

# 2022 Minerals Yearbook

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## SILVER [ADVANCE RELEASE]

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# SILVER

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In 2022, the United States produced 1,010 metric tons (t) of silver, compared with 1,020 t produced in 2021 (table 1). Approximately 56% of domestic silver production was from primary silver ores at 4 mines, whereas 34% of domestic silver was produced from base-metal ores at 13 mines, and the remaining production was from gold ores (table 3).

The Engelhard price of silver averaged \$21.88 per troy ounce in 2022, a 13% decrease from the 2021 average price of \$25.23 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, ethylene oxide, photography, and photovoltaics; jewelry; non-coin investments; and silverware. In 2022, global consumption of silver increased by 18% to 38,600 t from 32,800 t in 2021 (Newman and others, 2023, p. 8–9).

In 2022, silver was mined in 60 countries. Global silver production was 25,600 t compared with 25,900 t (revised) in 2021 (tables 1, 8). Mexico was the leading producer, followed by China, Peru, Poland, Russia, Chile, Bolivia, Australia, Kazakhstan, and the United States in descending order of production. These 10 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, 2022, 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 \$304 million at \$19.02 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. All silver bullion sold by the U.S. Mint in fiscal year 2022 (October 1, 2021, through September 30, 2022) was used for the American Eagle silver dollar; the amount of silver sold decreased by 56% from that sold in fiscal year 2021 (U.S. Mint, 2022, p. 18, 52).

## 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 in 2022 was 1,010 t compared with 1,020 t produced in 2021. Silver in the United States was produced mainly as a principal product, in descending order, at the Greens Creek, Lucky Friday, Rochester, and Galena Complex Mines. Silver was produced as a byproduct 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 303 t (reported as 9,740,000 troy ounces) of silver in 2022, a 5% increase in production from 287 t (reported as 9,240,000 troy ounces) of silver produced in 2021. The increase was attributed to increased ore throughput and higher grade silver ore mined in 2022 compared with that in 2021 (Hecla Mining Co., 2023, p. 6, HL10-K 27).

Hecla's Lucky Friday Mine, a silver mine in the Coeur d'Alene mining district in northern Idaho, has been producing since 1958. Lucky Friday produced 137 t (reported as 4,410,000 troy ounces) of silver in 2022, a 24% increase from the 111 t (reported as 3,560,000 troy ounces) of silver produced in 2021. This increase was due to the continued implementation of the "Underhand Closed Bench" mining method at the property. This method was developed for proactive control of fault-slip seismicity in deep, high-stress, narrow vein mining areas to improve safety, reduce seismic activity, and increase the amount of ore mined (Hecla Mining Co., 2023, p. 4, HL10-K 30).

Coeur Mining, Inc.'s Rochester Mine, located in Pershing County and near Lovelock, NV, an open pit silver mine with gold byproduct, produced 95.2 t (reported as 3,060,000 troy ounces) of silver in 2022, 3% less than the 2021 silver production of 98.2 t (reported as 3,160,000 troy ounces). The decrease in silver production was primarily because of lower grade silver ore (Coeur Mining, Inc., 2023, p. 43).

In 2022, the Bingham Canyon Mine, near Salt Lake City, UT, owned by Rio Tinto Group, produced 64.0 t (reported as 2,060,000 troy ounces) of silver, an 8% decrease from the 69.3 t (reported as 2,230,000 troy ounces) of silver produced in 2021. The decrease was because of a decrease in silver ore grade. The Bingham Canyon Mine was primarily a copper mine, but silver was produced as a byproduct along with gold, molybdenum, and tellurium (Rio Tinto Group, 2023, p. 28).

The Galena Complex silver mine, in Shoshone County and near Silverton, ID, which was owned by Americas Gold and Silver Corp. (60%) and 2176423 Ontario Ltd. (40%), produced 34.8 t (reported as 1,120,000 troy ounces) of silver in 2022, an increase of 11% from production in 2021. 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., 2023, p. 3, 5, 12).

## Consumption

Consumption of silver for fabrication in the United States was 4,395 t in 2022, a 5% increase from 4,200 t (revised) in 2021. Domestic fabrication values included silver for industrial applications such as brazing alloys and solders, electrical and electronics, and other industrial applications. It also included silver for both jewelry and silverware but not bars, coins, or investments (Newman and others, 2023, p. 67, 69).

**Coin Fabrication.**—Approximately 656 t of silver was consumed for coins and medals in the United States in 2022, a 34% decrease from 1,001 t in 2021. In fiscal year 2022, the U.S. Mint sold 494 t of American Eagle silver bullion coins, a 56% decrease from 1,111 t sold in 2021 (U.S. Mint, 2022, p. 18–19; Newman and others, 2023, p. 68).

**Industrial Applications.**—Silver consumed in domestic industrial applications increased by 6% to 3,954 t of silver in 2022 from the 2021 consumption of 3,747 t (revised). There was increased consumption of silver powder in photovoltaic cells, which led to an increase in panel production (Newman and others, 2023, p. 46, 67).

