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2020 Minerals Yearbook

TIN [ADVANCE RELEASE]

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Tin

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Tin has not been mined in the United States since 1993, and primary tin metal has not been produced since the last smelter closed in 1989. Accordingly, the United States is completely reliant on imports and recycling for its tin needs, importing 31,600 metric tons (t) of refined tin during 2020, a 7% decrease from that in 2019 (tables 1, 7). In 2020, the reported amount of primary tin metal consumed domestically was 27,500 t (tables 1, 3) worth an estimated $485 million, and the reported amount of secondary tin consumed domestically was 2,860 t. Approximately 9,550 t of tin metal was produced from domestic old scrap (tables 1, 5). Industry stocks at yearend 2020 were 9,590 t, a 7% decrease from those at yearend 2019 (tables 1, 4).

World tin mine production in 2020 was 264,000 t, a 12% decrease from revised production in 2019 primarily owing to production decreases in Burma and Indonesia (tables 1, 9). Of the 21 countries in which tin was mined in 2020, 6 countries accounted for 84% of total production. China was the leading producer (32% of world output), followed by Indonesia (20%), Burma (11%), Peru (8%), Congo (Kinshasa) (7%), and Brazil (6%) (table 9). World primary tin smelter production was 344,000 t (table 10), a slight decrease from that in 2019 (revised). Total tin world smelter production was 363,000 t in 2020, a slight decrease from the revised total in 2019 (table 1). According to CRU International Ltd., world refined tin consumption for 2020 was 343,000 t, a 5% decrease from that in 2019 (Willoughby, 2021, p. 15).

The S&P Global Platts Metals Week annual average New York dealer price of $7.99 per pound for Grade A tin in 2020 decreased by 8% from that in 2019, and the annual average London Metal Exchange Ltd. (LME) cash price of $7.77 per pound decreased by 8% from that in 2019 (table 1). World tin reserves were estimated to be 4.3 million metric tons, about 16 times the estimated 2020 world mine production of tin (Merrill, 2021).

Government Actions and Legislation

Conflict Minerals.—The U.S. Securities and Exchange Commission (SEC) is responsible for implementing section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, which focused on the use of minerals determined to be financing conflict in Congo (Kinshasa) or adjoining countries. A "conflict mineral" is defined as cassiterite, columbite-tantalite, gold, wolframite, or their derivatives. Cassiterite is one of two principal minerals mined for tin. Section 1502 requires companies for which conflict minerals or their derivatives are necessary to the functionality or manufacture of their products to annually disclose whether those minerals originated in Congo (Kinshasa) or an adjoining country, also known as "covered countries" (U.S. Securities and Exchange Commission, 2012, p. 56274–56275).

In 2020, 1,057 companies filed conflict minerals disclosures (1,083 companies filed disclosures in 2019). In 2020, 58% of companies were able to determine the originating country for minerals used in their products. Among the companies reporting in 2020, 42% determined that minerals in their products may have originated from a covered country, whereas 16% determined that their minerals did not originate from a covered country. The remaining 42% of companies were either unable to make a determination or did not clearly indicate results of their determination. Based on a generalized sampling of company filings, an estimated 71% of companies reported using tin (U.S. Government Accountability Office, 2021, p. 1–5, 10–14). Tin concentrate production from Congo (Kinshasa) and adjoining countries has constituted 2% to 7% of world production during the previous 5 years (table 9).

Foreign Trade.—As of December 2020, steel and derivative product imports from all countries except Argentina, Australia, Brazil, Canada, the Republic of Korea, and Mexico remained subject to a 25% ad valorem tariff (U.S. Geological Survey, 2021, p. 5). Steel products affected by these tariffs included varieties of tinplate with Harmonized Tariff Schedule of the United States codes 7210.11.00, 7210.12.00, and 7212.10.00. In 2020, the United States imported 697,000 t of tinplate, a slight increase compared with imports in 2019 (table 7). Imports of tin in the form of ore and concentrates, unwrought metal, and waste and scrap remained duty free (U.S. International Trade Commission, 2020a, b).

Production

Tin has not been mined in the United States since 1993. In 2020, tin output recovered from old scrap totaled 9,550 t, a 9% decrease from the total in 2019 (tables 1, 5). A significant quantity of alloy tin scrap was generated during manufacturing processes and was recycled within those same industries as new scrap; however, these data were withheld to avoid disclosing company proprietary data. Secondary tin recovered from post-consumer (old) scrap was used in many types of products and was a particularly important source of tin for the manufacture of brass and bronze (table 3). In 2020, the total amount of tin recovered from new scrap was 7,990 t, a slight decrease from that in 2019. Total tin recovered in 2020 was 17,500 t, a 6% decrease from that in 2019 (table 5).

