



# 2008 Minerals Yearbook

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## SILVER

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By William E. Brooks

**Domestic survey data and tables were prepared by Lisa D. Miller, statistical assistant, and the world production table was prepared by Linder Roberts, international data coordinator.**

In 2008, the United States produced 1,250 metric tons (t) of silver, a slight decrease compared with revised 2007 domestic silver production of 1,280 t, and accounted for approximately 6% of world mine production of 21,300 t. Silver was produced in 11 States in 2008, and Alaska remained the country's leading silver-producing State, followed by Nevada and Idaho. Approximately 99% of domestic silver was produced from base-metal ores at 13 mines and from precious-metal ores at 12 mines.

The price of silver averaged \$14.87 per troy ounce in 2008, an 11% increase compared with the revised 2007 average price of \$13.43 per troy ounce, according to Platts Metals Week. The price of silver peaked at \$20.80 per troy ounce on March 13, but was still below the high price of \$50.35 per troy ounce in 1980. Increased investment was the main factor in the higher average silver price. A rise in the price of gold, oil, and commodities in general, was also an important factor in the increased silver price.

Traditional use categories for silver included coin and medal fabrication; industrial applications, including electrical and electronics components; jewelry and silverware; and photography. In 2008, the global use of silver for jewelry, photography, and silverware continued to decline. The use of silver for industrial and electronics applications also declined in 2008 even though silver is widely used in applications such as radio-frequency identification devices (RFIDs), which are used in barcodes, casino chips, passports, and speedpasses, as well as other electronics applications, such as flat-screen televisions. Owing to the surge in investment-related purchases of bullion coins, especially in the United States and Europe, the global use of silver for coin and medal fabrication increased by 63% in 2008 (Silver Institute, The, 2009, p. 23).

U.S. imports for consumption of refined silver in 2008 decreased by 6% compared with those in 2007. U.S. exports of silver bullion decreased to 685 t in 2008 compared with revised 797 t exported in 2007. In 2008, Mexico was the leading source of imported refined silver into the United States, followed by Canada, Peru, and Chile. India was the leading destination for exported silver, followed by Canada, Japan, and the United Kingdom.

In 2008, silver was mined in approximately 60 countries; global production was slightly higher than that in 2007, and Peru was the leading producer, followed by Mexico, China, and Australia.

## Legislation and Government Programs

On December 3, 2008, the amount and value of all custodial silver reserves in the U.S. Mint were 498,000 kilograms (kg) of silver with a total market value of \$207 million at \$12.96 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 section 5117 (b) and 31 U.S. Code section 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 (U.S. Mint, 2009). Its six facilities are in Denver, CO; Fort Knox, KY; Philadelphia, PA; San Francisco, CA; Washington, DC; and West Point, NY.

## Production

Domestic mine production data were compiled from 36 operations. Of these operations, 33 responded to the U.S. Geological Survey (USGS) canvass, representing 100% of U.S. mine production listed in table 1. Domestic mine production of silver, which totaled 1,250 t in 2008, was 3% less than the revised domestic mine production of 1,280 t in 2007. Silver was mostly produced as a byproduct from gold and base-metal ores, although three mines produced silver as a principal product.

Owing to conclusion of mining during 2007 at Coeur d'Alene Mines Corp.'s (Coeur d'Alene, ID) Rochester Mine, an open pit operation in northwestern Nevada, silver production from that mine in 2008 was 35% lower than that in 2007 as activities were limited to residual leaching (Silver Institute, The, 2009, p. 25).

In 2008, the Lucky Friday Mine, Hecla Mining Co.'s (Coeur d'Alene, ID) flagship mine in the Silver Valley, ID, produced 90 t of silver, a slight decrease from 2007 production. Hecla purchased 100% of the Greens Creek, AK, joint venture, which is considered to be the world's fifth ranked silver mine in terms of silver production, from Rio Tinto (London, United Kingdom) subsidiaries in April (Hecla Mining Co., 2008).