In 2022, the domestic use of silver for electronic and electrical applications totaled 2,300 t, a 4% increase from 2,203 t in 2021. This increase was related to an increase in photovoltaic installations and increased silver use in contact materials (Newman and others, 2023, p. 46, 67). Other areas that contributed to silver demand in electronics and electrical applications were in the automotive industry owing to increased use of silver for batteries for electric vehicles. Silver was used in the contacts and circuitry throughout an electric vehicle's power management system. There was a 10% increase in North American vehicle production because of the ending of the supply chain bottleneck in semiconductor chip manufacturing, which caused a delay in new cars arriving at automotive dealers. There also was a greater amount of electronic control units in vehicle systems used for entertainment, fuel efficiency, and safety. These devices have many contacts, wires, and other components that use silver (Newman and others, 2023, p. 46).

Silver 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, there has been an increased adoption of digital X-rays during the past decade, which has also resulted in a decline in silver use. In 2022, domestic use of silver for photographic applications was 367 t, a 12% decrease from 417 t used in 2021 (CPM Group LLC, 2024, p. 87, 89, 105).

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, refrigeration, and electric power distribution. These alloys also were important in the aerospace and automobile industries. In 2022, 210 t of silver was used domestically in brazing alloys and solders, a 3% increase from 203 t used in 2021 (Newman and others, 2023, p. 47, 68).

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. In addition to plastics, ethylene

oxide was used to produce antifreeze, detergents, and polyester fiber. Silver used in ethylene oxide catalysts in the United States was estimated to have decreased by 10% in 2022 to 591 t from 656 t in 2021 (CPM Group LLC, 2024, p. 105).

**Jewelry and Silverware.**—In 2022, domestic consumption of silver for fabrication of jewelry and silverware, excluding scrap, was 441 t, a 3% decrease from the 453 t consumed in 2021. Silver consumption for jewelry was 398 t in 2022, a 3% decrease from the 412 t consumed in 2021 because consumption in 2021 was higher than average. Domestic silver consumption for silverware was 43 t in 2022, a 5% increase from 41 t in 2021, which was a result of delayed consumer purchases because of the global coronavirus disease 2019 (COVID-19) pandemic (Newman and others, 2023, p. 55–56, 61, 69).

## Prices

In 2022, the daily Engelhard silver price yearly high was \$26.45 per troy ounce on March 8, and the yearly low was \$17.85 per troy ounce on September 1. The daily average price of silver was \$21.88 per troy ounce, a 13% decrease from the daily average price of \$25.23 per troy ounce in 2021 (table 1) (Newman and others, 2023, p. 7, 18).

## Foreign Trade

U.S. exports of silver contained in bullion, dore, and ores and concentrates doubled to 275 t in 2022 from the total of 137 t in 2021. Silver bullion accounted for 94% of silver exports, and silver dore accounted for 6%. Exports of ores and concentrates were minimal and accounted for less than one-half of a percent (0.05%) of all silver exports. Principal destinations of total silver exports were Canada and the United Kingdom (27% each), India (26%), and Switzerland (8%). Exports of dore decreased by 39%, but exports of bullion increased by 133%. Top destinations for silver bullion were Canada and the United Kingdom (29% each) and India (27%), whereas Switzerland (83%) and South Africa (12%) 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 27% to 4,490 t in 2022 from 6,160 t in 2021. Of the total imports for 2022, 84% were silver bullion, 15% were dore, and less than one-half of a percent (0.4%) were ores and concentrates. The principal import sources of total silver were Mexico (49%), Canada (18%), and Turkey (9%). Imports of bullion decreased by 28%, and dore imports decreased by 24% in 2022. The leading sources of silver were Mexico, which supplied 42% of the bullion, 90% of the dore, and 4% of the ores and concentrates, and Canada, which supplied 21% of the bullion and 95% of the ores and concentrates (table 6).

## World Review

World mine production of silver was 25,600 t in 2022 compared with 25,900 t (revised) in 2021. Mexico continued to be the leading producer of silver, accounting for 24% of world production. Mexico was followed by China (14%); Peru (12%); Australia, Bolivia, Chile, Poland, and Russia (5% each);

Argentina, Kazakhstan, and the United States (4% each); India (3%); and Indonesia and Sweden (2% each). These 14 countries accounted for 92% of the global silver production. Silver production decreased in Peru by 254 t, or 8%. Other countries with significant decreases in production were Australia (163 t), Chile (109 t), Bolivia (75 t), China (31 t), and Portugal and Uzbekistan (20 t each). Some of these decreases were offset by production increases from Mexico (100 t), Argentina (89 t), Russia (68 t), Kazakhstan (48 t), Indonesia (40 t), Sweden (31 t), the Philippines (25 t), and Botswana (21 t) (table 8).

According to the report from Metals Focus, produced for the Silver Institute, 30.2% of global silver production was from lead and zinc mines, 27.8% from primary silver mines, 25.8% from copper mines, 15.7% from gold mines, and 0.5% from other types of mining operations (Newman and others, 2023, p. 27).

