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2021 Minerals Yearbook

SILVER [ADVANCE RELEASE]

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Silver

By Anne M. Hartingh

Domestic survey data and tables were prepared by Michelle B. Blackwell, statistical assistant.

In 2021, the United States produced 1,020 metric tons (t) of silver, which was 5% less than production in 2020 (table 1). Approximately 52% of domestic silver production was from primary silver ores at 4 mines, 40% of domestic silver was produced from base-metal ores at 13 mines, and the remainder was from gold ores (table 3).

The Engelhard price of silver averaged $25.23 per troy ounce in 2021, a 23% increase compared with the 2020 average price of $20.58 per troy ounce (table 1).

Traditional use categories for silver included coin and bar fabrication; industrial applications such as brazing alloys and solders, electrical and electronics components, as a catalyst for ethylene oxide production, photography, and photovoltaics; jewelry; non-coin investments; and silverware. In 2021, global use of silver increased by 19% compared with that in 2020, surpassing volumes reached before the global coronavirus disease 2019 (COVID-19) pandemic and reaching its highest level since 2015 (Newman and others, 2022, p. 9).

In 2021, silver was mined in approximately 60 countries. Global silver production was 25,000 t, a 4% increase from 24,100 t (revised) in 2020 (tables 1, 8). Mexico was the leading producer, followed by China, Peru, Australia, Russia, Poland, Bolivia, Chile, and the United States in descending order of production. These nine countries, each of which produced more than 1,000 t of silver, accounted for 82% of the global production of silver.

Government Actions and Legislation

On September 30, 2021, the amount and value of Deep Storage and Working Stock custodial silver reserves held by the U.S. Mint were 498 t with a total market value of $344 million at $21.53 per fine troy ounce and a statutory value of $20.7 million. As custodian, the U.S. Mint is responsible for safeguarding much of the Nation's gold and silver. In accordance with 31 U.S. Code § 5117(b) and 31 U.S. Code § 5116(b)(2), a statutory rate of no less than $1.292929292 per fine troy ounce was used to value the custodial silver held by the U.S. Mint. Total silver bullion ounces sold increased by 51% in fiscal year (FY) 2021 (October 1, 2020, through September 30, 2021) compared with that sold in FY 2020. Sales of the American Eagle silver dollar increased by 62%, and sales of the America the Beautiful silver dollar decreased by 85% in FY 2021 (U.S. Mint, 2021, p. 16–18, 47).

Throughout the year, the Federal Reserve kept interest rates in the range of 0% to 0.25% owing to the overall risk to the economic outlook from the ongoing COVID-19 pandemic. This had the effect of keeping silver prices higher in 2021. The Federal Reserve expected to keep the target interest rate range until maximum employment was reached and inflation was measured at 2% (Board of Governors of the Federal Reserve System, 2021a, b).

Production

Domestic lode mine production data for silver were compiled by the U.S. Geological Survey from two separate voluntary monthly surveys of U.S. mining operations and from publicly available sources and represented 100% of U.S. mine production listed in table 1. Domestic mine production of silver decreased by 5% in 2021 to 1,020 t, primarily because of lower ore grades at the Greens Creek Mine in Alaska (Basov, 2021). Silver in the United States was produced mainly as a principal product at the Greens Creek, Lucky Friday, Rochester, and Galena Complex Mines, in descending order of production. Silver was produced as a secondary product at other mines (table 3).

Hecla Mining Co.'s Greens Creek Mine, an underground silver-zinc mine on Admiralty Island in southern Alaska near Juneau, produced 288 t (9,240,000 troy ounces) of silver in 2021, a 12% decrease in production from the 2020 production of 326 t (10,500,000 troy ounces) of silver. The decrease was attributed to reduced ore grades in the third quarter of 2021 compared with those in the third quarter of 2020 because of the mine plan as well as labor challenges from the COVID-19 pandemic and the increased competition for employees (Hecla Mining Co., 2022, p. HL10–K 8, 25, 26).

Hecla's Lucky Friday Mine, a silver mine in the Coeur d'Alene mining district in northern Idaho, had been producing since 1958, and procedures implemented owing to the global COVID-19 pandemic did not have significant effects on production because they were in the process of rampup activities after a strike ended in January 2020. Lucky Friday produced 111 t (3,560,000 troy ounces) of silver in 2021, a 75% increase from 63.2 t (2,030,000 troy ounces) in 2020. This increase was also due in part to the development of the new mining method of "Underhand Closed Bench" at the property. This method was developed for proactive control of fault-slip seismicity in deep, high-stress, narrow vein mining to improve safety and reduce delays caused by seismic activity (Hecla Mining Co., 2022, p. HL10–K 4, 28, 29).

Coeur Mining, Inc.'s Rochester Mine near Lovelock, NV, an open pit silver mine with byproduct gold, produced 98.2 t (3,160,000 troy ounces) of silver in 2021, essentially unchanged from the 2020 silver production of 98.7 t (3,170,000 troy ounces). Despite production staying the same from year to year, revenue increased by 19% from 2020, which was mostly the result of higher average silver and gold prices (Coeur Mining, Inc., 2022, p. 25, 44).

