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INDIUM [ADVANCE RELEASE]

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Indium

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Indium was not recovered from concentrates in the United States during 2018. Several facilities imported indium metal for the production of high-purity indium metal, indium compounds, specialty indium alloys, solders, and other indium products. During 2018, U.S. imports for consumption of unwrought indium metal and indium powders were 125 metric tons (t), slightly less than the 127 t imported in 2017 (table 1). Global primary refined indium production was estimated to have increased by 4% to 741 t in 2018 from that of the 2017 quantity (table 3).

Production

Globally, zinc concentrates were the principal source of primary indium. Although the United States was a significant producer of zinc concentrates, indium was not known to be recovered from these concentrates domestically or in other countries. In 2018, one indium-containing deposit in the United States continued to progress towards development—InZinc Mining Ltd.'s (Canada) West Desert zinc-copper-iron-indium deposit in Utah. InZinc Mining released a preliminary economic assessment of West Desert on April 1, 2014, that projected about 38 metric tons per year (t/yr) of indium could be produced from the zinc concentrate during a 15-year mine life (InZinc Mining Ltd., 2014).

A significant amount of indium-containing scrap was recycled domestically; however, sufficient data were not available to estimate the quantity of indium recovered or recycled into new indium products.

Consumption

Domestic indium consumption, based on import levels, was estimated to have ranged between 100 and 160 t/yr during the past 5 years. Imported indium metal was upgraded to higher purities and (or) consumed for the production of indium alloys, chemicals, shapes, and specialty products, which were sold to downstream users. Indium Corp. (Clinton, NY) accounted for the majority of U.S. consumption of indium. Other companies that consumed indium in the United States included 5N Plus Semiconductors LLC (St. George, UT), ACI Alloys, Inc. (San Jose, CA), AIM Specialty Materials USA (Cranston, RI), AXT Inc. (Fremont, CA), ESPI Metals Inc. (Ashland, OR), Exotech, Inc. (Pompano Beach, FL), and JX Nippon Mining & Metals USA, Inc. (Chandler, AZ). Umicore Vital Thin Film Technologies Co., Ltd had shut down operations at the Providence, RI, facility in late 2017.

Indium-Tin Oxide.—Production of indium-tin oxide (ITO) was the leading global use of indium. ITO is principally used as a transparent, electrically conductive, thin-film coating on flat-panel displays—most commonly, liquid crystal displays (LCDs). In late 2017, global ITO production capacity (excluding China) was essentially unchanged at an estimated 1,980 t/yr; Umicore's shutdown of the facility in Providence, RI, was offset by the increase of production in the Umicore facility in Qingyuan, China. Four ITO producers accounted for 90% of global capacity (excluding China)—Heesung Metal Ltd. (Republic of Korea), JX Nippon Mining & Metals Corp. (Japan), Mitsui Metal Mining Co., Ltd. (Japan), and Samsung Corning Precision Materials Korea Co., Ltd. (Republic of Korea). Capacity utilization at global ITO facilities (excluding China) was estimated to be about 69% in 2018 with production at 1,320 t and production capacity at 1,980 t/yr. World consumption of ITO was reportedly 1,500 t, with more than 95% consumed in China, Japan, the Republic of Korea, and Taiwan. ITO consumption in China was estimated at 1,000 t/yr; however, most of this consumption was satisfied by imported ITO. ITO was not produced locally. Globally, a significant amount of indium was reclaimed in the ITO recycling process and reused for the production of ITO. About 1,200 t/yr of indium can be reclaimed from ITO recycling (Vareha-Walsh, 2016; Umicore NV, 2017; Roskill's Letter from Japan, 2018; Minor Metals Monthly, 2019c).