Total global silver consumption increased by 18% to 38,600 t in 2022 from 32,800 t (revised) in 2021. This included silver used in industrial applications, jewelry, net physical investment, photography, and silverware. Industrial applications accounted for 45% of the total global consumption, followed by jewelry (19%), coins and medals fabrication (13%), and silverware (6%). There was an 80% increase in use for silverware, a 29% increase in use for jewelry, a 22% increase in use for net physical investment, and a 5% increase in use for industrial uses (Newman and others, 2023, p. 63, 67–69). Silver consumption for photovoltaics increased by 28% to 4,370 t from 3,420 t (revised) in 2021, whereas consumption for photographic uses was 855 t in 2022 compared with 862 t (revised) in 2021 (Newman and others, 2023, p. 21, 63, 67–69).

World consumption of silver for jewelry increased by 29% in 2022 to 7,280 t from 5,650 t (revised) in 2021. The increase was due to a 90% increase in silver consumption in India as retailers restocked after recovery from the COVID-19 pandemic. According to the World Silver Survey 2023, other countries with notable increased consumption in 2022 were Indonesia, Italy, Thailand, and Turkey, owing to post-pandemic recovery in exports and local sales. There was a decrease in demand for jewelry in both China and Russia in 2022 because both incomes and confidence in China were affected by the COVID-19 pandemic, whereas Russia was affected by sanctions imposed in response to its military action in Ukraine (Newman and others, 2023, p. 54–59, 69).

Global silver scrap recycling increased by 3% to 5,620 t in 2022 from 5,450 t (revised) in 2021, which was a 10-year high. This increase was due mainly to the 7% increase in industrial scrap supply because of continued strong growth in the processing of spent ethylene oxide catalysts. Recycling of jewelry was 1,070 t in 2022, compared with 1,070 t in 2021, and recycling of silverware was 759 t in 2022 and 756 t in 2021. The leading countries for silver scrap recycling were the United States (1,390 t), China (1,080 t), India (479 t), Russia (351 t), Germany (308 t), and Japan (283 t) (Newman and others, 2023, p. 38–40).

**Argentina.**—In 2022, silver production in Argentina increased by 11% to an estimated 913 t from 824 t (revised) in 2021 (table 8). The increase was from AngloGold Ashanti Ltd.’s Cerro Vanguardia and Yamana Gold Inc.’s Cerro Moro Mines, both of which had higher silver ore grades and throughput in 2022. The Cerro Vanguardia production was 124 t, a 5%

increase from 118 t in 2021, and Yamana’s Cerro Moro Mine production was 190 t, a 10% increase from 174 t in 2021 (AngloGold Ashanti Ltd., 2023; Yamana Gold Inc., 2023, p. 83).

**Bolivia.**—Silver production in Bolivia in 2022 was 1,214 t, a 6% decrease from the production of 1,289 t (revised) in 2021 (table 8). The decrease was due to lower production at Sumitomo Corp.’s San Cristobal Mine (Newman and others, 2023, p. 28).

**China.**—Silver production in China was 3,480 t in 2022, compared with 3,511 t (revised) produced in 2021; China was the second-ranked producer globally (table 8). The production decrease was caused by less byproduct output from lead-zinc mines within the country because of reserve depletion and stricter environmental regulations. Jewelry consumption in China was 531 t in 2022, an 18% decrease from 648 t in 2021, and silverware consumption in China in 2022 was 72 t, a 15% decrease from 85 t in 2021 (Newman and others, 2023, p. 28, 31, 69).

**Mexico.**—In 2022, Mexico was the leading producer of silver in the world with production of 6,196 t, a slight increase from the 6,096 t (revised) produced in 2021 (table 8). The increase in production was from a rampup of new projects such as SilverCrest Metals Inc.’s Las Chispas Mine and Gatos Silver Inc.’s Cerro Los Gatos Mine, both of which started production in 2022 (Newman and others, 2023, p. 27). Fresnillo plc also increased its production slightly in 2022 to 1,588 t from 1,554 t in 2021, which was attributed to higher ore grades and higher volume of ore processed at the Fresnillo Mine (Fresnillo plc, 2023, p. 2, 4–5).

**Peru.**—In 2022, Peru was the third-ranked producer of silver in the world with production of 3,080 t, an 8% decrease from the 3,333 t (revised) produced in 2021 (table 8). Starting in the fourth quarter of 2021, operations at Compania de Minas Buenaventura S.A.A.’s Uchucchacua Mine were halted for maintenance and exploration work, which was completed with plans to restart in the fourth quarter of 2023. In February 2022, Pan American Silver Corp. placed its Morococha operation on care-and-maintenance status. The mine produced 10 t in 2022, an 85% decrease from 68 t produced in 2021 (Compania de Minas Buenaventura S.A.A., 2023, p. 36; Pan American Silver Corp., 2023, p. 4, 12).

**Poland.**—In 2022, Poland produced 1,316 t of silver, compared with 1,303 t of silver produced in 2021 (table 8). All of the silver was produced by KGHM Polska Miedź S.A.’s three copper mines (Lubin, Polkowice-Sieroszowice, and Rudna) in the Lower Silesia region (KGHM Polska Miedź S.A., 2023, p. 26–27, 103).