In 2021, the Bingham Canyon Mine, near Salt Lake City, UT, owned by Rio Tinto Group, produced 69.3 t (2,230,000 troy ounces) of silver, essentially unchanged from the 68.6 t (2,210,000 troy ounces) of silver produced in 2020. The Bingham Canyon Mine was primarily a copper mine, but silver was produced as a secondary product with gold, molybdenum, and other minor metals (Rio Tinto Group, 2022, p. 352).

The Galena Complex silver mine, near Silverton, ID, which was owned by Americas Gold and Silver Corp. (60%) and 2176423 Ontario Ltd. (40%), produced 31.5 t (1,010,000 troy ounces) of silver in 2021, an increase of 9% from 28.9 t (929,000 troy ounces) in 2020. This increase was attributed to the Galena Recapitalization Plan that allowed for redevelopment of the mine and improved operational performance (Americas Gold and Silver Corp., 2022, p. 5).

Consumption

Consumption of silver for fabrication in the United States was 4,177 t in 2021, a 10% increase from 3,798 t (revised) in 2020. These values include silver for industrial demand and silver in jewelry and silverware. Silver consumption for coins and medals in the United States decreased slightly, consumption for jewelry increased by 15%, and consumption for silverware increased by 3%. Global consumption of silver in 2021 for fabrication was 32,627 t, a 19% increase from 27,370 t (revised) in 2020. Jewelry sales increased by 21%, silverware sales increased by 32%, and physical investment in silver increased by 36% (Newman and others, 2022, p. 63, 67–69).

Coin Fabrication.—Approximately 1,120 t of silver was consumed for coins and medals in the United States in 2021, a 51% increase from 740 t in 2020. In FY 2021, the U.S. Mint sold 1,110 t of American Eagle silver bullion coins, an increase of 62% from 684 t in FY 2020, and the sales of the America the Beautiful silver coin decreased by 85% in FY 2021 to 8.37 t from 55.9 t in FY 2020 owing to the discontinuation of the coin program (U.S. Mint, 2021, p. 18, 19).

Industrial Applications.—Silver consumed in domestic industrial applications increased by 10% to 3,723 t of silver in 2021 from the 2020 consumption of 3,400 t (revised). This increase was due to increased demand for photovoltaic applications and ethylene oxide catalysts. The photovoltaic demand increased because of a rise in solar panels, and the demand for ethylene oxide catalysts increased as a result of new plant capacity and replacement of previously installed catalysts (Newman and others, 2022, p. 45, 46).

The principal components of industrial consumption of silver were electrical components and electronics (2,100 t), brazing alloys and solders (200 t), and other applications (1,420 t) (Newman and others, 2020, p. 46, 47, 67, 68).

In 2021, the domestic use of silver for electronic and electrical applications totaled 2,103 t, a 7% increase from 1,972 t in 2020. This increase was related to the demand for photovoltaic installations and strong demand for new electronic equipment in home offices from the increase in remote workers (Newman and others, 2022, p. 46, 51). Another area that contributed to silver demand in electronics and electrical applications was in the automotive industry owing to the push for electric vehicles and reducing greenhouse gas emissions. Silver was used in the contacts and circuitry throughout a vehicle's electrical and electronic systems. There was also an increasing amount of electronic control units to enhance automobile entertainment systems, fuel efficiency, and safety. These devices have many contacts, wires, and other components that use silver. Silver was consumed largely in the main electrical connector material in the battery packs, in the surrounding control modules, and as the most efficient and reliable material for cables in onboard charging equipment (Newman and others, 2022, p. 49).

Silver halide was one of the essential materials used in the manufacture of photographic films and papers. The decline in the use of silver for photography began in 2000 in response to the growth in digital camera technology and the decline in the production of color film and paper. The use of silver in film and paper for consumer applications declined more rapidly than its use in motion picture film because of the slower adoption of digital formats in motion picture production. Other broad photographic-use categories for silver-containing film and paper included commercial photography, dental and industrial X-ray film, graphic arts, and medical X-ray film. In the medical field, digital X-rays have been increasingly adopted during the past decade, which has resulted in a decline in silver demand. In 2021, domestic use of silver for photographic applications was estimated to be 560 t, a 10% decrease from 620 t in 2020 (CPM Group, 2022, p. 85).

Adding silver to solder or brazing alloys helps produce smooth, leak-tight, and corrosion-resistant joints. Silver brazing alloys were used widely in a variety of applications, including air conditioning and refrigeration, and electric power distribution. They also were important in the aerospace and automobile industries. In 2021, 202 t of silver was used domestically in brazing alloys and solders, an 8% increase from 187 t used in 2020. This increase was attributed to the automotive sector and the increase in home heating ventilation and air conditioning (HVAC) upgrades (Newman and others, 2022, p. 47).

As a catalyst, silver can be used in the form of mesh screens or crystals to produce ethylene oxide and formaldehyde, both of which are essential ingredients in plastics. Approximately 90% of the silver used as an industrial catalyst was for the production of ethylene oxide from ethylene. Aside from plastics, ethylene oxide was used for antifreeze, detergents, and polyester fiber. Silver used in ethylene oxide catalysts in the United States was estimated to have decreased by 36% in 2021 to 656 t from 1,023 t in 2020 (CPM Group, 2022, p. 73, 95).