Since taking ownership of Galena Mine and mill, the Coeur Mine and mill, and the Caladay project in 2006, U.S. Silver Corp. (Toronto, Ontario, Canada) conducted an aggressive exploration and development program at its properties in the Silver Valley, ID. As of January 1, 2009, reserves of copper-silver ore contained 525 t of silver, and reserves of lead-silver ore contained 125 t of silver (U.S. Silver Corp., 2009b). In 2008, the company examined its Silver Valley operations as a result of the change in commodity demand and prices and decided to release four contractor groups as well as downsize the hourly workforce and the office staff (U.S. Silver Corp., 2008). Additional cost-saving measures included a 10% salary reduction for all salaried personnel and a similar reduction in wages for the hourly workforce. Repair work on the Galena shaft has been suspended until cash flow improved, and the company negotiated with suppliers for cost reductions for goods and services (U.S. Silver Corp., 2009a).

Revett Minerals Inc. (Spokane Valley, WA) reported 1.3 million metric tons (Mt) of ore processed and 37 t of silver produced in 2008 from the Troy Mine in northwestern Montana.

The company commenced preliminary work at its Rock Creek exploration property, also in northwestern Montana. Grading and site preparation activities commenced, and payments were made to the Montana Department of Fish, Wildlife, and Parks as stipulated in its grizzly bear mitigation program (Revett Minerals Inc., 2008). However, development of the Rock Creek project was challenged on environmental grounds by several organizations, and Revett indicated that it did not have sufficient funds to commence work on the evaluation adit, develop the mine, or begin mining operations (Revett Minerals Inc., 2009, p. 34).

Apollo Gold Corp.'s (Denver, CO) Montana Tunnels Mine, MT, approximately 8 kilometers (km) west of Jefferson City, MT, produced gold, lead, silver, and zinc. The mine is a 50% joint venture with Elkhorn Tunnels LLC (Aspen, CO), and Apollo was the operator of the mine. The mill processed an average throughput of 12,300 metric tons per day (t/d) of ore, and Apollo's 50% share of 2008 silver production was 7.5 t of silver, 0.8 t of gold, 3,500 t of lead, and 8,600 t of zinc. In December, ore in the company's L Pit was exhausted; however, permits were received that would allow expansion of the L Pit, which would then become the M Pit. Stockpiled ore at Montana Tunnels was expected to be milled until the end of April 2009, at which time the mill was to be placed on care-and-maintenance status (Apollo Gold Corp., 2009, p. 7).

Shoshone Silver Mining Co. (Wallace, ID) commenced a core drilling program on its Lakeview properties in Idaho. Shoshone transitioned from an exploration company to a production company, with commencement of production at the centrally located Lakeview mill. The mill generated concentrates from stockpiled ore using its 100-t/d ball mill and newly added zinc cells. Work began on bringing a 250-t/d ball mill back into production. The Lakeview District is approximately 56 km north of the Silver Valley, and the company holds many other claims in Idaho (Shoshone Silver Mining Co., 2009).

## Consumption

Domestic consumption of silver was approximately 5,800 t in 2007, which was slightly more than consumption of 5,600 t in 2007 (Silver Institute, The, 2009, p. 52).

**Coin and Medal Fabrication.**—Approximately 780 t of silver was used for coins and medals in the United States in 2008, a 56% increase from the approximately 500 t used in 2007 (Silver Institute, The, 2009, p. 82). Currently, the most significant use of silver in this application is in the fashioning of medals and commemorative pieces. The use of silver in circulating coins has mostly been phased out. Commemorative coins are produced by the U.S. Mint at its San Francisco and West Point locations.

**Industrial Applications.**—Approximately 3,700 t of silver was used in the United States in 2008 for industrial applications, a 4% increase from the 3,550 t used in 2007 (Silver Institute, The, 2009, p. 54). Owing to silver's excellent electrical and thermal conducting properties, silver is used in conductors, contacts, fuses, timers, and switches. Other industrial applications of silver include conductive adhesives; in the preparation of thick-film, silver-palladium pastes for use as silkscreen circuit paths in multilayer ceramic capacitors; in the manufacture of membrane switches; in flat-screen televisions

with plasma display panels; in silver-backed solar mirrors; as a film in electrically heated automobile windows; in smart cards; and in solar cells. A small amount of silver is used as a miniature antenna in RFIDs, and the U.S. Department of State has approved the use of passports with embedded RFIDs. These passports are readable at 6 meters, include a digital signature that helps identify if the passport's data have been altered, and the signal is blocked when the passport cover is closed. This may reduce the wait at checkpoints (Corelis, 2008).

