend 2012.

World tin mine production was 294,000 t, an increase of 21% from that in 2012. Of the 18 countries in which tin was mined, 6 countries accounted for 92% of the total production. China was the leading producer (37% of world output), followed by Indonesia (32%), Peru (8%), Bolivia (6%), Brazil (4%), and Burma (4%). World primary tin smelter production was 300,000 t, a slight decrease from that in 2012 (tables 9, 10) and, according to CRU International Ltd (CRU Tin Monitor, 2014), world refined tin consumption for 2013 was 339,000 t.

The Platts Metals Week composite tin price in 2013 increased by 5% from that in 2012. World tin reserves were estimated to be 4.8 million metric tons (Mt), about 16 times the estimated 2013 world primary tin production of 294,000 t. The majority of tin reserves were in Asia and South America.

## **Legislation and Government Programs**

In July 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act was signed into law (U.S. Congress, 2010). Section 1502 requires publicly listed companies to verify and disclose their sources of tin (cassiterite), tantalum (coltan), tungsten (wolframite), and gold; this group of minerals is commonly called 3TG minerals. Section 1502 also requires companies to file, by June 2014, a specialized disclosure form (SD form) with the SEC that indicates whether or not any 3TG minerals used in their products are sourced from countries specified in the Dodd Frank Act, the Democratic Republic of Congo, or the adjacent countries. Some companies that use any of the 3TG minerals have now publicly released their supply chains.

On January 1, 2013, the Government of Indonesia decreed that exports of tin solder were to be licensed by the ministry, effective July 1, 2013, and all refined tin exports were to have a purity level of 99.9%, up from the previous purity level of 99.85%. This new policy was expected to reduce the volume of tin from Indonesia being re-refined in other countries (ITRI Ltd., 2013d).

## **Production**

No tin was mined in the United States in 2013, and it has not been mined since 1993, when it was last mined in Alaska.

In 2013, tin recovered from new and old scrap was estimated to be 13,500 t, unchanged from that in 2012 (table 5). A significant quantity of alloy tin scrap was generated during manufacturing processes and recycled within those same industries.

Secondary tin recovered from obsolete fabricated parts was used in many types of products and was a particularly important source of tin for the manufacture of brass, bronze, and solder. In 2013, 11,100 t of tin were produced from old scrap, with 8,650 t from lead-base scrap, and 2,420 t from copper-base scrap (table 5).

# Consumption

Tin in the United States is primarily used, in descending order, in alloys, chemicals, tinplate, and solder. Tin alloys can be found in bronze and copper products, solders, and low-friction metals. Tin-based chemicals are commonly used in polyvinyl chloride (PVC) production and curing, biocides, and catalysts. Tinplate is a layer of tin adhered to steel or wrought iron substrate for corrosion protection. Tin is used in this case to prevent rust and is commonly used in food grade cans. Solder is commonly used in electronic devices for connections on circuit boards.

In 2013, U.S. tin consumption was 25,700 t of primary tin and 4,730 t of secondary tin. Domestic consumption data for tin were developed by the U.S. Geological Survey from a voluntary survey of tin consumers. Of the 129 firms to which a survey form was sent, 105 responded, accounting for 82% of estimated reported consumption. Data for the nonrespondents were estimated based on prior-year reporting.

# Prices

The Platts Metals Week average composite price for tin metal increased by 5% from that in 2012 to \$10.41 per pound. The London Metal Exchange Ltd. (LME) remained the principal commodity exchange for trading tin, and in 2013, the LME average tin price was \$10.12 per pound, a 6% increase from the average LME price of \$9.57 per pound in 2012. While prices increased, they remained 15% lower than the historically high average price of \$11.84 per pound in 2011. Seasonal trends for tin prices continued in 2013, with a faster than usual increase from the summer low prices.

# Foreign Trade

U.S. imports of refined tin, which supplied most domestic tin requirements, decreased by 5% compared with those of 2012 (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, Bolivia, Indonesia, and Malaysia,

in descending order of quantity imported. Refined tin exports were significantly less than imports (tables 6, 7).