Jewelry and Silverware.—In 2021, domestic consumption of silver for fabrication of jewelry and silverware, excluding scrap, was 452 t, a 13% increase from 398 t consumed in 2020. Silver consumption for jewelry increased to 411 t in 2021 from 358 t, a 15% increase from that in 2020 and higher than pre-pandemic levels as consumer sentiment for jewelry began to improve and fabricators benefitted from rebuilding of stocks that had fallen in 2020. Domestic silver consumption for silverware increased by 3% to 41 t from 40 t in 2020 as a result of consumer purchases that had been delayed owing to the global COVID-19 pandemic (Newman and others, 2022, p. 54–61, 69).

Prices

In 2021, the daily Engelhard silver price yearly high was $29.45 per troy ounce on February 1, and the yearly low was $21.75 per troy ounce on September 30. The daily average price of silver was $25.23 per troy ounce, a 23% increase compared with the daily average price of $20.58 per troy ounce in 2020 (table 1).

Foreign Trade

U.S. exports of silver contained in bullion, dore, and ores and concentrates decreased by 3% to 137 t in 2021 from the total of 141 t in 2020. Principal destinations were Canada (69%), Hong Kong (12%), Switzerland (7%), and Mexico (3%). Specifically, exports of bullion and ores and concentrates decreased by 14% and 8%, respectively, but exports of dore increased by 142%. Canada (85%), Mexico (3%), and Singapore (3%) were the top destinations for silver bullion. The vast majority (98%) of ores and concentrates shipments were sent to Japan, whereas Hong Kong (63%) and Switzerland (35%) were the top destinations for silver dore (table 4).

U.S. imports for consumption of silver contained in bullion, dore, and ores and concentrates decreased by 9% to 6,160 t in 2021 from 6,730 t in 2020. The principal import sources were Mexico (40%), Canada (14%), and Switzerland (10%). Imports of bullion decreased by 10%, and dore imports were unchanged between 2020 and 2021. The leading sources of silver were Mexico (which supplied 31% of the bullion, 91% of the dore, and 2% of the ores and concentrates) and Canada (which supplied 16% of the bullion and 98% of the ores and concentrates) (table 6).

World Review

World mine production of silver was 25,000 t in 2021, a 4% increase from the revised production of 24,100 t in 2020. Mexico continued to be the leading producer of silver, accounting for 24% of world production. Mexico was followed by China (14%), Peru (13%), Australia (5%), Bolivia (5%), Chile (5%), Poland (5%), Russia (5%), the United States (4%), Argentina (3%), India (2%), and Sweden (2%). These 12 countries accounted for 89% of the global silver production. Silver production decreased in Chile by 293 t, or 19%. Other countries with significant decreases in production were India (by 72 t), Russia (58 t), United States (53 t), Portugal (50 t), Argentina (47 t), and Papua New Guinea (25 t) (table 8).

According to the report from Metals Focus produced for the Silver Institute, 28% of global silver production was from primary silver mines, 31% from lead and zinc mines, 25% from copper mines, 16% from gold mines, and less than 1% from other types of mining operations. Global silver scrap recycling increased by almost 7% to 5,380 t (173 million troy ounces), an 8-year high, up from 5,050 t (162 million troy ounces) (revised) in 2020. This increase was due mainly to the increase in industrial scrap supply from a quicker pace of silver recovery from spent ethylene oxide catalysts that had been postponed in 2020 owing to the global COVID-19 pandemic. The leading countries for scrap recycling were the United States (1,280 t), China (946 t), India (457 t), Russia (320 t), Germany (302 t), and Japan (295 t) (Newman and others, 2022, p. 27, 38–40).

Global silver consumption increased by 19%, totaling 32,627 t in 2021 from 27,370 t (revised) in 2020. Industrial applications, accounting for 48% of the total global consumption, were the leading end uses of silver, followed by bars, coins, and medals (27%); jewelry (17%); and silverware (4%). Silver use in bars, coins, and medals increased by 36%, and use in silverware increased 32% in 2021. Industrial consumption increased by 9%, and jewelry consumption increased by 21%. Consumption for photovoltaics increased by 13% to 3,536 t, up from 3,142 t in 2020, whereas consumption for photographic uses increased 3% to 892 t from 865 t in 2020 (Newman and others, 2022, p. 63, 66–69).

World consumption of silver for silverware increased by 32% in 2021 to 1,327 t from the 1,009 t in 2020. The increase was due to three main factors in India: the improving economic recovery as the pandemic eased, the return of social events and weddings, and the return of corporate orders as business activity normalized. The bulk of the recovery was mainly in the second half of 2021, as the first half of 2021 saw a second wave of COVID-19 pandemic infections (Newman and others, 2022, p. 60, 69).

World consumption of silver for jewelry increased by 21% in 2021 to 5,641 t from 4,660 t (revised) in 2020. This increase was due to the recovery from the global COVID-19 pandemic. Also, fabricators benefitted from the rebuilding of stocks that had fallen in 2020. India had one of the largest increases in jewelry consumption, increasing by 45% in 2021, which was the highest growth rate since the start of India's reporting in 2010. The increase was due to a rapid economic recovery, easing of the global COVID-19 pandemic restrictions, and the increase in the number of weddings (Newman and others, 2022, p. 54–60, 69).