In 2008, other industrial applications for silver included its use in batteries, bearings, brazing and soldering, catalysts, medical applications, mirrors, photovoltaic cells, solar energy production, and water purification. Silver is also used as a coating material for compact disks and digital video disks (Silver Institute, The, 2009, p. 58). Owing to silver's antibacterial properties, silver was used in clothing, classroom notebooks, dental amalgam, disinfectants, laundry machines, shoes, and toothbrushes. Dental amalgam, though in declining use because of its mercury content, may contain 34% to 38% silver (Lawrence, 1995). Silver embedded in locker room surfaces is being used to reduce staph infections, and silver-based disinfectants have been introduced as a low-cost, environmentally sensitive option for use in care centers and food processing facilities.

**Jewelry and Silverware.**—In 2008, the U.S. demand for silver for jewelry and silverware was 410 t, an 8% decrease compared with the 440 t used in 2007 (Silver Institute, The, 2009, p. 68). World consumption of silver for jewelry and silverware decreased by about 3%, to 6,700 t in 2008, from 6,900 t in 2007. The use of nonprecious metals, such as steel, for bracelets and other items is becoming more widespread and helps to explain the decline in the silver jewelry market.

**Photography.**—Silver is one of the essential materials used in the manufacture of films and photographic papers. Eastman Kodak Co. (Rochester, NY) purchased silver from numerous suppliers; however, the decline in the use of silver for photographic use began in 2000 because of digital camera technology and the decline in the production of color film and paper. Total net sales from Eastman Kodak's reorganized Film, Photofinishing, and Entertainment Group declined to \$3.0 billion in 2008 from \$3.6 billion in 2007 (Eastman Kodak Co., 2009, p. 33). Domestic use of silver for photographic use declined to 910 t in 2008 from 1,120 t in 2007 (Silver Institute, The, 2009, p. 63). The overall decline in silver use in the photographic industry is also reflected in the film sector in which 1.1 billion rolls of silver-bearing film were sold in 2008, compared with 1.4 billion rolls sold in 2007. Silver-bearing photographic paper consumption declined to 1,140 million square meters (m<sup>2</sup>) in 2008 from 1,260 million m<sup>2</sup> in 2007. Overall use of silver in the photographic industry declined to 3,270 t in 2008 from 3,890 t in 2007 (Silver Institute, The, 2009, p. 64). Other broad photographic-use categories included commercial photography, dental and industrial x rays, graphic arts, and medical x rays.

## Prices

In 2008, the average price of silver was \$14.87 per troy ounce, which was 11% above the 2007 average price of \$13.43 per

troy ounce. The price peaked at \$20.80 per troy ounce on March 13. Owing to the movement of physical silver to the Exchange Traded Fund (ETF) inventory agency in London, exports of silver rose dramatically in 2006. Silver inventories in the three physically backed funds, iShares Silver Trust, ETF Securities, and Swiss Zürcher Kantonalbank, totaled approximately 8,240 t at yearend 2008, compared with 5,350 t at yearend 2007 (Silver Institute, The, 2009, p. 100).

## Foreign Trade

U.S. imports of refined silver declined from 4,760 t in 2007 to 4,430 t of refined silver in 2008. Exports of refined silver declined from 730 t in 2007 to 555 t in 2008. Principal import sources in 2008 of silver ores and concentrates, ash and residues, bullion, and dore included Mexico (2,610 t), Canada (781 t), and Peru (645 t) (table 6). Principal export destinations in 2008 included India (143 t), Canada (126 t), and Japan (66 t) (table 4). According to The Silver Institute (2009, p. 46), total silver imports into India increased to 5,000 t in 2008, an alltime record. Imports surged when prices were low in October and November. U.S. exports of bullion to the United Kingdom returned to a lower level of 60 t. This was after a previous high of 1,180 t of bullion shipped in 2006 for startup ETF inventories in London.