Consumption

During 2020, tin in the United States was used, in descending order by weight, in chemicals, 25%; tinplate, 22%; alloys, 12%; solder, 9%; bronze and brass, 6%; babbitt, bar tin, and tinning, 4%; and other, 22% (table 3). Tin-based chemicals commonly were used in polyvinyl chloride production and in biocides, catalysts, curing, and electroplating. Tinplate is a layer of tin adhered to steel or wrought iron substrate for corrosion protection; tin was used in this case to inhibit rust and was

commonly used in food-grade cans. Tin alloys were used in brass and bronze products, solders, and low-friction metals. Solder commonly was used in electronic devices for connections on circuit boards.

Domestic consumption data for tin were developed by the U.S. Geological Survey from a voluntary survey of companies that consumed tin. The amount of tin consumed by the companies that did not respond to the survey was estimated based on prior reports or on information from other sources. In 2020, reported consumption of primary tin was 27,500 t, a 3% decrease from that in 2019. Reported secondary tin consumption in 2020 was 2,860 t, a decrease of 33% from that in 2019 (table 1).

In July, Wieland Group (Germany), a producer of semifinished copper and copper alloy products, announced that it had acquired Marjan Inc. (Waterbury, CT), a provider of hot-dip tin coatings with facilities in Waterbury, CT, and Montgomery, IL. The acquisition would expand Wieland's access into the hot-dip tinning market in North America, and the new entity would operate as Wieland Marjan (Wieland Group, 2020).

Prices

The S&P Global Platts Metals Week annual average New York dealer price for Grade A tin metal was $7.99 per pound in 2020, an 8% decrease from the 2019 average New York dealer price of $8.68 per pound. The LME remained the principal commodity exchange for trading tin. In 2020, the annual average LME cash price for tin was $7.77 per pound, an 8% decrease from the 2019 average LME price of $8.46 per pound (table 1).

Foreign Trade

In 2020, the United States imported a total of 751,000 t of tin products valued at $1.27 billion dollars, unchanged in quantity and a 12% decrease in value from that in 2019 (table 7). Refined tin imports, which supplied most domestic primary tin requirements, totaled 31,600 t valued at $539 million in 2020, a 7% decrease in quantity and an 18% decrease in value from those in 2019. Imports of tin alloys totaled 843 t in 2020 valued at $11.6 million, a 17% decrease in quantity and a 20% decrease in value from those in 2019. The leading tin imports in 2020, by quantity, were tinplate and terneplate, which equaled 697,600 t and were valued at $673 million, a slight increase in quantity and a decrease of 7% in value from those in 2019. Top sources of refined tin to the United States were Indonesia (29%), Peru (28%), Bolivia (16%), Malaysia (12%), and Brazil (10%) (table 8).

In 2020, the United States exported a total of 101,000 t of tin products valued at $148 million dollars, a decrease of 7% in quantity and 17% in value from that in 2019. Refined tin exports in 2020 equaled 519 t valued at $9.82 million, a 60% decrease in quantity and a 63% decrease in value from those in 2019. Exports of tin alloys totaled 1,130 t valued at $17.2 million, a 6% decrease in quantity and a 3% decrease in value from those in 2019. The leading tin exports in 2020, by quantity, were tinplate and terneplate, which equaled 90,500 t and were valued at $65.0 million, a decrease of 6% in quantity and 10% in value from those in 2019 (table 6).

World Review

According to an annual survey by the International Tin Association Ltd., the world's 10 leading refined tin producers and their 2020 production were Yunnan Tin Group Co. Ltd. (China), 74,800 t; PT Timah (Persero) Tbk. (Indonesia), 45,700 t; Malaysia Smelting Corp. (Malaysia), 22,400 t; Minsur S.A. (Peru), 19,600 t; Yunnan Chengfeng Non-ferrous Metals Co. Ltd. (China), 16,500 t; Thailand Smelting and Refining Co. Ltd. (Thailand), 11,300 t; Guangxi China Tin Group Co. Ltd. (China), 10,100 t; Jiangxi New Nanshan Technology Ltd. (China), 10,100 t; Metallo Chimique International N.V. (Belgium), 8,100 t; and Gejiu Zili Mining and Metallurgy Co. Ltd (China), 7,000 t. Production for top producer Yunnan Tin was essentially unchanged from that in 2019. Of the top five producers, Malaysia Smelting, PT Timah, and Yunnan Chengfeng reported decreases of 8%, 40%, and 14%, respectively, in production from that in 2019, whereas Minsur reported no production change. Overall production by the top 10 refined tin producers decreased by 12% in 2020 from that in 2019 (International Tin Association Ltd., 2021).