Argentina.—In 2021, silver production in Argentina decreased by 6% to an estimated 720 t from 767 t (revised) in 2020 (table 8). At SSR Mining Inc.'s Chinchillas Mine, which was in the Puna Region, production was 249 t of silver in 2021, an increase of 44% from 174 t in 2020. Hochschild Mining plc's San Jose Mine produced 163 t of silver, a 28% increase from 128 t in 2020. In both instances, the increases were due to not having any work stoppages from the COVID-19 pandemic, which took place in 2020 (Hochschild Mining plc, 2022, p. 4; SSR Mining Inc., 2022, p. 107).

Bolivia.—Silver production in Bolivia in 2021 was 1,292 t, a 12% increase compared with 1,153 t (revised) in 2020 (table 8). The increase was due to the ending of disruptions from the global COVID-19 pandemic and expansions at both large and small operations (Newman and others, 2022, p. 28).

Canada.—Silver production in concentrate in Canada was 325 t in 2021, unchanged from 325 t in 2020 (table 8). Hudbay Minerals Inc.'s Lalor Mine focused on gold production, which led to a lower output of silver, and Coeur's Silvertip Mine continued ongoing exploration and technical work to support a potential restart (Coeur Mining Inc., 2022, p. 27; Hudbay Minerals Inc., 2022 p. 22). This decrease was offset by the 8% increase in production from 21 t in 2020 to 23 t in 2021 at Agnico Eagle Mines Ltd.'s LaRonde Complex (Agnico Eagle Mines Ltd., 2022 p. 70).

China.—Silver production in China was 3,501 t in 2021, a 3% increase from 3,405 t in 2020. China was the second leading producer globally (table 8). The increase was due to the recovery from global COVID-19 pandemic disruptions. Jewelry consumption in China was 648 t in 2021, an increase of 10% from 589 t in 2020. Silverware consumption in China was 85 t in 2021, an increase of 10% from 77 t in 2020 (Newman and others, 2022, p. 28, 59–61, 69).

Mexico.—In 2021, Mexico was the leading producer of silver in the world with production of 6,108 t, a 10% increase from 5,541 t in 2020 (table 8). The increase in production was the result of the rampup of new projects and recovery from global COVID-19 pandemic disruptions that caused many mines in the country to temporarily halt operations in 2020 (Newman and others, 2022, p. 27).

Peru.—In 2021, Peru was the third leading producer of silver in the world with production of 3,310 t, a 19% increase from 2,772 t in 2020 (table 8). Operations in the country recovered from the global COVID-19 pandemic disruptions in 2020 (Newman and others, 2022 p. 28)

Poland.—In 2021, Poland produced 1,303 t of silver, a 7% increase from 1,218 t in 2020 (table 8). The increase was partially due to higher grades of ore at KGHM's operations in the country (Newman and others, 2022 p. 30).

Russia.—Silver production in 2021 was 1,322 t, a 4% decrease from 1,380 t in 2020 (table 8). Lower ore grades and tonnages at Silver Bear Resources Plc.'s Mangazeisky Mine contributed to the decrease from year to year (Newman and others, 2022 p. 30).

Outlook

Industrial demand for silver is expected to increase because of silver use in increasing vehicle electrification and continued investment in photovoltaics. There also could be an increase in demand for ethylene oxide catalysts. Jewelry and silverware demand is expected to increase in India because of continued recovery from the COVID-19 pandemic.

Mine production of silver is expected to increase in 2022, primarily led by Mexico, where there are new projects that are ramping up and there is increasing production at established mines. Chile also is forecast for an increase in production owing to Kinross Gold Corp.'s La Coipa project, which is expected to reach full capacity by mid-2022. Peru is forecast to have a reduction in production owing to the suspension of mining at Buenaventura's Uchucchacua Mine in the fourth quarter of 2021 (Newman and others, 2022, p. 12–15).

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TABLE 1
SALIENT SILVER STATISTICS[1]

(Metric tons and thousand dollars, unless otherwise specified)

		2017	2018	2019	2020	2021
United States:						
Mine production:						
Quantity	metric tons	1,030	934	981	1,080 r	1,020
Value	thousands	$566,000	$473,000	$502,000	$712,000 r	$830,000
Refinery production:						
Domestic and foreign ores and concentrates	metric tons	1,420	1,420	1,360 r	1,400 r	1,920
Scrap (old and new)	do.	490	632	627 r	582 r	908
Exports:						
Ores and concentrates	do.	16	8	(2)	1 r	1
Bullion	do.	92	558	190	130	111
Dore	do.	49	38	30	10	25
Imports for consumption:						
Ores and concentrates[3]	do.	7	8	1 r	(2)	15
Bullion	do.	3,950	3,750	3,790	5,830	5,240
Dore	do.	1,090	1,080	973	907	910
Stocks, December 31:						
Industry	do.	150	170	52	55 r	56
COMEX	do.	7,570	9,150	9,860	12,300	11,100
U.S. Department of the Treasury	do.	498	498	498	498	498
Bullion coin production[4]	do.	746	461	577	740	1,120
Price, average[5]	dollars per troy ounce	17.08	15.73	16.24 r	20.58 r	25.23
Employment, mine and mill workers[6]		1,027	971	995	1,183 r	1,441
World, mine production[7]	metric tons	26,500 r	25,900 r	25,800 r	24,100 r	25,000

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[1]Table includes data available through November 4, 2022. Data are rounded to no more than three significant digits, except prices and employment.
[2]Less than ½ unit.
[3]Includes silver content of ash and residues.
[4]Fiscal year sales of silver bullion coins as published by the U.S. Mint.
[5]Price data are the annual Englehard quotations published in S&P Global Platts Metals Week.
[6]Employment data are from the U.S. Department of Labor, Mine Safety and Health Administration, for mines classified as (active and temporarily idle) silver mines, adjusted by the U.S. Geological Survey.
[7]May include estimated data.