Alloys.—Indium-containing alloys were thought to be the second leading global end use of indium and were commonly used as solders in a wide range of applications owing to indium's high ductility and malleability, high thermal conductivity, and low melting point. Indium-lead solders were used to inhibit the leaching of gold components in electronic apparatus. Indium-silver alloys or pure indium foil were used as thermal interface materials in electronics (a substance used to seal a heat-generating surface to a heat sink, filling microscopic air voids to allow for effective heat transfer). Certain indium-tin alloys were used as bonding agents between nonmetallic materials. Indium was also used in dental alloys, in low melting temperature alloys for fuses, as a substitute for mercury, and in white gold alloys.

III-V Compound Semiconductor Materials.—An important use of indium was for III-V semiconductor materials, most commonly indium phosphide (InP) in optoelectronic devices (such as laser diodes) for fiber-optic communications. InP-based substrates are used in both laser and photo diodes in transceivers and in 5th-generation (5G) fiber optic telecommunications networks, which allow for more devices to be supported on a cellular network, has lower latency within the network, reduced signal loss within optical fiber, and produced faster speeds for all users. InP was mostly produced in Asia, followed by Europe and the United States, in descending order of quantity. Companies that produced InP polycrystalline ingot or substrates included AXT, InPACT Inc. (France), JX Nippon Mining & Metals (Japan), NeoPhotonics Corp., (United States), Phostec, s.r.o. (Slovakia), Sumitomo Electric Industries, Ltd. (Japan), and Wafer Technology Ltd. (United Kingdom) (Beijing Dimen International Information Consulting Co. Ltd., 2014; Dahlman and others, 2018, p. 57–71).

Other.—Indium was used in the manufacturing of copper-indium-gallium-selenide (CIGS) thin-film photovoltaic solar cells. An estimated 40 t of indium was consumed globally for the production of CIGS solar cells. CIGS thin-film cells accounted for 1% [1.5 gigawatts (GW)] of global solar cell production in 2017. Crystalline silicon continued to be the dominant solar cell-type, accounting for 95% (100 GW) of global production (106 GW) in 2017. Solar Frontier K.K. (Japan) was thought to be the only mass producer of CIGS solar cells in 2018. The company operated two CIGS plants in Japan with a combined capacity to produce approximately 1 gigawatt per year of solar cells (Roskill's Letter from Japan, 2016a, b; National Renewable Energy Laboratory, 2019, p. 68; Solar Frontier K.K., undated).

Indium was also used for the production of the semiconducting compound, indium gallium zinc oxide (IGZO), in organic light-emitting diode (OLED) displays and LCDs. IGZO has replaced amorphous silicon as the thin-film transistor in some displays because it allows for more pixels per square inch on small displays and ultra-high definition on large displays. IGZO also requires less voltage to operate. Sharp Corp. (Japan) consumed IGZO for the production of small- and medium-sized high-performance LCD panels for smartphones and tablets at its Kameyama Plant No. 2 in Japan. Although IGZO had yet to be used commercially in large-screen LCD displays, LG Display (Republic of Korea) has been using IGZO in its OLED televisions (Cammell, 2012; Harrower, 2015, p. 17–19; Roskill's Letter from Japan, 2016a).

Prices

In 2018, the average Platts Metals Week New York dealer price for indium (99.99% minimum purity in minimum lots of 50 kilograms) was about $375 per kilogram, an increase of 3% compared with that in 2017. The 2018 average Metal Bulletin free market price for indium increased by 29% from that in 2017 to $291 per kilogram. The average monthly free market price for indium was $284 per kilogram in January, increasing to a high of $349 per kilogram in April, and steadily decreasing through the rest of the year, ending at $242 per kilogram.

Foreign Trade

During 2018, U.S. imports for consumption of unwrought indium metal and indium powders were 125 t, a slight decrease from the 127 t imported in 2017 (table 1). Leading suppliers in 2018 were China (46%), Canada (23%), the Republic of Korea (11%), and France and Japan (6% each). Imports of indium from China, Canada, and France increased substantially in 2018, increasing by about 17 t, 5 t, and 5 t, respectively. This increase was offset by decreases in imports from Hong Kong (17 t), Belgium (4 t), Japan (2 t), and Taiwan (2 t). Data on indium exports were not available because there was no exclusive domestic export Schedule B code for unwrought indium and indium powders.