**Russia.**—Silver production in 2022 was 1,280 t, a 6% increase from 1,212 t (revised) in 2021 (table 8). The increase was because of the first full year of production at Polymetal International plc’s Nezhda Mine (Newman and others, 2023, p. 30; Polymetal International plc, 2023, p. 42).

## Outlook

Mine supply of silver in 2023 is expected to increase slightly because of new silver mines ramping up production. One such mine is the Juanicipio Mine in Mexico which is a joint venture between Fresnillo and MAG Silver Corp. and is expected



to reach full production in the first half of the year. There is also the expected startup of Gold Field Ltd.'s Salares Norte Mine in Chile and the potential resumption of production of Buenaventura's Uchucchacua Mine in Peru.

Industrial demand for silver is expected to increase based on continued growth in vehicle electrification and continued investment in the fifth generation of cellular network technology, consumer electronics, photovoltaics, and power grids. Both jewelry fabrication and silverware demand are expected to decrease because (1) there is no longer the post-pandemic increase in buying, and (2) the economic uncertainty in both Europe and the United States (Newman and others, 2023, p. 14–15).

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TABLE 1  
SALIENT SILVER STATISTICS<sup>1</sup>

(Metric tons unless otherwise specified)

	2018	2019	2020	2021	2022
United States:					
Mine production:					
Quantity	934	981	1,080	1,020	1,010
Value thousands	\$473,000	\$502,000	\$712,000	\$830,000	\$709,000
Refinery production:					
Domestic and foreign ores and concentrates	701 <sup>r</sup>	1,360	1,360 <sup>r</sup>	1,920	1,850
Scrap (old and new)	578 <sup>r</sup>	627	582	908	1,090
Exports:					
Ores and concentrates	8	(2)	1	1	(2)
Bullion	558	190	130	111	259
Dore	38	30	10	25	15
Imports for consumption:					
Ores and concentrates <sup>3</sup>	8	1	(2)	15	18
Bullion	3,750	3,790	5,830	5,240	3,780
Dore	1,080	973	907	911 <sup>r</sup>	695
Stocks, December 31:					
Industry	51 <sup>r</sup>	52	55	56	55
COMEX	9,150	9,870 <sup>r</sup>	12,300	11,100	9,300
U.S. Department of the Treasury	498	498	498	498	498
Bullion coin production <sup>4</sup>	461	577	740	1,120	494
Price, average <sup>5</sup> dollars per troy ounce	15.73	16.24	20.58	25.23	21.88
Employment, mine and mill workers <sup>6</sup>	973 <sup>r</sup>	990 <sup>r</sup>	1,180 <sup>r</sup>	1,440 <sup>r</sup>	1,400
World, mine production <sup>7</sup>	25,800 <sup>r</sup>	26,400 <sup>r</sup>	24,300 <sup>r</sup>	25,900 <sup>r</sup>	25,600

<sup>r</sup>Revised.

<sup>1</sup>Table includes data available through November 15, 2023. Data are rounded to no more than three significant digits, except prices.

<sup>2</sup>Less than ½ unit.

<sup>3</sup>Includes silver content of ash and residues.

<sup>4</sup>Fiscal year sales of silver bullion coins as published by the U.S. Mint.

<sup>5</sup>Price data are the annual Englehard quotations published in S&P Global Platts Metals week.

<sup>6</sup>Employment data are from the U.S. Department of Labor, Mine Safety and Health Administration, for mines classified as (active and temporarily idle) silver ore mines.

<sup>7</sup>May include estimated data.

TABLE 2  
MINE PRODUCTION OF SILVER IN THE UNITED STATES, BY STATE<sup>1</sup>

(Kilograms)

State	2020	2021	2022
Arizona	70,700	79,900	73,400
Idaho	140,000	142,000	169,000
Nevada	189,000	196,000	171,000
Utah	68,600	69,300	64,000
Other <sup>2</sup>	608,000	536,000	532,000
Total	1,080,000	1,020,000	1,010,000

<sup>1</sup>Table includes data available through November 15, 2023. Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes Alaska, California, Colorado, Missouri, Montana, New Mexico, South Carolina, and South Dakota.