TABLE 2
MINE PRODUCTION OF SILVER IN THE UNITED STATES, BY STATE[1]

(Kilograms)

State	2019	2020	2021
Arizona	64,700	70,700	79,900
Idaho	W	140,000	142,000
Nevada	190,000	189,000 r	196,000
Utah	91,700	68,600	69,300
Other[2]	634,000 r	608,000 r	536,000
Total	981,000	1,080,000 r	1,020,000

rRevised. W Withheld to avoid disclosing company proprietary data; included with "Other."
[1]Table includes data available through November 4, 2022. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes Alaska, California, Colorado, Missouri, Montana, New Mexico, South Carolina, and South Dakota.

TABLE 3

LEADING SILVER-PRODUCING MINES IN THE UNITED STATES IN 2021, IN ORDER OF OUTPUT[1]

Rank	Mine	County and State[2]	Operator[3]	Source of silver
1	Greens Creek	Southeastern Region, AK	Hecla Mining Co.	Silver-zinc ore.
2	Red Dog	Northern Region, AK	Teck Alaska Inc.	Zinc-lead ore.
3	Lucky Friday	Shoshone, ID	Hecla Mining Co.	Silver ore.
4	Rochester	Pershing, NV	Coeur Mining, Inc.	Do.
5	Bingham Canyon	Salt Lake, UT	Rio Tinto Kennecott[4]	Copper-molybdenum ore.
6	Phoenix	Lander, NV	Nevada Gold Mines LLC[5]	Gold-copper ore.
7	Mission Complex	Pima, AZ	ASARCO LLC[6]	Copper ore.
8	Galena Complex	Shoshone, ID	Americas Gold and Silver Corp. (60%) and 2176423 Ontario Ltd. (40%)	Silver ore.
9	Bagdad	Yavapai, AZ	Freeport-McMoRan Inc.	Copper-molybdenum ore.
10	Round Mountain	Nye, NV	Kinross Gold Corp.	Gold ore.
11	Continental Pit	Silver Bow, MT	Montana Resources LLP	Copper-molybdenum ore.
12	Soledad Mountain	Kern, CA	Falco Resources Ltd. (50%) and Gauss LLC (50%)	Gold ore.
13	Carlin Mines Operations	Elko and Eureka, NV	Nevada Gold Mines LLC[5]	Do.
14	Moss	Mohave, AZ	Elevation Gold Mining Corp.[7]	Gold-silver ore.
15	Pinto Valley	Gila, AZ	Pinto Valley Mining Corp.[8]	Copper-molybdenum ore.
16	Haile	Lancaster, SC	OceanaGold Corp.	Gold ore.
17	Wharf	Lawrence, SD	Coeur Mining, Inc.	Do.
18	Bald Mountain	White Pine, NV	Kinross Gold Corp.	Do.
19	Chino	Grant, NM	Freeport-McMoRan Inc.	Copper ore.
20	Rawhide	Mineral, NV	Rawhide Mining LLC	Gold ore.
21	Morenci	Greenlee, AZ	Freeport-McMoRan Inc.	Copper-molybdenum ore.
22	Cortez Operations	Eureka and Lander, NV	Nevada Gold Mines LLC[5]	Gold ore.
23	Betze-Post	Eureka, NV	do.	Do.
24	Ray	Pinal, AZ	ASARCO LLC[6]	Copper ore.
25	Fletcher	Reynolds, MO	Doe Run Resources Corp.	Lead ore.
26	Viburnum (#29 and #35)	Washington and Iron, MO	do.	Do.
27	Brushy Creek	Reynolds, MO	do.	Do.

Do., do. Ditto.

[1]Table includes data available through November 4, 2022. The mines on this list accounted for more than 99% of U.S. mine production in 2021.

[2]For Alaska, mines are located by geographic region, as delineated by the Alaska Division of Geological & Geophysical Surveys in its Special Report 76, Alaska's mineral industry 2020.

[3]As of December 31, 2021.

[4]Wholly owned subsidiary of Rio Tinto Group.

[5]Nevada Gold Mines LLC is a joint venture between Barrick Gold Corp. (61.5%) and Newmont Mining Corp. (38.5%).

[6]Wholly owned subsidiary of Grupo México, S.A.B. de C.V.

[7]On September 24, 2021, Northern Vertex Mining Corp. changed its name to Elevation Gold Mining Co.

[8]Fully owned subsidiary of Capstone Copper Corp.