China.—Inner Mongolia Xingye Mining Co. Ltd. announced plans to restart mining activities at the Baiyinchagan Mine in Inner Mongolia Autonomous Region. Prior to its closure in 2019 after a fatal accident, the mine produced approximately 7,000 t of tin in concentrate and accounted for about 8% of tin mine production in China in 2018 (International Tin Association Ltd., 2020a).

In November, Yunnan Tin Group Co. Ltd. commissioned its newly relocated tin smelter in the Mengzi Economic Development Zone, Yunnan Province. The company projected that the smelter would reach its full production capacity of 70,000 metric tons per year (t/yr) by yearend. In 2013, the company announced that it would move its main smelting facility in Geiju City, Yunnan Province, to comply with a Government mandate that required smelters within 1 kilometer of residential areas to relocate (International Tin Association Ltd., 2020b).

Congo (Kinshasa).—Alphamin Resources Corp. (Mauritius) produced 10,300 t of payable tin in concentrate at its underground Bisie tin mine in 2020, the mine's first full year of production. The company commenced commercial production at the Bisie Mine, in North Kivu Province, in September 2019 and produced 5,220 t of tin in concentrate by yearend 2019. During 2020, Alphamin was in the process of building a $4.6 million fine tin recovery plant, which would be fully commissioned by June 2021 and could increase tin production at Bisie by 5% to 10%, according to the company. In December, Alphamin commenced drilling at the Mpama South deposit, located near the currently mined Mpama North deposit, and planned to complete an initial resource estimate for Mpama South in 2021. Tin production at the Bisie Mine was projected to increase to 13,000 t in 2021 (Alphamin Resources Corp., 2021, p. 2–4, 10).

Germany.—In May, the European Commission approved Aurubis AG's acquisition of nonferrous metals recycler Metallo Group (Belgium). Aurubis, a refining company and Europe's largest copper producer, purchased Metallo Group for

$433 million.[1] Metallo specialized in the recycling of materials with low metal contents, including tin. The acquisition of Metallo, with recycling plants in Belgium and Spain, would increase Aurubis' recycling capacity and capabilities (Aurubis AG, 2020).

Indonesia.—PT Timah Tbk, a leading global tin producer, produced 39,800 t of tin in ore and 45,700 t of tin metal in 2020, decreases of 52% and 40%, respectively, from ore and metal production in 2019. PT Timah attributed the decrease in tin production to a decrease in global tin demand and issues related to the global coronavirus disease 2019 (COVID-19) pandemic at the company's mining operations in Bangka Belitung Islands and Riau Provinces (PT Timah Tbk, 2021, p. 195, 244).

In January, PT Timah began construction on its Advanced Tin Smelter project at its existing smelter in Muntok. The project included installing new smelting equipment that used Ausmelt technology and was initiated in response to the low recovery rate of the existing smelter technology and decreasing availability of high-grade tin ore. By yearend, the project was almost 39% complete. Once complete, the smelter would have a capacity of 40,000 t/yr of crude tin (PT Timah Tbk, 2021, p. 240; 2022, p. 14).

Namibia.—In June, AfriTin Mining Ltd. announced that it had resumed ramping up production at the Uis tin mine after operations were hampered by Government-mandated lockdown measures initiated in late March in response to the COVID-19 pandemic. In 2019, AfriTin Mining finished construction on Phase 1 of the pilot plant and began shipping concentrate from the Uis Mine. By December 2020, the mine had reached production with the pilot plant producing at nameplate capacity (60 metric tons per month of tin concentrate in Phase 1) (Ford, 2020; AfriTin Mining Ltd., 2021, p. 67).

Spain.—Reported tin production at W Resources plc's (United Kingdom) La Parrilla tungsten-tin mine was 61 t of tin in concentrate in 2020. The mine, located in the Caceres and Badajoz Provinces, was commissioned in 2019 and was projected to produce 500 t/yr of tin concentrate (about 260 t/yr of contained tin) at full production and a mine life of more than 11 years. During 2020, the company began an improvement program at La Parrilla to substantially increase production at the mine, with a particular focus on increasing the tungsten recovery rate and revising the mine plan (W Resources plc, 2017, p. 6; 2020; 2021, p. 3).