World Review

Global production of primary indium increased by 4% in 2018 from that in 2017, mostly as a result of increased production in China, France, and the Republic of Korea (table 3). China continued to be the leading producer, followed by the Republic of Korea, Japan, and Canada. Production resumed at Nyrstar NV's (Belgium) Auby zinc smelter in France in 2017. The smelter had not produced any indium since November 2015 owing to a fire (Metal-Pages, 2017; Nyrstar NV, 2019, p. 12).

Primary indium was recovered mainly from the residues generated during the smelting of zinc concentrates. Although an important factor, global changes in zinc mine production may not be an indicator of a corresponding change in the production of indium. It has been estimated that only about 35% of the indium contained in zinc concentrates reaches refineries that are capable of extracting and producing indium (Vareha-Walsh, 2016). Data on the amount of secondary production were not available. Estimated global consumption of indium was about 1,500 t in 2018, essentially unchanged from that in 2017.

Belgium.—Indium metal was produced at Umicore's precious-metals refinery at Hoboken. A specialty metals plant at the refinery had the capacity to recover 50 t/yr of indium from dusts and residues generated by the facility's lead refinery (Umicore NV, 2019).

Canada.—Refined indium was produced at Teck Resources Ltd.'s metallurgical complex at Trail, British Columbia, as a byproduct of processing lead-zinc concentrates. Indium production capacity at Trail was 75 t/yr (Teck Cominco Ltd., 2006, p. 27).

China.—China was the leading producer of refined indium, accounting for 40% of global primary refined production in 2018. Residues from lead and zinc companies accounted for 52% of the indium produced in China; the remaining 48% was produced from other sources. Production was estimated to have increased slightly in 2018 from that in 2017, owing to increased production from larger producers. This increase was offset by Government environmental regulations causing small smelters that were not able to meet the regulations to shut down. Some companies that have ceased production of indium were Nanjing Germanium Factory Co., Ltd.; Qinghai Western Indium Co.; Shangxing Antimony; Wenzhou Nonferrous Smelting Co., Ltd; Yunnan Copper Zinc Co.; and Zhuzhou Touch Smelting, part of Zhuzhou Smelter Group Co., Ltd. These companies previously produced a combined total of 50 to 60 t/yr of indium; however, production stopped in November. Zhuzhou Touch Smelting announced a relocation plan in 2017 and was expected to resume production of indium in the first quarter of 2019 (Argus Metals International, 2019).

China's indium consumption for ITO production was reported to have increased by 9% in 2018 (98 t) from that in 2017 (90 t). Indium consumption for ITO production rose from 76 t in 2017 to 98 t in 2018. China's consumption of indium was mostly for the production of ITO (70%), semiconductors (12%), and solder (12%). In recent years, China has been actively developing its domestic ITO industry in an effort to move away from being a net importer of ITO; the country has been nearly 100% import reliant on Japan, the Republic of Korea, and Taiwan for the type of ITO sputtering targets needed for the production of advanced display technologies. In January, state-owned company China Triumph International Engineering Co., Ltd. announced plans to develop three ITO production lines in the city of Luoyuan

in Henan Province. The production lines were expected to be completed by the end of 2018 (Lu, 2014a; Minor Metals Monthly, 2018, 2019a, b; Sun, 2019).