TABLE 3  
LEADING SILVER-PRODUCING MINES IN THE UNITED STATES IN 2022, IN ORDER OF OUTPUT<sup>1</sup>

Rank	Mine	County and State <sup>2</sup>	Operator <sup>3</sup>	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 <sup>4</sup>	Copper-molybdenum ore.
6	Phoenix	Lander, NV	Nevada Gold Mines LLC <sup>5</sup>	Gold-copper ore.
7	Galena Complex	Shoshone, ID	Americas Gold and Silver Corp. (60%) and 2176423 Ontario Ltd. (40%)	Silver ore.
8	Bagdad	Yavapai, AZ	Freeport-McMoRan Inc.	Copper-molybdenum ore.
9	Mission Complex	Pima, AZ	ASARCO LLC <sup>6</sup>	Copper 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	Golden Queen Mining Co., LLC.	Gold ore.
13	Moss	Mohave, AZ	Elevation Gold Mining Corp.	Gold-silver ore.
14	Bald Mountain	White Pine, NV	Kinross Gold Corp.	Do.
15	Pinto Valley	Gila, AZ	Capstone Copper Corp.	Copper-molybdenum ore.
16	Haile	Lancaster, SC	OceanaGold Corp.	Gold ore.
17	Chino	Grant, NM	Freeport-McMoRan Inc.	Copper ore.
18	Carlin Mines operations	Elko and Eureka, NV	Nevada Gold Mines LLC <sup>5</sup>	Do.
19	Morenci	Greenlee, AZ	Freeport-McMoRan Inc.	Copper-molybdenum ore.
20	Cortez operations	Lander, NV	Nevada Gold Mines LLC <sup>5</sup>	Gold ore.
21	Rawhide	Mineral, NV	Rawhide Mining LLC	Do.
22	Wharf	Lawrence, SD	Coeur Mining, Inc.	Do.
23	Ray	Pinal, AZ	ASARCO LLC <sup>6</sup>	Copper ore.
24	Fletcher	Reynolds, MO	Doe Run Resources Corp.	Lead ore.
25	Viburnum (#29 and #35)	Washington and Iron, MO	do.	Do.
26	Betze-Post	Eureka, NV	Nevada Gold Mines LLC <sup>5</sup>	Gold ore.
27	Brushy Creek	Reynolds, MO	Doe Run Resources Corp.	Lead ore.

Do., do. Ditto.

<sup>1</sup>Table includes data available through November 15, 2023. The mines on this list accounted for more than 99% of U.S. mine production of silver in 2022.

<sup>2</sup>For Alaska, mines are located by geographic region, as delineated by the Alaska Division of Geological & Geophysical Surveys in its Special Report 77, Alaska's mineral industry 2021.

<sup>3</sup>As of December 31, 2022.

<sup>4</sup>Wholly owned subsidiary of Rio Tinto Group.

<sup>5</sup>Nevada Gold Mines LLC was a joint venture between Barrick Gold Corp. (61.5%) and Newmont Mining Corp. (38.5%).

<sup>6</sup>Wholly owned subsidiary of Grupo México, S.A.B. de C.V.



TABLE 4  
U.S. EXPORTS OF REFINED SILVER, BY COUNTRY OR LOCALITY<sup>1</sup>

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)
2021	515	\$323	111,000	\$99,100	25,400	\$22,800	137,000	\$122,000
2022:								
Australia	69	49	2,480	1,950	--	--	2,550	2,000
Canada	--	--	74,800	60,800	--	--	74,800	60,800
Cayman Islands	--	--	1,750	1,460	--	--	1,750	1,460
Czechia	--	--	2,410	2,010	--	--	2,410	2,010
Germany	14	11	1,280	799	4	7	1,290	816
Hong Kong	--	--	10,300	6,340	--	--	10,300	6,340
India	--	--	71,000	48,800	231	180	71,200	49,000
Italy	--	--	1,700	1,180	57	41	1,760	1,220
Mexico	--	--	5,890	4,080	14	10	5,910	4,090
Panama	--	--	2,770	2,050	--	--	2,770	2,050
South Africa	--	--	187	147	1,880	1,320	2,070	1,470
Switzerland	--	--	8,080	7,190	12,700	9,410	20,800	16,600
United Kingdom	--	--	74,000	59,200	--	--	74,000	59,200
Other	49	41	2,770	2,120	407	294	3,230	2,450
Total	132	101	259,000	198,000	15,300	11,300	275,000	210,000

-- Zero.

<sup>1</sup>Table includes data available through September 26, 2023. 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<sup>1</sup>