TABLE 4
U.S. EXPORTS OF REFINED SILVER, BY COUNTRY OR LOCALITY[1]

Year and country or locality	Ores and concentrates		Bullion		Dore		Total	
	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)
2020	562	$341	130,000	$84,400	10,500	$9,490	141,000	$94,300
2021:								
Australia	--	--	1,740	1,950	20	10	1,760	1,960
Canada	10	5	94,400	81,700	--	--	94,400	81,700
Cayman Islands	--	--	295	281	--	--	295	281
Czechia	--	--	1,610	1,910	--	--	1,610	1,910
Germany	--	--	231	197	26	24	256	221
Hong Kong	--	--	89	78	15,900	12,300	16,000	12,300
India	--	--	340	295	108	84	448	379
Israel	1	5	5	4	--	--	6	9
Japan	504	310	1,780	1,950	5	4	2,290	2,260
Mexico	--	--	3,590	3,120	50	44	3,640	3,160
Panama	--	--	465	879	--	--	465	879
Singapore	--	--	3,310	3,400	--	--	3,310	3,400
Switzerland	--	--	849	826	8,940	10,100	9,790	11,000
Taiwan	--	--	332	329	--	--	332	329
United Kingdom	--	--	1,400	1,370	26	24	1,430	1,390
Other	1	3	783	794	263	216	1,050	1,010
Total	515	323	111,000	99,100	25,400	22,800	137,000	122,000

-- Zero.

[1]Table includes data available through August 22, 2022. Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 5
U.S. EXPORTS OF SILVER, BY COUNTRY OR LOCALITY[1]

Year and country or locality	Other unwrought silver		Metal powder		Silver nitrate		Semimanufactured forms[2]		Waste and scrap	
	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)
2020	952,000	$707,000	612,000	$453,000	36,500	$11,100	642,000	$424,000	18,700,000	$3,570,000
2021:										
Australia	51	15	18	12	504	113	1,220	788	224	5,210
Belgium	--	--	7,650	7,110	--	--	--	--	2,610,000	255,000
Canada	917,000	827,000	19,500	16,300	17,900	5,990	556,000	486,000	2,050,000	272,000
China	833	695	76,200	72,000	209	106	15,600	13,100	21,100	968
France	84	57	76,000	64,200	--	--	5,040	3,960	571	828
Germany	900	1,030	17,800	15,600	44	53	4,420	4,000	3,270,000	829,000
Hong Kong	2,700	2,040	23,700	21,200	--	--	6,500	6,590	2	85
India	28,900	17,600	1,860	1,630	551	136	7,130	7,580	2,120	276
Ireland	6	29	43	44	--	--	1,810	1,500	--	--
Israel	206	59	58	52	--	--	1,070	982	465	39
Italy	2	13	3,030	2,720	--	--	1,260	1,090	1,580,000	1,040,000
Japan	--	--	47,100	42,600	--	--	1,640	1,120	4,550,000	538,000
Korea, Republic of	499	433	45,200	41,800	899	154	14,800	13,300	207,000	11,000
Malaysia	354	216	4,610	4,570	51	28	3,540	3,260	2,840	4,160
Mexico	9,660	7,960	35,400	31,400	6,160	2,590	87,500	60,000	--	--
Netherlands	--	--	18,500	15,700	--	--	64	54	66,800	2,200
New Zealand	26	11	--	--	--	--	1,420	1,270	100	35
Philippines	732	912	--	--	--	--	2,940	2,750	--	--
Poland	--	--	--	--	--	--	2,100	1,490	17	10
Romania	--	--	3,060	2,830	--	--	179	135	--	--
Russia	240	37	59	56	236	7	103	92	288	13,000
Saudi Arabia	--	--	--	--	61	12	2,320	1,500	144	58
Singapore	165	190	60,500	51,100	23,400	12,100	5,140	3,970	17,300	682
South Africa	10	7	--	--	--	--	93	62	16,300	8,980
Spain	1	3	860	763	--	--	11,800	8,220	--	--
Sweden	--	--	72	58	--	--	226	128	2,440,000	45,900
Switzerland	602	592	89	84	--	--	3,020	3,290	11,100	19,000
Taiwan	5	6	104,000	93,200	607	55	1,160	1,220	--	--
Thailand	4,320	1,920	31	46	1,360	390	4,490	3,380	21	42
United Arab Emirates	404	141	3	3	--	--	2,410	1,720	48,900	2,210
United Kingdom	40	33	34,300	29,800	406	87	16,000	13,600	425,000	1,650,000
Other	5,450	3,430	7,100	5,940	2,680	515	13,400	10,300	5,660	490
Total	973,000	864,000	586,000	521,000	55,100	22,400	774,000	657,000	17,300,000	4,710,000

-- Zero.

[1]Table includes data available through August 22, 2022. Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Containing 99.5% or more by weight of silver.

Source: U.S. Census Bureau.