Large amounts of indium metal have been held in Fanya Metal Exchange commodity warehouses in China. By November 2015, the Kunming municipal government took over Fanya, and exchange warehouses reportedly held about 3,610 t of indium, equivalent to more than 4 years of primary production. The Kunming municipal government announced that it had launched a criminal investigation into Fanya, and on February 5, 2016, the owner of the Fanya was arrested on suspicion of unlawfully raising funds from the public. In July 2018, the Kunming municipal government announced the completion of a 2-day trial of officials that were involved in Fanya. The chairman, Shan Jiuliang, and 21 other Fanya executives were charged with embezzlement and violating financial management laws and regulations. The inventory was expected to be unavailable in the short term until the tonnage of indium that is registered with metal processors and trading companies was confirmed (Gu, 2015; Metal-Pages, 2016; Stanway, 2018).

Other exchanges in China that traded indium included the Shaanxi Nonferrous Metal Exchange, the Hunan South Rare Precious Metals Exchange, the Tianfu Mercantile Exchange, and the Wuxi Stainless Steel Exchange (Burton, 2013; Lu, 2014b).

China continued being a net exporter of indium in 2018, exporting 329 t of unwrought indium, powders, and waste and scrap, while importing 220 t of unwrought indium, powders, and waste and scrap. Exports were shipped predominately to Japan (45%), the Republic of Korea (40%), and the United States (6%). Imports were sourced predominately from Indonesia (59%) and Hong Kong (30%) (Global Trade Information Services Inc., 2019; Sun, 2019).

France.—Nyrstar resumed producing indium at its zinc smelter in Auby in the first quarter of 2017, after a fire in November 2015 closed the plant. Nyrstar produced 42.6 t of indium in 2018, a 43% increase from the 29.8 t produced in 2017 (Nyrstar NV, 2019).

Japan.—Japan was a significant producer and recycler of indium. Dowa Metals and Mining Co. Ltd. had the capacity to produce about 70 t/yr of primary indium and to recover up to 150 t/yr of secondary indium at its zinc smelter and rare metals recycling facility in Akita. The other primary producer was Mitsui Mining & Smelting Co. Ltd. (Takehara plant). Asahi Pretec Corp. had the capacity to produce 200 t/yr of secondary indium at its ITO target recycling plant at Fukuoka. Other secondary indium producers included JX Nippon Mining & Metals, Mitsui Mining & Smelting Co. Ltd., Sumitomo Metal Mining Co. Ltd., and Toho Zinc Co. Ltd. (Metal-Pages, 2008).

Japan was a leading consumer of indium, mostly for the production of ITO. ITO producers included Mitsui Mining & Smelting, which operated the 420-t/yr ITO manufacturing plant at Omuta, and JX Nippon Mining & Metals, which operated the world's leading ITO production plant (648-t/yr capacity) at Isohara near Tokyo (Roskill's Letter from Japan, 2018).

Japan's imports of indium metal, powder, and scrap increased by 42% to 515 t in 2018 from those in 2017, reportedly owing to a decrease in recycling levels and low prices. Leading import sources in 2017 included the Republic of Korea (63%), China (22%), Taiwan (6%), and France (4%) (Global Trade Information Services Inc., 2019; Roskill's Letter from Japan, 2019).

Korea, Republic of.—Korea Zinc Co. Ltd. was a significant producer of primary and secondary indium at its Onsan zinc refinery. Young Poong Co., Ltd. had the capacity to produce up to 100 t/yr of indium at its Seokpo smelter. The Republic of Korea was also a notable consumer of indium. Major consumers were the ITO producers, Corning Precision Materials Korea Co., Ltd. (540 t/yr) and Heesung Metal Ltd. (180 t/yr) (Roskill's Letter from Japan, 2018; Young Poong Co., Ltd., 2019).

The Republic of Korea imported 250 t of indium (metal, powder, and scrap) in 2018, an increase of 160% from that in 2017, mostly from China (67%), Taiwan (15%), Japan, (9%), France (4%), and the United States (3%), and exported 245 t, predominantly to Japan (94%) (Global Trade Information Services Inc., 2019).

Russia.—Chelyabinsk Zinc Plant OJSC and Ural Mining and Metals Co.'s Electrozink smelter produced refined indium. Most of Russia's refined indium output was thought to be exported. Production was estimated to be 5 t in 2018, unchanged from that in 2017.