Year and country or locality	Other unwrought silver		Metal powder		Silver nitrate		Semimanufactured forms <sup>2</sup>		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)
2021	973,000	\$864,000	586,000	\$521,000	55,100	\$22,400	774,000	\$657,000	17,300,000	\$4,710,000
2022:										
Australia	46	31	595	434	423	123	999	746	40	6
Belarus	--	--	--	--	--	--	--	--	15,400	4,990
Belgium	9	8	4,180	3,400	--	--	15,200	10,800	2,590,000	216,000
Canada	203,000	167,000	20,800	15,300	127,000	5,610	367,000	288,000	1,300,000	228,000
China	199	158	78,400	63,200	322	96	15,300	11,800	17,000	4,200
France	155	130	76,600	56,000	--	--	4,550	3,610	210	711
Germany	367	320	31,000	23,400	203	91	30,000	18,900	3,340,000	448,000
Hong Kong	1,380	904	3,760	2,890	61	3	8,300	6,390	4	180
Hungary	--	--	521	407	--	--	1,220	969	--	--
India	15,800	11,100	2,630	2,000	423	54	5,150	3,960	1,890	1,390
Israel	79	55	77	63	--	--	1,180	994	1	9
Italy	10	17	6,140	4,670	--	--	1,560	1,230	1,630,000	968,000
Japan	4	3	46,200	37,000	20	9	2,460	1,780	2,130,000	240,000
Korea, Republic of	51	39	48,800	39,700	1,250	157	10,200	8,200	56,800	2,230
Malaysia	474	386	4,030	3,150	58	75	3,840	3,130	349,000	224,000
Mexico	7,170	4,470	27,400	21,100	7,670	2,460	95,400	71,800	--	--
Netherlands	6	4	17,700	13,800	--	--	156	147	124,000	3,320
New Zealand	--	--	--	--	--	--	2,310	1,860	--	--
Philippines	997	769	--	--	--	--	3,080	2,290	--	--
Poland	--	--	--	--	--	--	1,340	1,100	12	45
Romania	--	--	2,710	2,110	--	--	342	319	--	--
Saudi Arabia	--	--	--	--	30	6	1,960	1,440	336	58
Singapore	478	320	57,600	43,300	21,400	10,900	4,430	3,460	157	13
South Africa	--	--	--	--	78	15	6	4	57,600	23,500
Spain	--	--	654	507	--	--	4,880	3,660	19	15
Sweden	--	--	16	14	--	--	202	158	1,860,000	52,500
Switzerland	5,450	3,740	10	10	--	--	6,160	5,360	14,100	45,300
Taiwan	29	26	72,300	57,300	1,790	133	1,110	974	38	189
Thailand	1,670	1,180	244	179	--	--	4,610	3,600	113	984
United Arab Emirates	509	357	--	--	32	3	1,830	1,370	61,900	3,050
United Kingdom	29	24	43,300	33,500	419	88	13,100	10,100	434,000	795,000
Vietnam	604	427	32	25	500	60	2,110	1,630	--	--
Other	5,460	3,730	4,310	3,370	1,940	542	23,700	18,600	902	762
Total	244,000	196,000	550,000	427,000	164,000	20,400	633,000	488,000	14,000,000	3,260,000

-- Zero.

<sup>1</sup>Table includes data available through September 26, 2023. Data are rounded to no more than three significant digits; may not add to totals shown.<sup>2</sup>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<sup>1</sup>

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)
2021	14,800	\$11,400	5,240,000	\$4,320,000	911,000 <sup>r</sup>	\$972,000	6,160,000	\$5,300,000
2022:								
Argentina	--	--	--	--	18,500	13,000	18,500	13,000
Belgium	--	--	55,200	36,700	--	--	55,200	36,700
Bolivia	--	--	7,680	4,950	--	--	7,680	4,950
Canada	17,500	12,200	775,000	567,000	5,540	4,250	798,000	583,000
Chile	--	--	256,000	180,000	1,060	941	257,000	181,000
China	47	30	21	25	--	--	68	55
Colombia	--	--	3,040	2,230	9,870	7,230	12,900	9,450
Dominican Republic	66	120	--	--	104	79	170	199
Finland	--	--	10,000	6,270	--	--	10,000	6,270
France	--	--	2,000	1,480	--	--	2,000	1,480
Germany	--	--	24,400	19,500	8,390	6,110	32,800	25,700
Hong Kong	--	--	40,900	28,700	--	--	40,900	28,700
Italy	--	--	13,000	11,000	3,390	2,480	16,400	13,500
Kazakhstan	--	--	148,000	118,000	--	--	148,000	118,000
Korea, Republic of	--	--	155,000	116,000	--	--	155,000	116,000
Mexico	803	169	1,570,000	1,090,000	628,000	706,000	2,200,000	1,800,000
Nicaragua	--	--	42	24	18,600	12,000	18,600	12,100
Peru	--	--	12,100	7,920	1,010	676	13,100	8,590
Poland	--	--	95,700	68,500	--	--	95,700	68,500
Switzerland	--	--	106,000	77,300	--	--	106,000	77,300
Turkey	--	--	412,000	292,000	--	--	412,000	292,000
United Arab Emirates	--	--	18,000	13,600	--	--	18,000	13,600
United Kingdom	--	--	51,000	37,500	--	--	51,000	37,500
Uzbekistan	--	--	14,500	11,700	--	--	14,500	11,700
Other	--	--	8,450	5,980	362	357	8,810	6,330
Total	18,400	12,600	3,780,000	2,700,000	695,000	753,000	4,490,000	3,460,000

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

<sup>1</sup>Table includes data available through September 26, 2023. 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<sup>1</sup>