Outlook

Tin is a vital component of the electronics and packaging industries. As such, the demand for tin is currently closely tied to these industries. According to the International Tin Association, future demand for tin will be driven largely by electronics and energy uses, including computing and robotics; electric vehicles; and energy generation, storage, and infrastructure. The International Tin Association projected that refined tin production and consumption would increase in 2021 compared with those in 2020. Consumption was forecast to exceed production by 2,700 t, a smaller deficit compared with that in 2019 (Onstad, 2020; International Tin Association Ltd., undated).

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[1]Where necessary, values have been converted from euro area euros (EUR) to U.S. dollars (US$) at an annual average exchange rate of EUR0.877=US$1.00 for 2020.

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TABLE 1
SALIENT TIN STATISTICS[1]

(Metric tons, tin content, unless otherwise specified)

		2016	2017	2018	2019	2020
United States:						
Production, secondary, tin content from old scrap[e]		9,960	10,000	9,890 r	10,500	9,550
Exports, refined tin		1,150	1,560	941	1,300	519
Imports for consumption, refined tin		32,200	34,300	36,800	34,100	31,600
Consumption, reported:						
Primary		22,500	23,300	28,000	28,500	27,500
Secondary		2,920	3,100	4,680	4,240	2,860
Stocks, yearend, U.S. industry[2]		6,370	6,660	10,100	10,300	9,590
Price, average:[3]						
Platts Metals Week New York dealer, Grade A	cents per pound	839.10	936.65	935.87	868.08	798.65
London Metal Exchange Ltd., cash	do.	815.22	911.22	914.29	846.43	777.15
World, production:[4]						
Mine		309,000	341,000	327,000 r	299,000 r	264,000
Smelter:						
Primary		342,000	351,000	350,000 r	347,000 r	344,000
Secondary		22,400	22,800 r	19,400 r	19,900 r	18,700
Total		364,000 r	373,000	370,000 r	367,000 r	363,000

[e]Estimated. [r]Revised. do. Ditto.
[1]Table includes data available through October 25, 2021. Data are rounded to no more than three significant digits, except "Price, average"; may not add to totals shown.
[2]Includes primary, secondary, in process, jobbers-importers, and pig tin afloat to the United States.
[3]Source: S&P Global Platts Metals Week.
[4]May include estimated data.

TABLE 2
U.S. CONSUMPTION OF PRIMARY AND SECONDARY TIN[1]

(Metric tons, tin content)

	2019	2020
Stocks, January 1[2]	8,670	8,570
Net receipts during year:		
Primary	28,400	28,000
Secondary	2,460	2,460
Scrap	2,150	972
Total receipts	33,000	31,400
Total available	41,700	40,000
Processed:		
Tin consumed in manufactured products:		
Primary	28,500	27,500
Secondary	4,240	2,860
Total	32,700	30,400
Intercompany transactions in scrap	353	606
Total processed	33,100	31,000
Stocks, December 31 (total available less total processed)	8,590	9,010

[1]Table includes data available through October 25, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes tin in transit in the United States.

TABLE 3
U.S. CONSUMPTION OF TIN, BY FINISHED PRODUCT[1]

(Metric tons, tin content)

	2019			2020		
Product	Primary	Secondary	Total	Primary	Secondary	Total
Alloys, miscellaneous[2]	4,250	W	4,250	3,740	W	3,740
Babbitt	318	W	318	227	W	227
Bar tin	495	--	495	536	--	536
Bronze and brass	776	1,060	1,840	832	1,080	1,910
Chemicals	7,290	W	7,290	7,540	W	7,540
Solder	3,740	W	3,740	2,660	W	2,660
Tinning	423	W	423	314	W	314
Tinplate[3]	5,820	W	5,820	6,810	W	6,810
Other[4]	5,360	3,170	8,540	4,880	1,770	6,650
Total	28,500	4,240	32,700	27,500	2,860	30,400

W Withheld to avoid disclosing company proprietary data; included with "Other." -- Zero.
[1]Table includes data available through October 25, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes terne metal.
[3]Includes secondary pig tin and tin acquired in chemicals.
[4]Includes britannia metal, collapsible tubes and foil, jewelers' metal, pewter, tin powder, type metal, and white metal.