Outlook

World indium production is expected to increase into 2019 owing to the Auby smelter returning online, but will be reactive to prices, the projected auctions of Fanya's inventory, and the new demand of 5G telecommunications. Roskill Information Services Ltd. projects that indium prices are to remain stable through 2019, with growth in demand for ITO. Beijing Antaike Information Development Co., Ltd. forecasts that China's consumption of indium is expected to increase by 2020 (Minor Metals Monthly, 2017, 2018; Yang, 2018; Roskill's Letter from Japan, 2019).

Indium demand is expected to increase with the development of 5G technologies, where InP lasers and receivers are used to send data through fiberoptic lines. 5G is used on the backhaul side of telecommunications to provide faster data transfer speeds and allow more efficient calculations of data owing to lower data losses in transmission. Industry projections have estimated that 10 million devices will be used on the 5G network in 2019 and will increase to 1.9 billion devices within 5 years (Telefonaktiebolaget LM Ericsson, 2019, p. 6).

On the supply side, China is expected to continue to be the main global supplier of primary indium metal. Additional primary production capacity is anticipated in France, up to a capacity of 70 t/yr. Several indium-containing exploration or development projects, mostly in Canada, South America, and the United States, are advancing, but it is uncertain as to when or whether these projects will begin production (Metal-Pages, 2017).

References Cited

Argus Metals International, 2019, China's Zhuxhou touch smelting halts In output: Argus Media group, Argus Metals International, November 27. (Accessed April 11, 2020, via http://www.argusmedia.com/metals/.)

Beijing Dimen International Information Consulting Co. Ltd., 2014, Market research report on global indium phosphide industry: Beijing, China, Beijing Dimen International Information Consulting Co. Ltd., April, 142 p.