Year and country or locality	Other unwrought silver		Metal powder		Silver nitrate		Semimanufactured forms <sup>2</sup>		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)
2021	397,000	\$289,000	196,000	\$49,600	2,370	\$316	1,200,000	\$998,000	6,200,000	\$1,510,000
2022:										
Argentina	--	--	--	--	--	--	--	--	87,500	1,620
Australia	12	7	--	--	--	--	56,500	42,500	956	843
Belgium	--	--	--	--	79	11	17,400	13,600	20,500	1,740
Bolivia	--	--	--	--	--	--	--	--	14,600	4,360
Brazil	--	--	--	--	--	--	--	--	53,100	6,610
Canada	52,600	34,100	14,000	1,060	349	106	351,000	262,000	1,490,000	130,000
Chile	--	--	320	170	--	--	33,200	23,500	16,000	1,740
China	69	57	176	86	--	--	7,760	5,280	27,400	15,100
Colombia	--	--	--	--	--	--	--	--	244,000	2,700
Costa Rica	--	--	3	2	--	--	--	--	53,400	3,910
Ecuador	--	--	--	--	--	--	--	--	61,100	1,200
France	7	10	18,200	2,260	--	--	--	--	44	92
Germany	2,190	1,380	38,900	30,100	158	15	37,800	28,400	122,000	65,500
Guatemala	--	--	--	--	--	--	--	--	12,300	326
Hungary	13,000	623	6,080	485	--	--	--	--	--	--
India	23	17	2,170	1,600	5	12	319	146	11,700	2,060
Italy	5,000	3,360	15	11	--	--	926	829	1,000	4,460
Japan	10	19	25,900	5,150	5	5	4,550	3,600	627,000	253,000
Kazakhstan	--	--	--	--	--	--	284,000	212,000	--	--
Korea, Republic of	1,640	826	2	19	116	60	245,000	181,000	4,980	1,610
Malaysia	--	--	--	--	--	--	--	--	90,200	18,800
Mexico	341,000	238,000	30	2	--	--	49,800	36,900	902,000	120,000
New Zealand	--	--	--	--	--	--	25	21	24,500	4,300
Peru	38,000	26,600	--	--	--	--	979	784	116,000	234
Poland	--	--	110,000	77,900	272	41	130,000	93,600	19,400	1,480
Singapore	--	--	2,210	1,630	--	--	275	46	12,200	181
Spain	14	3	36	97	--	--	--	--	15,500	166,000
Switzerland	--	--	40,700	19,000	41	24	37,800	29,800	1	5
Taiwan	--	--	3,990	335	--	--	389,000	282,000	14,000	485
Thailand	(3)	3	--	--	--	--	5	3	145,000	47,900
United Kingdom	767	141	10,500	7,610	1,920	139	117,000	88,400	1,440,000	420,000
Uzbekistan	--	--	--	--	--	--	32,700	24,400	--	--
Vietnam	--	--	--	--	--	--	--	--	18,600	230
Other	134	124	8,720	6,110	7	14	6,220	4,940	47,300	21,200
Total	455,000	305,000	282,000	154,000	2,950	425	1,800,000	1,330,000	5,700,000	1,300,000

-- Zero.

<sup>1</sup>Table includes data available through September 26, 2023. Data are rounded to no more than three significant digits; may not add to totals shown.<sup>2</sup>Containing 99.5% or more by weight of silver.<sup>3</sup>Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 8  
SILVER: WORLD MINE PRODUCTION, BY COUNTRY OR LOCALITY<sup>1</sup>

(Kilograms)