# **World Review**

According to a survey by ITRI Ltd. (2014b), the world's 10 leading refined tin producers and their production in 2013 were, in descending order of production, Yunnan Tin Group Co., Ltd. (China), 72,400 t; Malaysia Smelting Corp. Bhd. (Malaysia), 32,700 t; Minsur S.A. (Peru), 24,400 t; PT Timah (Persero) tbk. (Indonesia), 23,700 t; Thailand Smelting and Refining Co. Ltd. (Thailand), 23,000 t; Yunnan Chengfeng Co., Ltd. (China), 18,300 t; Guangxi China Tin Group Co. Ltd. (China), 11,900 t; Empresa Metalúrgica Vinto S.A. (Bolivia), 11,300 t; Metallo Chimique International N.V. (Belgium), 10,300 t; and Yunnan Gejiu Zi-Li Metallurgy Co. Ltd. (China), 6,000 t.

Australia.—MGT Resources Ltd. (Sydney, New South Wales) had its initial public offering of shares on the Australian Securities Exchange (ASX) on January 9. It expected to begin mining the Dalcouth property within the Mt Garnet tin project in Queensland, producing a lifetime of 793,000 t at an average grade of 0.78% tin, or 6,100 t of recoverable refined tin. The Mount Veteran mill has been refurbished and can treat 70,000 metric tons per year (t/yr) of ore to produce 500 t/yr of tin concentrate. The mill could be expanded further to process up to 500,000 t/yr of ore (ITRI Ltd., 2013f).

The Metals X Ltd.'s (West Perth, Western Australia) Renison Mine in Tasmania reported a 20% increase in tin reserves to 3.96 Mt of ore grading 1.39% tin and having 55,000 t of contained tin. Tailings suitable for treatment contain an additional 87,800 t of recoverable tin (ITRI Ltd. 2013c, g; Metals X Ltd., 2013).

Consolidated Tin Mines Ltd. (Cairns, North Queensland) announced the results of a pre-feasibility study on its Mt Garnet Project, and began a definitive feasibility study. Consolidated expected to begin production by the end of 2014. The pre-feasibility study was based on a 1-million-metric-ton-per-year (Mt/yr) operation that delivers ore to a conventional flotation concentrator. The Mt Garnet concentrator was expected to produce 2,900 t/yr of tin concentrate containing 68% tin, 235,000 t/yr of iron ore concentrate containing 65% iron, and 54,000 t/yr of fluorite concentrate containing 86% calcium fluoride (CaF<sub>2</sub>) (ITRI Ltd., 2013a).

*China*.—In 2013, China's imports of refined tin were 13,000 t, 56% less than the imports in 2012, and the lowest level of tin imports since 2005. Tin metal exports increased by 99% to 3,450 t in 2013. Concentrate imports more than tripled to 96,568 t (gross weight) in 2013. The decrease in refined tin imports was attributed to high domestic tin stocks and production combined with weak demand (ITRI Ltd., 2014a).

*Egypt*.—Gippsland Ltd. (Subiaco, Western Australia, Australia) announced plans to increase production of tin-in-concentrate at its Abu Dabbab alluvial tin mine in Egypt by between 840 t/yr and 960 t/yr starting in March 2013. Mining at this placer deposit began in the spring of 2012 (ITRI Ltd., 2012). Gippsland received funding from the Egyptian Government for the first phase of the project. Estimated 2013 production was 2,300 t of tin and 420 t of tantalum pentoxide.

The second phase would include the expected production of 2.4 Mt/yr of ceramic-grade feldspar (Sparks, 2013b, c).