Burton, Mark, 2013, Corrected—Tianfu Mercantile Exchange becomes third Chinese bourse to offer indium trading: Metal Bulletin, August 20. (Accessed August 20, 2013, via http://www.metalbulletin.com/.)
Cammell, Suzanne, 2012, Sharp commits to LCD production: Metal-Pages, April 13. (Accessed April 13, 2012, via http://www.metal-pages.com/.)
Dahlman, Eric, Parkvall, Stefan, and Skold, Johan, 2018, 5G NR, The next generation wireless access technology: Academic Press, August 31, p. 466.
Global Trade Information Services Inc., 2019, Global trade atlas: Global Trade Information Services Inc. (Accessed April 8, 2019, via http://www.gtis.com/gta/.)
Gu, Rena, 2015, Timeline 2015—The Fanya crisis: Metal Bulletin, December 30. (Accessed December 30, 2015, via http://www.metalbulletin.com/.)
Harrower, Malcolm, 2015, Overview of the indium market: International Minor Metals Conference, Toronto, Ontario, Canada, April 27–29, presentation, 30 p.
InZinc Mining Ltd., 2014, Preliminary economic assessment: Vancouver, British Columbia, Canada, InZinc Mining Ltd., May 7. (Accessed December 28, 2015, at http://inzincmining.com/properties/preliminary_assessment/.)
Lu, Carol, 2014a, A closer look at Umicore-Vital ITO joint venture: Metal Bulletin, August 14. (Accessed August 14, 2014, via http://www.metalbulletin.com/.)
Lu, Carol, 2014b, Shaanxi Nonferrous Metals Exchange debuts in China: Metal Bulletin, June 20. (Accessed June 20, 2014, via http://www.metalbulletin.com/.)
Metal-Pages, 2008, Asahi Pretec leading Japanese recycler: Metal-Pages, August 27. (Accessed August 27, 2008, via http://www.metal-pages.com/.)
Metal-Pages, 2016, Chinese authorities progress on Fanya case: Argus Media group Metal-Pages, June 23. (Accessed July 3, 2017, via http://www.metal-pages.com/.)
Metal-Pages, 2017, Nyrstar restarts indium production at Auby: Argus Metals International Metal-Pages, May 4. (Accessed November 11, 2017, via http://www.metal-pages.com/.)
Minor Metals Monthly, 2017, China's indium market commentary for 2016: Minor Metals Monthly [published by Beijing Antaike Information Development Co., Ltd., or Antaike], no. 201, January, p. 27–29.
Minor Metals Monthly, 2018, China's indium market commentary for 2017: Minor Metals Monthly [published by Beijing Antaike Information Development Co., Ltd., or Antaike], no. 213, January, p. 29–30.
Minor Metals Monthly, 2019a, China's indium market commentary for H1 2019: Minor Metals Monthly [published by Beijing Antaike Information Development Co., Ltd., or Antaike], no. 231, July, p. 39–43.
Minor Metals Monthly, 2019b, China's indium market commentary for January–February 2019: Minor Metals Monthly [published by Beijing Antaike Information Development Co., Ltd., or Antaike], no. 227, March, p. 24–26.
Minor Metals Monthly, 2019c, China's indium market commentary for 2018: Minor Metals Monthly [published by Beijing Antaike Information Development Co., Ltd., or Antaike], no. 225, January, p. 31–35.
National Renewable Energy Laboratory, 2019, 2017 renewable energy data book: Golden, CO, National Renewable Energy Laboratory, 130 p. (Accessed November 13, 2019, at https://www.nrel.gov/docs/fy19osti/72170.pdf.)
Nyrstar NV, 2019, Annual report, 2018: Balen, Belgium, Nyrstar NV, May 27, 265 p. (Accessed June 6, 2019, at https://www.nyrstar.com/~/media/Files/N/Nyrstar/results-reports-and-presentations/english/2019/annual-report-2018-en.pdf.)
Roskill's Letter from Japan, 2016a, Indium—Chinese output could rise by 50% in 2017: Roskill's Letter from Japan, no. 480, August, p. 1–7.
Roskill's Letter from Japan, 2016b, Indium—Market moves into surplus: Roskill's Letter from Japan, no. 473, January, p. 4–9.
Roskill's Letter from Japan, 2018, Indium—Vital Materials raise ITO capacity to 800 tpy: Roskill's Letter from Japan, no. 497, January, p. 14–15.
Roskill's Letter from Japan, 2019, Indium—Prices are forecast to remain stable this year: Roskill's Letter from Japan, no. 512, April, p. 12–14.
Solar Frontier K.K., [undated], Company—Production: Tokyo, Japan, Solar Frontier K.K. (Accessed November 22, 2016, at http://www.solar-frontier.com/eng/company/production/index.html.)
Stanway, David, 2018, China completes trial of 21 over scandal-hit Fanya exchange: Thomson Reuters, July 1. (Accessed July 8, 2018, at https://www.reuters.com/article/us-china-metals-scandal-idUSKBN1JS076.)
Sun, Xu, 2019, 2018 indium market development report: Beijing, China, Antaike Information Development Co. Ltd., January, 23 p.
Teck Cominco Ltd., 2006, Annual report 2005—Core values: Vancouver, British Columbia, Canada, Teck Cominco Ltd., 104 p. (Accessed September 17, 2018, at https://www.teck.com/media/Investors-2005_Annual_Report_T5.1.1.pdf.)
Telefonaktiebolaget LM Ericsson, 2019, Ericsson mobility report: Stockholm, Sweden, Telefonaktiebolaget LM Ericsson, June, 36 p. (Accessed August 5, 2019, at https://www.ericsson.com/assets/local/mobility-report/documents/2019/ericsson-mobility-report-june-2019.pdf.)
Umicore NV, 2017, Umicore sells large area coatings activity to Vital: Brussels, Belgium, Umicore NV press release, October 20. (Accessed December 4, 2017, at http://www.umicore.com/en/media/press/umicore-sells-large-area-coatings-activity-to-vital.)
Umicore NV, 2019, Minor metals: Brussels, Belgium, Umicore NV. (Accessed November 11, 2019, at https://pmr.umicore.com/en/metals-products/minor-metals/.)
Vareha-Walsh, Donna (Indium Corp.), 2016, Indium market supply and demand: U.S. Geological Survey National Minerals Information Center seminar, Reston, VA, January 21, presentation, 23 p.
Yang, Deborah, 2018, LCD TV panel demand expected to go through a correction in first quarter of 2018, IHS Markit says: Englewood, CO, IHS Inc. press release, January 17. (Accessed March 22, 2018, at https://technology.ihs.com/599441/lcd-tv-panel-demand-expected-to-go-through-a-correction-in-first-quarter-of-2018-ihs-markit-says.)
Young Poong Co., Ltd., 2019, Company overview: Seoul, Republic of Korea, Young Poong Co., Ltd. (Accessed November 11, 2019, at http://www.ypzinc.co.kr/eng/company/menu_01.html.)