## World Review

World mine production of silver was 21,300 t in 2008, a slight increase from the 21,100 t of silver produced in 2007 (table 8). According to the U.S. Geological Survey, in Peru, the world's leading silver-producing country, silver production increased by 5%. Silver production also increased in Mexico (3%) and in China (4%), the second and third ranked silver producers, respectively. Regionally, silver production increased in the Commonwealth of Independent States (CIS) by 8%, to 1,880 t in 2008 from 1,740 t in 2007; in Asia by 6%, to 3,630 t in 2008 from 3,420 t in 2007; and in Latin America by 5%, to 6,690 t in 2008 from 6,350 t in 2007 (Silver Institute, The, 2009, p. 26). In 2008, silver supplied to the market from above-ground stocks of silver decreased by 14%, to 4,720 t in 2008, from 5,470 t in 2007 (Silver Institute, The, 2009, p. 35).

**Argentina.**—Pan American Silver Corp. (Vancouver, British Columbia, Canada) reported that the opening of its newest mine, Manantial Espejo, would be delayed and initial silver production was scheduled for November. The delay in opening was because of delayed equipment deliveries and the loss of critical electrical equipment enroute; however, the company began pouring dore on December 29 (Pan American Silver Corp., 2008a; 2009).

**Australia.**—Owing to increases in lead-zinc production, total silver output in Australia increased by 48 t. BHP Billiton's Cannington Mine, one of the world's leading producers of silver as a principal product, indicated 1,080 t of silver produced in 2008 even with a 90 t decline in production owing to reduced head grades (Silver Institute, The, 2009, p. 29). Silver is also produced at the company's multiminerall Olympic Dam Mine.

**Bolivia.**—Apex Silver Mines Ltd. (Denver, CO) announced the sale of Apex Silver's interest in the San Cristobal Mine, in the Potosi District of southwestern Bolivia, to Sumimoto Corp.

(Tokyo, Japan); however, Apex would continue to manage the mine after the sale and financial restructuring (Apex Silver Mines Ltd., 2008). Total throughput at San Cristobal during the fourth quarter exceeded third quarter throughput by 4%, and production for 2008 totaled 353,000 t of zinc concentrate and 103,000 t of lead concentrate containing 510 t of silver. Concentrator throughput at San Cristobal averaged 38,200 t/d (Apex Silver Mines Ltd., 2009, p. 50).

During its initial, partial-year startup phase, Coeur d'Alene Mines Corp.'s (Coeur d'Alene, ID) San Bartolome Mine produced 90 t of silver and was expected to produce 280 t during its first full year of production in 2009 (Coeur d'Alene Mines Corp., 2009, p. 3).

**China.**—Silver production from China increased by 4%, to 2,800 t in 2008 from 2,700 t in 2007 (table 8). Silvercorp Metals, Inc. (Vancouver), the leading silver producer in China, through its wholly owned subsidiary Victor Mining Ltd., entered into an agreement to acquire 77.5% interest in the Ying silver-lead-zinc project in Henan Province. The company also entered into an agreement to acquire 60% interest in the HPG silver-gold-lead operating mine within the Ying project. The company generated \$44.7 million in silver sales in 2008 (Silvercorp Metals, Inc., 2009).

**Mexico.**—In 2008, Mexico was the world's second-ranked producer of silver. Production increased by 4%, to 3,240 t in 2008 from 3,130 t in 2007. In April, Fresnillo Plc (London) was spun off from parent company Industrias Peñoles S.A. de C.V., and in 2008, Fresnillo became one of the world's leading primary silver producers (Fresnillo Plc., 2009). The company produced 1,080 t of silver in 2008, of which 1,050 t was produced from the Fresnillo Mine in Zacatecas. Industrias Peñoles produced 350 t of silver in 2008, a 5% decrease from revised production of 370 t in 2007 (Silver Institute, The, 2009, p. 24).

Coeur d'Alene Mines' new mine, the Palmarejo Mine, was brought online in 2008 and has the capacity to produce 280 metric tons per year of silver (Coeur d'Alene Mines Corp., 2009, p. 3).

**Peru.**—As in 2007, Peru was the world's leading silver producer. Production increased by 5%, to 3,680 t in 2008 from 3,500 t in 2007. Production at Cia. Minas Buenaventura's (Lima, Peru) Uchucchacua Mine, Peru's leading silver-producing mine, increased by 13%, to 350 t in 2008 from 310 t in 2007. In 2008, four mines in Peru were among the top 15 silver-producing mines in the world (Silver Institute, The, 2009, p. 99). In decreasing order of production, these include Minas Buenaventura's Uchucchacua Mine, Hochchild Mining plc's Arcata Mine and Pallancata Mine, and Pan American Silver Corp.'s Huaron Mine. At Hochchild Mining's Pallancata Mine, silver production increased to 130 t in 2008 from 22 t in 2007.