Indonesia.—In 2013, Indonesia released Presidential Regulation No. 32/2013 which authorized the Indonesian Commodity and Derivative Exchange (ICDX) to manage tin exports. The regulation requires all tin ingot exports to go through the ICDX, which has stated that in order for a smelter to become a member, it must have clear permits and ore supplies that can be documented. Analysts speculate that the ICDX also may limit future monthly trading volumes of physical tin to 5,000 metric tons per month but no limits have been announced. PT Timah, a supporter of the ICDX regulation No. 32/2013, reported lower sales volumes in 2013 and an increase in its concentrate stockpiles (ITRI Ltd., 2013b; Spicer, 2013).

*Malaysia*.—The Government of Malaysia completed an anti-dumping investigation and announced that duties would be imposed on imports of tinplate for 5 years, beginning November 16, 2013. This investigation was based on a petition filed by Perusahaan Sadur Timah Malaysia (Perstima) Bhd. One Chinese company and three South Korean companies were faced with these import duties (Ministry of International Trade and Industry, 2013).

Morocco.—Kasbah Resources Ltd. (South Perth, Western Australia, Australia) signed a memorandum of understanding to sell Nittetsu Mining Co., Ltd. (Tokyo, Japan) a 5% interest in the Achmmach tin project in Morocco for \$6.32 million. Nittetsu Mining will receive a minimum of 5% of the tin production from Achmmach Mine and Kasbah would continue to manage and operate the joint venture (Kasbah Resources Ltd., 2013). Including the 20% purchase of the Achmmach project in 2012 by Toyota Tsusho Corp. (Tokyo), Japanese companies would control 25% of the Achmmach project (Kasbah Resources Ltd., 2012).

Kasbah Resources subsequently delayed its definitive feasibility study on the Achmmach project in Morocco because of the identification of a near-surface deposit that was viable for open pit mining. The newly identified Western Zone Shallows has an indicated mineral resource of 144,000 t at 0.9% tin (ITRI Ltd., 2013e).

**Poland.**—CAN-PACK S.A., the Polish can maker, opened a new 1-billion-can-per-year plant in Novocherkassk, Russia, producing both beverage and food cans (Conway 2013; CAN-PACK S.A., 2013).

#### Outlook

According to industry analysts, worldwide demand for primary tin is expected to increase at a moderate rate in 2014. The rate of increase, however, could increase as new applications continue to find acceptance in the marketplace, especially in the electronics (solder) field. Tin prices decreased in February 2014, but recovered in September. The increase in price was primarily due to Indonesia's new export restrictions.

Estimates from ITRI and Reuters indicate that demand for tin would increase during 2014. With no new mines expected in 2014, increasing demand will continue to push the deficit of tin mine production past 2014. ITRI expects this trend to continue for 5 years (Onstad, 2013).

World tin reserves appear to be adequate to meet foreseeable demand. Secondary sources of tin are likely to become an increasingly important component of supply, especially in the United States. Domestic tin requirements are expected to continue to be met primarily through imports.

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Waste Age.

TABLE 1
SALIENT TIN STATISTICS<sup>1</sup>
(Metric tons contained tin, unless otherwise specified)

		2009	2010	2011	2012	2013
United States:						
Production, secondary	_	11,100	11,100	11,000	11,200	11,100
Exports, refined tin		3,170	5,630	5,450	5,560	5,870
Imports for consumption, refined tin		33,000	35,300	34,200	36,900	34,900
Consumption:						
Primary	_	24,800	25,300	25,200	24,500	25,700
Secondary		7,750	4,820	3,280	3,240	4,730
Stocks, yearend, U.S. industry		7,070	6,410	6,280 <sup>r</sup>	6,910 <sup>r</sup>	6,530
Prices, average:						
New York, NY, market	cents per pound	641.62	954.13	1,215.90	989.60	1,041.43
Platts Metals Week composite	do.	837.08	1,239.64	1,574.67	1,283.37	1,352.43
London, United Kingdom	do.	615.15	925.15	1,184.05	957.26	1,011.92
Kuala Lumpur, Malaysia	do.	609.34	922.17	1,187.54	958.44 <sup>r</sup>	1,011.85
World, production:						
Mine	_	246,000 r	267,000 r	265,000 r	243,000	294,000 e
Smelter:						
Primary		310,000	318,000	321,000 <sup>r</sup>	305,000 r	300,000 <sup>e</sup>
Secondary		20,900 r	22,100 r	22,000 r	23,600 r	24,000 e
Total		331,000 r	340,000 r	343,000 r	328,000 r	324,000 e

<sup>&</sup>lt;sup>e</sup>Estimated. <sup>r</sup>Revised. do. Ditto.