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

Germanium and Indium. Ch. in Critical Mineral Resources of the United States—Economic and Environmental Geology and Prospects for Future Supply, Professional Paper 1802, 2017.
Historical Statistics for Mineral and Material Commodities in the United States. Data Series 140.
Indium. Ch. in Mineral Commodity Summaries, annual.
Indium (In). Ch. in Metal Prices in the United States Through 2010, Scientific Investigations Report 2012–5188, 2013.
Materials Flow of Indium in the United States in 2008 and 2009. Circular 1377, 2012.
Mineral Commodity Profile—Indium. Open-File Report 2004–1300, 2005.

Other

Economics of Indium. Roskill Information Services Ltd.
Indium. Ch. in Mineral Facts and Problems, U.S. Bureau of Mines Bulletin 675, 1985.
Mining Journal Executive Commodity Report—Indium. Mining Journal Books, Ltd.

TABLE 1
U.S. IMPORTS FOR CONSUMPTION OF UNWROUGHT INDIUM AND INDIUM POWDERS BY COUNTRY OR LOCALITY[1]

Country or locality	2017		2018	
	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
Belgium	4,370	$845	250	$8
Canada	23,100	4,680	28,200	9,080
China	40,600	8,030	57,900	16,900
Estonia	220	40	--	--
France	3,030	551	7,710	2,180
Germany	67	9	52	15
Hong Kong	19,600	3,370	2,110	713
Japan	9,840	4,710	7,570	5,210
Kazakhstan	418	79	8	2
Korea, Republic of	15,100	2,730	13,600	3,680
Luxembourg	--	--	2,120	575
Poland	--	--	396	65
Russia	2,520	505	625	207
Switzerland	520	90	--	--
Taiwan	6,420	1,040	4,280	650
United Kingdom	1,320	239 [r]	531	85
Total	127,000	26,900	125,000	39,400

[r]Revised. -- Zero.
[1]Table includes data available through May 6, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau. Harmonized Tariff Schedule code 8112.92.3000.

TABLE 2
ESTIMATED WORLD PRIMARY INDIUM PRODUCTION CAPACITY IN 2018[1]

(Metric tons)