Pan American Silver Corp. (Vancouver) reported high-grade drill results for the newly discovered Morro Solar vein at the Morococha Mine. Drill results included a 5.1-meter (m) intercept with 949 grams per ton (g/t) of silver; a 1.37-m intercept with 800 g/t silver; and an 0.85-m intercept with 1.09 g/t silver (Pan American Silver Corp., 2008b). After a review of all its mines, the company initiated the process to suspend

operations at its Quiruvilca Mine in 2009 (Pan American Silver Corp., 2009).

## Outlook

In 2008, world silver consumption was the same as 2007 (Silver Institute, The, 2009, p. 79). World silver use in photography continued to fall; however, silver use in photography was expected to level off as silver continues to be used in high-quality paper prints from digital sources. Washing machines and dryers that use antimicrobial silver and odor-absorbing nanoparticles are now available. Pens, paper, keyboards, telephones, and the computer mouse that use antimicrobial silver technology are now being offered. “Thick film” applications of silver are being used in the ink market. RFID applications for tracking and shipments includes high data capacity tags, readers, and computer systems. The use of silver in the tags ranges from 6 to 10 milligrams per tag. By substituting silver for platinum, the cost of precious metals in the auto catalytic converters will be cut by more than 90% (Silver Institute, The, 2009, p. 61). ETF inventories continue to increase and indicate continued investor interest. Silver-based biocides indicate a new generation of safe and environmentally friendly use of silver for the control of bacterial, viral and fungal infections, on hard surfaces and in water systems.

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

		2004	2005	2006	2007	2008
United States:						
Mine production:						
Quantity	metric tons	1,250	1,230	1,160	1,280	1,250
Value	thousands	\$268,000	\$289,000	\$431,000	\$554,000	\$600,000
Refinery production:						
Domestic and foreign ores and concentrates	metric tons	1,140	2,530	2,210 <sup>r</sup>	791 <sup>r</sup>	779
Scrap (old and new)	do.	1,920	981	1,110 <sup>r</sup>	1,220 <sup>r</sup>	1,530
Exports, refined	do.	422	341	1,670	797	685
Imports for consumption, refined	do.	4,100	4,550	4,840	5,000	4,680
Stocks, December 31:						
Industry	metric tons	131	86	98	70	153
Futures exchanges	do.	3,580	3,380	3,150	4,130	4,160
U.S. Department of the Treasury	do.	220	220	220	220	220
Price, average <sup>2</sup>	dollars per troy ounce	6.69	7.34	11.61	13.43 <sup>r</sup>	14.87
Employment, mine and mill workers <sup>3</sup>		900 <sup>r</sup>	900 <sup>r</sup>	900 <sup>r</sup>	900	900
World, mine production	metric tons	20,000 <sup>r</sup>	20,800	20,300 <sup>r</sup>	21,100 <sup>r</sup>	21,300 <sup>e</sup>

<sup>e</sup>Estimated. <sup>r</sup>Revised. do. Ditto.

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

<sup>2</sup>Price data are the annual Handy & Harman quotations published in Platts Metals Week.

<sup>3</sup>Employment data are from the U.S. Department of Labor, Mine Safety and Health Administration.

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

(Kilograms)

State	2006	2007	2008
Nevada	260,000	243,000	235,000
Other <sup>2</sup>	895,000	1,040,000	1,020,000
Total	1,160,000	1,280,000	1,250,000