 $\label{eq:table 2} \text{U.s. Consumption of Primary and Secondary Tin}^1$ 

# (Metric tons, contained tin)

	2012	2013
Stocks, January 1 <sup>2</sup>	5,800	7,110
Net receipts during year:		
Primary	24,900 r	25,600
Secondary	2,810	2,620
Scrap	892 <sup>r</sup>	1,970
Total receipts	28,600 r	30,200
Total available	34,400 <sup>r</sup>	37,300
Tin consumed in manufactured products:		
Primary	24,500	25,700
Secondary	3,240	4,730
Total	27,800 r	30,400
Intercompany transactions in scrap	454	5
Total processed	28,200	30,400
Stocks, December 31 (total available less total processed)	6,200 r	6,850
In : 1		

rRevised.

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

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

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

 $\label{eq:table 3} \text{U.s. consumption of tin, By finished product}^1$ 

# (Metric tons, contained tin)

		2012			2013				
Product	Primary	Secondary	Total	Primary	Secondary	Total			
Alloys, miscellaneous <sup>2</sup>	2,950	W	2,950	7,160	W	7,160			
Babbitt	253 <sup>r</sup>	28 <sup>r</sup>	281	401	419	820			
Bar tin	W	W	W	W	W	W			
Bronze and brass	1,250	1,210	2,460	1,090	1,290	2,380			
Chemicals	9,860	W	9,860	6,790	W	6,790			
Solder	3,010 r	1,920 r	4,930 r	3,020	2,920	5,940			
Tinning	467		467	511		511			
Tinplate <sup>3</sup>	6,090	W	6,090	6,030	W	6,030			
Other <sup>4</sup>	646 r	80 r	726 <sup>r</sup>	704	103	807			
Total	24,500	3,240	27,800 r	25,700	4,730	30,400			

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

 $\label{eq:table 4} \textbf{U.S. INDUSTRY YEAREND TIN STOCKS}^1$ 

#### (Metric tons)

	2012	2013
Plant raw materials:		
Pig tin:		
Primary <sup>2</sup>	5,270 <sup>r</sup>	4,990
Secondary	621 <sup>r</sup>	107
In process <sup>3</sup>	109 <sup>r</sup>	387
Total	6,000	5,490
Additional pig tin:		
Jobbers-importers	739	855
Afloat to United States	173	191
Total	912	1,050
Grand total	6,910 <sup>r</sup>	6,530
r		

rRevised.

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

<sup>&</sup>lt;sup>2</sup>Includes terne metal.

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

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

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

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

<sup>&</sup>lt;sup>3</sup>Data only include tin content of scrap.

 ${\it TABLE 5} \\ {\it U.S. STOCKS, RECEIPTS, AND CONSUMPTION OF NEW AND OLD SCRAP AND TIN RECOVERED, BY TYPE OF SCRAP^1}$ 

# (Metric tons)

			Gross v	veight of scrap	ı				
	Stocks,			Consumptio	n	Stocks,	T	in recovere	d <sup>e</sup>
Type of scrap	January 1	Receipts	New	Old	Total	December 31	New	Old	Total
2012:									
Copper-base scrap:	_								
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 e	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	XX	XX	XX	XX	XX	XX	2,380	11,200	13,500
2013:									
Copper-base scrap: <sup>e</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	1,230	W	1,230
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	1,660	2,420	4,080
Lead-base scrap	43,700 e	1,120,000	27,700	1,100,000	1,120,000	42,800	727	8,650	9,380
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	11,100	13,500

<sup>&</sup>lt;sup>e</sup>Estimated. W Withheld to avoid disclosing company proprietary data. XX Not applicable.