TABLE 6

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

Year and country or locality	Ores and concentrates, ash and residues		Bullion		Dore		Total	
	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)	Silver content (kilograms)	Value (thousands)
2020	406 r	$359 r	5,830,000	$3,860,000	907,000 r	$886,000 r	6,730,000 r	$4,750,000
2021:								
Argentina	--	--	--	--	9,960	8,040	9,960	8,040
Australia	--	--	96,900	81,200	--	--	96,900	81,200
Belgium	--	--	18,100	14,600	--	--	18,100	14,600
Bolivia	--	--	--	--	17,700	12,800	17,700	12,800
Canada	14,500	11,300	838,000	683,000	3,850	2,570	856,000	697,000
Chile	--	--	243,000	196,000	--	--	243,000	196,000
Colombia	--	--	544	454	10,000	8,090	10,600	8,550
France	--	--	5,000	3,880	--	--	5,000	3,880
Germany	--	--	143,000	120,000	16,800	13,500	160,000	133,000
Hong Kong	--	--	74,400	64,300	--	--	74,400	64,300
Indonesia	--	--	12,900	10,000	--	--	12,900	10,000
Italy	--	--	12,100	8,180	3,890	2,670	15,900	10,900
Kazakhstan	--	--	85,700	75,300	--	--	85,700	75,300
Korea, Republic of	--	--	250,000	207,000	--	--	250,000	207,000
Mexico	321	67	1,640,000	1,330,000	832,000	911,000	2,470,000	2,240,000
Nicaragua	--	--	124	91	1,980	1,460	2,100	1,550
Peru	--	--	52,700	37,900	1,480	1,210	54,200	39,100
Poland	--	--	460,000	382,000	12,000	10,300	472,000	392,000
Russia	--	--	170,000	144,000	--	--	170,000	144,000
Switzerland	--	--	605,000	506,000	50	55	606,000	506,000
Turkey	--	--	269,000	223,000	--	--	269,000	223,000
United Kingdom	--	--	190,000	169,000	--	--	190,000	169,000
Uzbekistan	--	--	66,000	57,000	--	--	66,000	57,000
Other	--	--	5,730	5,320	728	589	6,460	5,910
Total	14,800	11,400	5,240,000	4,320,000	910,000	972,000	6,160,000	5,300,000

rRevised. -- Zero.

[1]Table includes data available through August 22, 2022. Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 7
U.S. IMPORTS FOR CONSUMPTION OF SILVER, BY COUNTRY OR LOCALITY[1]

Year and country or locality	Other unwrought silver		Metal powder		Silver nitrate		Semimanufactured forms[2]		Waste and scrap	
	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)	Gross weight (kilograms)	Value (thousands)
2020	487,000 r	$273,000 r	194,000	$22,900	2,060	$278	1,270,000	$826,000	8,530,000	$1,460,000
2021:										
Argentina	--	--	--	--	--	--	--	--	84,000	1,970
Australia	3,110	2,200	--	--	--	--	37,100	30,900	201	32
Belgium	2	2	--	--	--	--	--	--	139,000	1,310
Bolivia	--	--	--	--	--	--	--	--	49,000	2,450
Brazil	--	--	--	--	--	--	--	--	454,000	14,500
Canada	57,100	41,100	16,500	1,070	188	97	36,600	29,000	1,830,000	175,000
Cayman Islands	--	--	--	--	--	--	--	--	23,700	30
Chile	--	--	--	--	--	--	36,000	28,500	--	--
China	11	10	12,300	758	--	--	--	--	99,800	25,900
Colombia	10	8	--	--	--	--	--	--	35,000	4,690
Costa Rica	--	--	1,240	53	--	--	--	--	90,500	5,140
France	--	--	39,600	3,940	176	5	--	--	14,500	40
Germany	1,540	724	19,000	16,000	34	5	3,230	2,580	148,000	164,000
Honduras	--	--	--	--	--	--	--	--	20,700	2,350
Hong Kong	7	5	--	--	--	--	72,700	57,900	36	26
Hungary	29,200	1,340	13,000	1,420	--	--	--	--	1,810	80
India	1	5	2,690	2,090	--	--	54,800	47,400	3,680	2,770
Ireland	--	--	--	--	--	--	--	--	28,800	562
Japan	21	28	53,600	9,120	--	--	72	82	200,000	89,500
Korea, Republic of	676	48	24	19	161	96	85,300	68,500	795	644
Malaysia	--	--	--	--	--	--	--	--	48,000	8,010
Mexico	302,000	242,000	2,120	128	--	--	516	602	423,000	61,100
Nigeria	--	--	--	--	--	--	--	--	30,700	9,310
Poland	417	277	9,030	7,260	--	--	151,000	132,000	6	39
South Africa	--	--	--	--	--	--	--	--	60,500	41,400
Switzerland	26	21	530	426	4	2	44,500	37,600	25	22
Taiwan	--	--	3,980	260	--	--	363,000	306,000	29,500	2,540
Thailand	--	--	--	--	--	--	--	--	41,200	11,100
Trinidad and Tobago	--	--	--	--	--	--	--	--	25,700	7,060
United Kingdom	171	104	467	385	1,810	108	293,000	242,000	2,120,000	727,000
Vietnam	--	--	--	--	--	--	--	--	66,000	1,370
Other	2,600	1,650	21,800	6,660	1	2	19,400	15,900	131,000	146,000
Total	397,000	289,000	196,000	49,600	2,370	316	1,200,000	998,000	6,200,000	1,510,000

rRevised. -- Zero.
[1]Table includes data available through August 22, 2022. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Containing 99.5% or more by weight of silver.

Source: U.S. Census Bureau.