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

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

TABLE 3  
LEADING SILVER-PRODUCING MINES IN THE UNITED STATES IN 2008, IN ORDER OF OUTPUT<sup>1</sup>

Rank	Mine	County and State	Operator	Source of silver
1	Red Dog	Northwest Arctic, AK	Teck Cominco Alaska Inc.	Zinc-lead ore.
2	Greens Creek	Juneau, AK	Hecla Mining Co.	Zinc-silver ore.
3	Lucky Friday	Shoshone, ID	do.	Silver ore.
4	Bingham Canyon	Salt Lake, UT	Kennecott Utah Copper Corp.	Copper-molybdenum ore.
5	Rochester	Pershing, NV	Coeur d'Alene Mines Corp.	Silver ore.
6	Midas	Elko, NV	Newmont Mining Corp.	Gold ore.
7	Galena	Shoshone, ID	U.S. Silver Corp.	Silver ore.
8	Phoenix	Lander, NV	Newmont Mining Corp.	Gold-copper ore.
9	Mission Complex <sup>2</sup>	Pima, AZ	Asarco LLC	Copper-molybdenum ore.
10	Troy	Lincoln, MT	Revelt Minerals Inc.	Copper-silver ore.
11	Bagdad	Yavapai, AZ	Freeport-McMoRan Copper & Gold Inc.	Copper-molybdenum ore.
12	Smoky Valley Common Operation	Nye, NV	Kinross Gold Corp.	Gold ore.
13	Montana Tunnels	Jefferson, MT	Apollo Gold Corp.	Do.
14	Continental Pit	Silver Bow, MT	Montana Resources	Copper-molybdenum ore.
15	Carlin Mines Operations <sup>3</sup>	Elko, Eureka, Humboldt, Lander, NV	Newmont Mining Corp.	Gold-copper ore.
16	Ray	Pinal, AZ	Asarco LLC	Copper ore.
17	Chino	Grant, NM	Freeport-McMoRan Copper & Gold Inc.	Copper-molybdenum ore.
18	Denton-Rawhide	Mineral, NV	Kennecott Minerals Co.	Gold ore.
19	Pinto Valley	Gila, AZ	BHP Copper Inc.	Copper ore.
20	Goldstrike <sup>4</sup>	Eureka, NV	Barrick Gold Corp.	Gold ore.
21	Fletcher	Reynolds, MO	Doe Run Resources Corp.	Lead ore.
22	Cresson	Teller, CO	AngloGold Ashanti Ltd. <sup>5</sup>	Gold ore.
23	Brushy Creek	Reynolds, MO	Doe Run Resources Corp.	Lead ore.
24	Buick	Iron, MO	do.	Do.
25	Florida Canyon	Pershing, NV	Jipangu Inc.	Gold ore.

Do., do. Ditto.

<sup>1</sup>The mines on this list accounted for more than 99% of U.S. mine production in 2008.

<sup>2</sup>Includes Eisenhower, Mission, Pima, and San Xavier Mines.

<sup>3</sup>Includes Carlin East, Deep Post, Gold Quarry, Lone Tree, Mule Canyon, Pete, Rain/Emigrant, and Twin Creeks Mines.

<sup>4</sup>Formerly listed as Betze-Post Mine.

<sup>5</sup>On July 1, AngloGold Ashanti Ltd. purchased the remaining 33% of the Cripple Creek & Victor Gold Mining Co. from Golden Cycle Gold Corp.

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

Year and country	Silver 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)
2007	15,800	\$7,020	660,000	\$274,000	51,500	\$21,700	727,000	\$303,000
2008:								
Australia	12	7	37,300	23,400	--	--	37,300	23,400
Brazil	--	--	933	299	--	--	933	299
Canada	289	100	123,000	58,300	2,830	904	126,000	59,300
Colombia	133	40	--	--	--	--	133	40
Dominican Republic	191	86	162	66	--	--	353	152
Finland	--	--	--	--	404	165	404	165
Germany	1,420	729	38,500	34,700	46	19	39,900	35,400
Guatemala	--	--	121	52	--	--	121	52
Hong Kong	140	62	--	--	--	--	140	62
India	--	--	106,000	38,600	36,900	14,000	143,000	52,600
Ireland	31,500	6,210	20	11	--	--	31,500	6,220
Italy	--	--	328	92	--	--	328	92
Japan	--	--	65,800	24,400	--	--	65,800	24,400
Korea, Republic of	44,300	21,700	--	--	--	--	44,300	21,700
Latvia	8,970	1,610	--	--	--	--	8,970	1,610
Lebanon	--	--	202	79	--	--	202	79
Mexico	6,770	3,120	1,360	578	65	24	8,200	3,720
New Zealand	--	--	47	24	846	341	892	365
Norway	--	--	--	--	4,170	1,690	4,170	1,690
Peru	--	--	--	--	399	158	399	158
Singapore	--	--	--	--	4,060	1,400	4,060	1,400
Spain	--	--	57	31	679	292	736	323
Sweden	29,000	15,000	--	--	--	--	29,000	15,000
Switzerland	--	--	750	346	15,700	6,370	16,400	6,720
Thailand	851	315	--	--	--	--	851	315
Turkey	--	--	--	--	302	145	302	145
United Kingdom	6,490	1,230	25,100	12,900	28,400	10,600	60,000	24,700
Uruguay	--	--	13,600	8,740	--	--	13,600	8,740
Other (9 countries)	252	74	74	38	--	--	326	112
Total	130,000	50,300	413,000	203,000	94,800	36,200	638,000	289,000