Country or locality <sup>2</sup>	2018	2019	2020	2021	2022
Algeria	26	20	12	12 <sup>e</sup>	12 <sup>e</sup>
Argentina	1,023,768	1,055,000 <sup>r</sup>	706,000 <sup>r</sup>	824,200 <sup>r</sup>	912,939 <sup>e</sup>
Armenia <sup>c</sup>	19,500	22,800	23,100	22,200	18,417
Australia	1,254,000	1,325,000	1,337,000 <sup>r</sup>	1,330,000 <sup>r</sup>	1,167,000
Azerbaijan	3,229	3,820	4,310	4,858 <sup>r</sup>	7,777
Bolivia	1,191,024	1,152,628	929,909 <sup>r</sup>	1,289,456 <sup>r</sup>	1,214,301
Botswana	--	--	--	10,383	31,174
Brazil	71,000	69,000 <sup>r</sup>	69,000 <sup>r</sup>	73,000 <sup>r</sup>	76,000
Bulgaria	41,315	35,145	32,760	31,816	32,000 <sup>e</sup>
Burkina Faso	8,000 <sup>e</sup>	9,000 <sup>e</sup>	10,012	8,897 <sup>r</sup>	7,326
Canada <sup>3</sup>	392,000	398,773 <sup>r</sup>	306,913 <sup>r</sup>	319,119 <sup>r</sup>	334,480 <sup>e</sup>
Chile	1,370,237	1,309,321	1,575,794	1,383,041 <sup>r</sup>	1,274,363
China	3,422,000	3,443,000	3,405,000	3,511,000 <sup>r</sup>	3,480,000
Colombia	16,691 <sup>r</sup>	14,479 <sup>r</sup>	19,948 <sup>r</sup>	26,191 <sup>r</sup>	32,650
Côte d'Ivoire	137	--	--	2,000	-- <sup>e</sup>
Cyprus	180	97	486	-- <sup>r</sup>	--
Dominican Republic	166,500	108,700	87,900 <sup>r</sup>	79,700 <sup>r</sup>	79,679
Ecuador	192	2,892	1,792	2,273 <sup>r</sup>	2,000 <sup>e</sup>
Eritrea	31,000	44,836	65,284	68,624	49,855
Ethiopia	1,000 <sup>e</sup>	1,000 <sup>e</sup>	1,000 <sup>e</sup>	2,800	2,800 <sup>e</sup>
Fiji <sup>4</sup>	413	692	479	622 <sup>r</sup>	425 <sup>e</sup>
Finland	12,849	40,461	54,833	45,338 <sup>r</sup>	35,182
Georgia	3,000 <sup>e</sup>	4,052	11,172	12,674	22,420
Ghana <sup>c</sup>	1,800	1,800	1,800	1,800	1,800
Greece	25,237	28,161	30,209	29,281	32,870
Honduras	31,182	43,579	45,000 <sup>e</sup>	46,524	46,000 <sup>e</sup>
India	648,600	633,176	682,000 <sup>e</sup>	690,497 <sup>r, e</sup>	693,608 <sup>e</sup>
Indonesia	309,000	487,000	335,200	397,900 <sup>r</sup>	438,290
Ireland	1,160	1,578	918	1,342	2,750
Japan	3,596	3,492	1,757	1,751 <sup>r</sup>	1,746
Kazakhstan	369,000 <sup>e</sup>	1,022,068 <sup>r</sup>	1,035,181 <sup>r</sup>	1,004,789 <sup>r</sup>	1,052,858 <sup>e</sup>
Korea, North <sup>c</sup>	20,000	20,000	20,000	20,000	20,000
Korea, Republic of	7,090	5,245	5,739	10,001 <sup>r</sup>	7,100
Kyrgyzstan	16,000	14,000	11,700	6,000 <sup>e</sup>	6,000 <sup>e</sup>
Laos	37,465	34,443	34,893	25,797	24,883
Malaysia	1,542	686	423	440 <sup>e</sup>	440 <sup>e</sup>
Mexico	6,049,626 <sup>r</sup>	5,841,233 <sup>r</sup>	5,604,847 <sup>r</sup>	6,096,281 <sup>r</sup>	6,195,813
Mongolia	52,876 <sup>r</sup>	49,766 <sup>r</sup>	52,876 <sup>r</sup>	55,986 <sup>r</sup>	49,766
Morocco	243,000	284,000	249,000	248,000 <sup>r</sup>	263,000
Namibia <sup>5</sup>	4,666	5,598 <sup>r</sup>	6,998 <sup>r</sup>	4,070 <sup>r</sup>	5,048
New Zealand	6,332	4,060	1,393	3,051 <sup>r</sup>	3,922
Nicaragua	20,980	17,760	20,411	23,160	23,000 <sup>e</sup>
Niger <sup>c</sup>	120	120	120	--	--
Pakistan <sup>c</sup>	3,000	3,000	3,000	--	--
Panama	--	35,217	49,627	78,419	87,498
Papua New Guinea	93,000 <sup>r</sup>	146,000	119,000	91,000 <sup>r</sup>	84,000
Peru	4,160,162	3,860,306	2,723,879 <sup>r</sup>	3,333,632 <sup>r</sup>	3,079,790
Philippines	29,782	31,267	24,024	30,856	56,227
Poland	1,264,300	1,249,000	1,218,000	1,303,000	1,315,800
Portugal	90,820	95,271	95,954	98,000 <sup>r</sup>	78,000
Russia	1,341,000 <sup>r</sup>	1,391,000 <sup>r</sup>	1,309,000 <sup>r</sup>	1,212,000 <sup>r</sup>	1,280,000
Serbia	839	1,676	1,550	4,800	7,600 <sup>e</sup>
Slovakia	345	295	269	328 <sup>r</sup>	354
Solomon Islands <sup>c</sup>	190	180	140	120	230
South Africa	46,467	55,903	38,118 <sup>r</sup>	37,147 <sup>r</sup>	45,704
Spain	88,514	77,501	92,662	84,000 <sup>r</sup>	72,000
Sweden	443,624 <sup>r</sup>	419,926 <sup>r</sup>	400,929	428,585 <sup>r</sup>	460,000

See footnotes at end of table.

TABLE 8—Continued  
SILVER: WORLD MINE PRODUCTION, BY COUNTRY OR LOCALITY<sup>1</sup>

(Kilograms)

Country or locality <sup>2</sup>	2018	2019	2020	2021	2022
Tajikistan	6,300 <sup>e</sup>	10,800	11,600 <sup>e</sup>	11,100 <sup>e</sup>	12,000 <sup>e</sup>
Tanzania	12,262	12,607	13,187	9,324 <sup>r</sup>	13,602
Turkey	197,320	241,590 <sup>r</sup>	98,270 <sup>r</sup>	162,670 <sup>r</sup>	143,260
United Kingdom	--	130	100 <sup>r</sup>	400 <sup>r</sup>	1,328
United States	934,000	981,000	1,080,000	1,020,000	1,010,000
Uzbekistan	224,000	219,200	237,600	238,100 <sup>r</sup>	218,000
Zimbabwe	1,542	1,493	1,522	1,500	1,583
Total	25,800,000 <sup>r</sup>	26,400,000 <sup>r</sup>	24,300,000 <sup>r</sup>	25,900,000 <sup>r</sup>	25,600,000

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

<sup>1</sup>Table includes data available through August 14, 2023. 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.

<sup>2</sup>In addition to the countries and (or) localities listed, silver may have been produced in other countries, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Silver content of concentrates produced.

<sup>4</sup>Mine output, silver content.

<sup>5</sup>Silver content of concentrates, estimated.