TABLE 8
SILVER: WORLD MINE PRODUCTION, BY COUNTRY OR LOCALITY[1]

(Kilograms)

Country or locality[2]	2017	2018	2019	2020	2021
Algeria	25	26	20	12	12 e
Argentina	997,961	1,023,768	1,071,000 r	767,087 r	720,000 e
Armenia[e]	15,500	19,500	22,800	23,100 r	22,200
Australia	1,120,000	1,254,000	1,325,000	1,343,000	1,363,000
Azerbaijan	3,429	3,229	3,820	4,310	3,860
Bolivia	1,196,416	1,191,024	1,152,628 r	1,153,100 r	1,291,817
Botswana	--	--	--	--	10,383
Brazil	86,000	71,000	66,000	68,000	80,000
Bulgaria	53,053	41,315	35,145	32,760	31,816
Burkina Faso	6,000 e	8,000 r, e	9,000 r, e	10,012 r	15,500
Canada[3]	368,000	392,000	349,710	324,862 r	325,026
Chile	1,318,582	1,370,237	1,309,321	1,575,794	1,282,346
China	3,601,000	3,422,000	3,443,000	3,405,000 r	3,501,000
Colombia	12,076	16,684	12,706	19,931 r	29,000 e
Côte d'Ivoire	485	137	--	--	2,000
Cyprus	96	180	97	486	200 e
Dominican Republic	151,757	166,500	108,700	87,990	72,000 e
Ecuador	68	192	2,892	1,792	1,500 e
Eritrea	49,921	31,000	44,836	65,284	68,624
Ethiopia[e]	1,000	1,000	1,000	1,000	2,800
Fiji[4]	350	413	692	479 r	360
Finland	13,654	12,849	40,461	54,833	43,265
Georgia	3,000 e	3,000 e	4,052	11,172 r	12,674
Ghana[e]	1,800	1,800	1,800	1,800	1,800
Greece	23,967	25,237	28,161	30,209	29,281
Guatemala	336,943	--	--	--	--
Honduras	21,785	31,182	43,579	45,000 r, e	46,524
India	526,604	648,600	633,176	682,000 r, e	610,000 e
Indonesia	329,000	309,000	487,000	335,200	335,000 e
Ireland	1,340	1,160	1,578	918	1,342
Japan	3,408	3,596	3,492	1,757	1,746
Kazakhstan[e]	461,000	369,000	422,000	435,000	420,000
Korea, North[e]	20,000	20,000	20,000	20,000	20,000
Korea, Republic of	8,788	7,090	5,245	5,739	5,800 e
Kyrgyzstan	17,097	16,000	14,000	11,700	6,000 e
Laos	42,841	37,465	34,443	34,893 r	25,797
Malaysia	1,404	1,542	686	423	440 e
Mexico	6,108,722	6,049,000	5,840,000	5,541,000	6,108,000
Mongolia[e]	62,000	60,000	57,000	57,000	59,000
Morocco	319,000 r	243,000 r	284,000 r	249,000 r	288,000
Namibia[e, 5]	7,010	4,670	6,220	6,980	5,850
New Zealand	8,022	6,332	4,060	1,393 r	2,893
Nicaragua	16,438 r	20,980 r	17,760 r	20,411 r	23,160
Niger[e]	120	120	120	120	--
Oman	120	--	--	--	--
Pakistan[e]	3,000	3,000	3,000	3,000	--
Panama	--	--	35,217	49,627	78,419
Papua New Guinea	86,700	114,900	146,000 r	119,000 r	94,000
Peru	4,303,541	4,160,162	3,860,306	2,771,825	3,310,192
Philippines	31,737	29,782	31,267	24,024	30,856
Poland	1,290,000 r	1,264,300 r	1,249,000	1,218,000	1,303,000
Portugal	40,185	90,820	95,271	95,954 r	46,048
Russia	1,373,000	1,400,000	1,407,000	1,380,000	1,321,898
Slovakia	410	345	295	269 r	250 e
South Africa	62,536	46,467	55,903	38,154	37,747
Spain	82,694	88,514	77,501	92,662 r	92,000 e
Sweden	488,135	471,325	423,777	400,929 r	468,093

See footnotes at end of table.

TABLE 8—Continued
SILVER: WORLD MINE PRODUCTION, BY COUNTRY OR LOCALITY[1]

(Kilograms)

Country or locality[2]	2017	2018	2019	2020	2021
Tajikistan	4,300	6,300 e	10,800	11,600 r	11,100
Tanzania	10,911	12,262	12,607	13,187	13,000 e
Turkey	151,490	197,320	242,000	98,300 r	98,296
United Kingdom	--	--	130	124 r	250 e
United States	1,030,000	934,000	981,000	1,080,000 r	1,020,000
Uzbekistan	220,000	224,000	219,200	237,600	237,000 e
Zimbabwe	1,480	1,542	1,493	1,522 r	1,500
Total	26,500,000 r	25,900,000 r	25,800,000 r	24,100,000 r	25,000,000

eEstimated. rRevised. -- Zero.

[1]Table includes data available through November 2, 2022. All data are reported unless otherwise noted; totals may include estimated data. Totals, U.S. data, 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, silver may have been produced in other countries and (or) localities, but available information was inadequate to make reliable estimates of output.

[3]Silver content of concentrates produced.

[4]Mine output, silver content.

[5]Silver content of concentrates, estimated.