 $\label{eq:table 6} \text{U.S. EXPORTS OF TIN IN VARIOUS FORMS}^1$ 

20	12	2013		
Quantity	Value	Quantity	Value	
(metric tons)	(thousands)	(metric tons)	(thousands)	
5,560	\$36,200 r	5,870	\$38,400	
15,100	66,000	10,700	59,000	
160,000	132,000	135,000	109,000	
	Quantity (metric tons) 5,560	(metric tons) (thousands) 5,560 \$36,200 ° 15,100 66,000	Quantity (metric tons)         Value (thousands)         Quantity (metric tons)           5,560         \$36,200 °         5,870           15,100         66,000         10,700	

Revised.

Source: U.S. Census Bureau.

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

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

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

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

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

 $\label{eq:table 7} {\it TABLE 7}$  U.S. IMPORTS FOR CONSUMPTION OF TIN IN VARIOUS FORMS  $^1$ 

	20	12	2013		
	Quantity		Quantity		
	(metric tons,	Value	(metric tons,	Value	
Form	gross weight)	(thousands)	gross weight)	(thousands)	
Dross, skimmings, scrap residues, tin alloys, n.s.p.f. <sup>2</sup>	73,300	\$39,300	64,300	\$36,100	
Miscellaneous <sup>3</sup>	XX	35,700	XX	33,900	
Tin compounds	438	9,400	257	5,230	
Tinplate and terneplate	428,000	500,000	488,000	546,000	
Tinplate scrap	91,300	30,800	59,700	21,400	

XX Not applicable.

Source: U.S. Census Bureau.

TABLE 8  $\mbox{U.S. IMPORTS FOR CONSUMPTION OF UNWROUGHT TIN METAL, } \\ \mbox{BY COUNTRY}^1$ 

	20	12	20	13
	Quantity	Value	Quantity	Value
Country	(metric tons)	(thousands)	(metric tons)	(thousands)
Belgium	625	\$12,400	218	\$5,250
Bolivia	5,100	110,000	6,510	147,000
Brazil	2,930	60,100	3,100	69,800
Canada	25	582	28	627
Chile				
China	174	3,870	1,610	36,900
Indonesia	6,180	89,300	5,560	109,000
Japan	5	141		
Malaysia	4,590	96,000	4,190	93,400
Peru	14,500	304,000	11,300	252,000
Singapore	424	8,210	101	2,100
Switzerland	(2)	4		
Thailand	1,750	38,000	2,380	54,500
United Kingdom	1	17		
Other	646	13,100	4	27
Total	36,900	735,000	34,900	771,000

<sup>--</sup> Zero.

Source: U.S. Census Bureau.

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

<sup>&</sup>lt;sup>2</sup>Not specifically provided for.

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

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

 $<sup>^2</sup>Less\ than\ ^1\!\!/_2\ unit.$ 

 $\label{eq:table 9} \text{TIN: WORLD MINE PRODUCTION, BY COUNTRY}^{1,\,2}$ 

# (Metric tons)

Country	2009	2010	2011	2012	2013 <sup>e</sup>
Australia	13,268 <sup>r</sup>	18,263 <sup>r</sup>	14,014 <sup>r</sup>	6,158 r, 3	6,474 <sup>3</sup>
Bolivia	19,575	20,190	20,373	$19,702^{-3}$	19,300
Brazil	9,500	10,400	10,725	13,667 3	12,000
Burma <sup>4</sup>	1,000	4,000	11,000 e	10,600	11,000
Burundi	12	12	22	21	20
China <sup>e</sup>	97,200	115,000	120,000	110,000	110,000
Congo (Kinshasa) <sup>e</sup>	9,900	8,600	4,800	3,700	3,000
Indonesia	46,078	43,258	42,000 e	41,000	95,200
Laos	598	925	674	762 <sup>3</sup>	800
Malaysia	2,412	2,668	3,346 <sup>r</sup>	3,726 3	3,700
Niger <sup>5</sup>	r	r	r	r	
Nigeria <sup>e, 6</sup>	400	520	570	570	570
Peru	37,503	33,848	28,882	26,105 3	23,668 3
Portugal	34	22	39	30 r	40
Russia	127	144	75	100	420
Rwanda <sup>e</sup>	2,400	3,000	2,900	1,600	1,900
Thailand	166	291	282	124 <sup>3</sup>	200
Uganda, placer		32	10 e		40
Vietnam <sup>e</sup>	5,400	5,400	5,400	5,400	5,400
Total	246,000 r	267,000 r	265,000 r	243,000	294,000