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

(Metric tons)

	2019	2020
Plant raw materials:		
Pig tin:		
Primary[2]	8,120	7,880
Secondary	513	154
In process[3]	511	120
Total	9,140	8,150
Additional pig tin:		
Jobbers-importers	W	W
Afloat to United States	W	W
Total	1,170	1,440
Grand total	10,300	9,590

W Withheld to avoid disclosing company proprietary data.
[1]Table includes data available through October 25, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes tin in transit in the United States.
[3]Data 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[1]

(Metric tons)

	Gross weight of scrap								
	Stocks,		Consumption			Stocks,	Tin recovered[e]		
Type of scrap	January 1	Receipts	New	Old	Total	December 31	New	Old	Total
2019:									
Copper-base scrap:[e]									
Ingot makers	3,400	43,500 r	W	W	44,000	2,890 r	(2)	(2)	(2)
Brass mills[3]	W	W	W	W	W	W	(2)	(2)	(2)
Foundries and other plants	699	3,100 r	W	W	3,300	497 r	(2)	(2)	(2)
Lead-base scrap	W	895,000 r	W	W	900,000	11,400 r	(2)	(2)	(2)
Tin-base scrap[4]	W	W	W	W	W	W	(2)	(2)	(2)
Total	XX	XX	XX	XX	XX	XX	8,120	10,500	18,600
2020:									
Copper-base scrap:[e]									
Ingot makers	2,890	29,500	W	W	29,700	2,700	(2)	(2)	(2)
Brass mills[3]	W	W	W	W	W	W	(2)	(2)	(2)
Foundries and other plants	497	1,700	W	W	1,700	493	(2)	(2)	(2)
Lead-base scrap	11,400	1,050,000	W	W	1,050,000	12,400	(2)	(2)	(2)
Tin-base scrap[4]	W	W	W	W	W	W	(2)	(2)	(2)
Total	XX	XX	XX	XX	XX	XX	7,990	9,550	17,500

[e]Estimated. [r]Revised. W Withheld to avoid disclosing company proprietary data. XX Not applicable.
[1]Table includes data available through October 25, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Withheld to avoid disclosing company proprietary data; included in totals.
[3]Consumption is assumed to be equal to receipts.
[4]Includes tinplate and other scrap recovered at detinning plants.

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

Form	2019 Quantity (metric tons, gross weight)	2019 Value (thousands)	2020 Quantity (metric tons, gross weight)	2020 Value (thousands)
Unwrought:				
Refined tin	1,300	$26,500	519	$9,820
Tin alloys	1,200	17,800	1,130	17,200
Wrought:				
Tin bars, rods, profiles, and wire	5,480	46,600	4,640	41,500
Tin foil	50 r	341 r	239	1,630
Tin plates, sheet, and strip	1,080	3,550	2,270	3,910
Tin tubes, pipes, and tube and pipe fittings	186	3,160	158	2,250
Tin waste and scrap	2,470	2,270	1,200	1,840
Tin flakes and powders	274	5,070	232	4,440
Tinplate and ternplate	96,700 r	72,500	90,500	65,000

rRevised.
[1]Table includes data available through August 9, 2021. Data are rounded to no more than three significant digits.

Source: U.S. Census Bureau.

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

Form	2019 Quantity (metric tons, gross weight)	2019 Value (thousands)	2020 Quantity (metric tons, gross weight)	2020 Value (thousands)
Unwrought:				
Refined tin	34,100	$659,000	31,600	$539,000
Tin alloys	1,020	14,400	843	11,600
Wrought:				
Tin bars, rods, profiles, and wire	1,450	32,400	1,160	34,000
Tin foil	56	1,960	47	1,630
Tin plates, sheet, and strip	58	418	58	282
Tin tubes, pipes, and tube and pipe fittings	196	499	10	134
Tin waste and scrap	30,400	11,200	20,700	8,700
Tin flakes and powders	117	3,520	129	4,000
Tin oxides	211	4,110	160	2,780
Tinplate and ternplate	685,000	720,000	697,000	673,000

[1]Table includes data available through August 9, 2021. Data are rounded to no more than three significant digits.

Source: U.S. Census Bureau.