Country	Major operating company	Location of main facilities	Primary annual capacity
Belgium	Umicore NV	Hoboken	50
Canada	Teck Resources Ltd.	Trail, British Columbia	75
China[2]	Guangxi Debang Technology Co. Ltd.	Liuzhou, Guangxi	85
Do.[2]	Guangxi Hechi Jinhe Mining and Smelting Co. Ltd.	Hechi, Guangxi	10
Do.[2]	Guangxi Tanghan Zinc & Indium Co. Ltd.	do.	30
Do.[2]	Hsikuangshan Twinkling Star Antimony Co. Ltd. (China Minmetals Group)	Lengshuijiang, Hunan	7
Do.[2]	Huludao Nonferrous Metals Group Co.	Huludao, Liaoning	60
Do.[2]	Hunan Jingshi Group Co. Ltd.	Zhuzhou, Hunan	40
Do.[2]	Laibin Smelter [Liuzhou Huaxi (China Tin) Group Co.]	Laibin, Guangxi	50
Do.[2]	Liuzhou Zinc Products Co.	Liuzhou, Guangxi	20
Do.[2]	Nanjing Germanium Co. Ltd.	Nanjing, Jiangsu	150
Do.[2]	Nanjing Sanyou Electronic Material Co. Ltd.	do.	50
Do.[2]	Shaoguan Smelter (Shenzhen Nonfemet Co.)	Shaoquan, Guangdong	25
Do.[2]	Tibet Summit Industry Co. Ltd.	Xining, Qinghai	15
Do.[2]	Xiangtan Zhengtan Nonferrous Metal Co. Ltd.	Xiangtan, Hunan	75
Do.[2]	Yintai Technology Co. Ltd.	Liuzhou, Guangxi	40
Do.[2]	Yuguang Gold-Lead Co. Ltd.	Jiyuan, Henan	20
Do.[2]	Yunnan Chengfeng Nonferrous Metals Co. Ltd.	Gejiu, Yunnan	10
Do.[2]	Yunnan Hualian Zinc and Indium Co. Ltd.	Wenshan, Yunnan	60
Do.[2]	Yunnan Luoping Zinc & Electricity Co. Ltd.	Luoping, Yunnan	20
Do.[2]	Yunnan Mengzi Mining and Smelting Co. Ltd.	Honghe, Yunnan	60
Do.[2]	Zhuzhou Smelter Group Co. Ltd.	Zhuzhou, Hunan	60
France	Nyrstar NV	Auby	48
Japan	Dowa Metals and Mining Co. Ltd.	Iijima, Akita	70
Do.	Mitsui Mining & Smelting Co. Ltd.	Takehara, Hiroshima	NA
Do.	Sumitomo Metal Mining Co. Ltd.	Harima, Hyogo	NA
Korea, Republic of	Korea Zinc Co. Ltd.	Onsan	160
Do.	Young Poong Co., Ltd.	Seokpo	100
Peru	Doe Run Peru S.R. Ltda.	La Oroya	5
Do.	Votorantim Metais Ltda.	Cajamarquilla	50
Russia	Chelyabinsk Zinc Plant OJSC	Chelyabinsk	15
Do.	Ural Mining and Metals Co.	Vladikavkaz	5

Do., do. Ditto. NA Not available.
[1]Table includes data available through May 6, 2020. Estimated data are rounded to no more than two significant digits.
[2]Includes facilities that consume mineral concentrates as well as processors that consume unrefined indium.

TABLE 3
INDIUM: WORLD REFINERY PRODUCTION, BY COUNTRY OR LOCALITY[1]

(Kilograms)

Country or locality[2]	2014	2015	2016	2017	2018[e]
Belgium	28,000	20,000	20,000	20,000 [e]	22,000
Canada	67,000 [e]	70,000 [e]	71,000	67,000	58,000
China	460,000	421,000 [r]	404,000 [r]	287,000 [e]	300,000
France	43,000	41,000	--	29,800	40,000
Japan	70,000	70,000	70,000	70,000 [e]	70,000
Korea, Republic of	195,000	195,000	210,000	225,000 [e]	235,000
Peru[e]	14,000	10,000	10,000	10,000	11,000
Russia[e]	4,000	5,000	5,000	5,000	5,000
Total	881,000	832,000 [r]	790,000 [r]	714,000	741,000

[e]Estimated. [r]Revised. -- Zero.
[1]Table includes data available through June 12, 2019. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.
[2]In addition to the countries and (or) localities listed, Kazakhstan and Ukraine may have produced primary indium, but available information was inadequate to make reliable estimates of output.