<sup>&</sup>lt;sup>e</sup>Estimated. <sup>r</sup>Revised. -- Zero.

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

<sup>&</sup>lt;sup>2</sup>Includes data available through July 11, 2014.

<sup>&</sup>lt;sup>3</sup>Reported figure.

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

<sup>&</sup>lt;sup>5</sup>Production of tin was by artisanal miners.

<sup>&</sup>lt;sup>6</sup>Concentrate gross weight reported, estimated 62% tin content.

 $\label{eq:table 10} \text{TIN: WORLD SMELTER PRODUCTION, BY COUNTRY}^{1,\,2}$ 

# (Metric tons)

Country	2009	2010	2011	2012 <sup>e</sup>	2013 <sup>e</sup>
Australia, secondary <sup>e</sup>	400	400	400	400	400
Belgium, secondary <sup>e</sup>	8,700 <sup>r</sup>	9,900 <sup>r</sup>	10,000 r	11,400 <sup>r</sup>	12,000
Bolivia, primary	14,995 <sup>r</sup>	14,975 <sup>r</sup>	14,518 r, 3	14,280 r, 3	14,000
Brazil:					
Primary	8,311	9,098	9,382 3	11,955 <sup>3</sup>	12,250 <sup>3</sup>
Secondary <sup>e</sup>	250	250	250	250	250
Total	8,561	9,348	9,632 3	12,205 3	12,500
Bulgaria, secondary <sup>e</sup>	r	r	r	r	
Burma, primary <sup>e</sup>	30	30	30	30	30
China, primary <sup>e</sup>	140,000	150,000	156,000	148,000	150,000
Denmark, secondary <sup>e</sup>	75	75	60	50	50
Greece, secondary <sup>e</sup>	75	60	50	50	50
Indonesia, primary	51,418	43,832	43,000	42,000	41,000
Japan, primary	757	841	947 <sup>3</sup>	1,133 r, 3	1,000
Malaysia, primary	36,407	38,737	40,267 <sup>3</sup>	37,792 3	32,668 3
Mexico, primary	15				
Norway, secondary <sup>e</sup>	50	50	50	50	50
Peru, primary	34,388	36,451	32,290 <sup>3</sup>	24,811 3	24,181 <sup>3</sup>
Russia:e					
Primary	1,129 3	1,081 3	526 <sup>3</sup>	500	400
Secondary	300	300	200 <sup>r</sup>	200	150
Total	1,430	1,380	726 <sup>r</sup>	700	550
Spain, secondary <sup>e</sup>	10	10	10	10	10
Thailand, primary	19,423	20,000	20,000	20,000	20,000
United States, secondary	11,100	11,100	11,000 3	11,200 3	11,100 <sup>p</sup>
Vietnam, primary	2,747	3,042	3,900 r	4,000 <sup>r</sup>	4,000
Grand total	331,000 <sup>r</sup>	340,000 r	343,000 <sup>r</sup>	328,000 <sup>r</sup>	324,000
Of which:					
Primary	310,000	318,000	321,000 <sup>r</sup>	305,000 r	300,000
Secondary	20,900 <sup>r</sup>	22,100 r	22,000 r	23,600 r	24,000

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

<sup>&</sup>lt;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>&</sup>lt;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 10, 2014.

<sup>&</sup>lt;sup>3</sup>Reported figure.