TABLE 8
U.S. IMPORTS FOR CONSUMPTION OF REFINED TIN, BY COUNTRY OR LOCALITY[1]

Country or locality	2019 Quantity (metric tons)	2019 Value (thousands)	2020 Quantity (metric tons)	2020 Value (thousands)
Belgium	327	$6,520	372	$6,500
Bolivia	5,940	115,000	5,060	86,700
Brazil	3,020	57,900	3,080	52,800
Canada	25	819	8	116
China	1,340	27,300	(2)	2
Estonia	480	10,200	--	--
Indonesia	5,230	93,100	9,170	148,000
Malaysia	7,120	137,000	3,740	64,000
Peru	7,930	154,000	8,850	156,000
Poland	1,080	22,400	1,080	19,600
Russia	845	17,300	--	--
Taiwan	20	399	--	--
Thailand	600	12,100	174	3,110
Other	202	4,470	103	2,020
Total	34,100	659,000	31,600	539,000

-- Zero.
[1]Table includes data available through August 9, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 9
TIN: WORLD MINE PRODUCTION, BY COUNTRY OR LOCALITY[1]

(Metric tons, tin content)

Country or locality	2016	2017	2018	2019	2020
Australia	6,635	7,402	6,871	7,738	8,118
Bolivia	17,460	18,341	17,251	17,147 r	14,709
Brazil	19,705	17,081	17,591	14,867 r	16,893
Burma[e, 2]	57,000	67,500	54,600	45,000 r	29,000
Burundi[e]	14	140	200	240	150
China	97,200	95,500	94,800 r	84,500	84,000 e
Congo (Kinshasa)[e]	7,100	11,000	9,800	11,200 r	17,300
Indonesia	69,621	83,000	85,000	77,468	53,000 e
Laos	1,117	1,083	480 r	1,600 r, e	1,400 e
Malaysia	4,158	3,894	3,868	3,611	2,959
Mongolia	39	25	25	26 r	100 e
Namibia	--	--	--	10	312
Nigeria[e, 3]	2,300	8,300	7,800	5,800	5,000
Peru	18,789	17,790	18,601	19,853	20,647
Portugal	54	81	111	108 r	120 e
Russia	627	1,011	1,530	2,264 r	2,500
Rwanda[e]	2,200	3,000	3,000	2,400 r	1,800
Tanzania	138	91	8	18 r	20 e
Thailand, mineral concentrate	92	541	75	73	70 e
Uganda	62 r	66	53 r	15 r	10 e
United Kingdom	160	255	230 e	--	--
Vietnam	4,579	5,000	5,500	5,500	5,400 e
Total	309,000	341,000	327,000 r	299,000 r	264,000

[e]Estimated. [r]Revised. -- Zero.
[1]Table includes data available through August 24, 2021. All data are reported unless otherwise noted; totals may include estimated data. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes tin content of tin-tungsten concentrate.
[3]Tin content is estimated as 62% of reported gross weight concentrate.

TABLE 10
TIN: WORLD SMELTER PRODUCTION, BY COUNTRY OR LOCALITY[1, 2]

(Metric tons, tin content)

Country or locality	2016	2017	2018	2019	2020
Belgium, secondary	8,540	9,700	9,330	9,300	9,000
Bolivia, primary	16,810	16,648	15,611	15,111 r	10,414
Brazil, primary	12,542	13,796	12,900	11,927	11,810
China, primary	182,500	178,400	177,400 r	181,200 r	203,000
Greece, secondary	--	50 e	50 e	--	-- e
India:					
Primary	9	15	18	19	13
Secondary	3,800 e	3,000 e	--	--	--
Total	3,810 e	3,020 e	18	19	13
Indonesia, primary	66,900	80,000	81,427	76,389	58,790
Japan, primary	1,620	1,624	1,650	1,547	1,558
Malaysia, primary	26,758	27,200	27,341 r	25,673 r	22,598
Norway, secondary[e]	50	50	50	--	--
Peru, primary	19,390	17,906	18,255	19,555	19,585
Rwanda, primary	-- e	-- e	--	300 r	300
Spain, secondary	7 r	24 r	81 r	101 r	115
Thailand, primary	10,807	10,588	10,721	10,956 r	11,265
United States, secondary[e]	9,960	10,000	9,890 r	10,500	9,550
Vietnam, primary	4,419 r	4,400	4,900	4,800	4,600 e
Grand total	364,000 r	373,000 r	370,000 r	367,000 r	363,000
Of which:					
Primary	342,000	351,000	350,000 r	347,000 r	344,000
Secondary	22,400	22,800 r	19,400 r	19,000 r	18,700

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

[1]Table includes data available through May 1, 2023. All data are reported unless otherwise noted; totals may include estimated data. Grand totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]Whenever possible, total output has been separated into primary (from ores and concentrates) and secondary (tin metal recovered from old scrap). Data reflect metal production at the first measurable stage of metal output.