-- Zero.

<sup>1</sup>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<sup>1</sup>

Year and country	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)
2007	70,000	\$22,400 <sup>r</sup>	1,500,000	\$302,000	47,100	\$4,930	659,000	\$150,000	238,000	\$233,000
2008:										
Argentina	368	81	50	23	55	4	396	95	--	--
Australia	589	229	81	38	380	40	363	147	38,500	21,700
Austria	--	--	230	104	--	--	39	19	--	--
Bahrain	--	--	56	26	--	--	273	46	--	--
Barbados	171	38	--	--	--	--	--	--	--	--
Belgium	265	111	4,980	2,440	124	24	346	100	453,000	120,000
Bolivia	218	32	--	--	--	--	10	5	--	--
Brazil	732	365	--	--	--	--	868	157	--	--
Canada	9,580	4,500	24,300	5,970	24,200	1,740	458,000	129,000	207,000	432,000
China	983	398	87,500	48,900	1,820	635	4,380	1,320	42,900	82,700
Costa Rica	224	80	10	5	197	17	--	--	--	--
Czech Republic	--	--	154	62	--	--	28,400	8,750	728	329
Denmark	15	7	--	--	--	--	79	22	200	38
Dominican Republic	492	241	361	191	32	15	838	184	28	27
East Timor	--	--	--	--	--	--	--	--	400	179
Ecuador	--	--	--	--	80	37	38	6	--	--
Egypt	--	--	--	--	--	--	432	216	--	--
Finland	--	--	--	--	--	--	1,180	428	--	--
France	43	9	48,600	25,400	26	3	16,900	4,000	64	36
Germany	851	308	83,100	42,700	215	55	28,800	10,200	620,000	270,000
Honduras	--	--	1,050	707	--	--	--	--	--	--
Hong Kong	6,610	2,790	111,000	63,400	--	--	33,900	7,750	1,410	2,780
India	14,200	3,110	288	152	115	12	3,710	771	314	1,590
Indonesia	--	--	--	--	99	19	295	116	1	7
Ireland	--	--	25	14	--	--	168	46	--	--
Israel	429	73	36	16	234	19	1,430	265	--	--
Italy	--	--	339	195	38	4	4,720	1,050	885,000	306,000
Japan	43	23	155,000	82,500	--	--	8,320	2,170	47,400	206,000
Jordan	140	20	--	--	--	--	1,190	279	--	--
Korea, Republic of	294	91	82,900	44,700	24	7	863	180	14,900	16,800
Lithuania	--	--	--	--	--	--	235	48	--	--
Malaysia	--	--	--	--	--	--	3,760	882	202	1,010
Mexico	1,860	455	13,200	6,380	4,570	367	64,700	18,100	583	1,550
Netherlands	15	5	11,900	6,310	--	--	53	27	--	--
New Zealand	45	10	30	8	107	10	--	--	--	--
Pakistan	41	7	--	--	1,070	34	--	--	104	64
Panama	77	40	--	--	--	--	29	14	49	617
Philippines	154	42	--	--	16	14	659	162	--	--
Russia	1,450	341	--	--	--	--	9	5	--	--

See footnotes at end of table.

TABLE 5—Continued  
U.S. EXPORTS OF SILVER, BY COUNTRY<sup>1</sup>

Year and country	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)
2008—Continued:										
Saudi Arabia	--	--	68	\$32	--	--	285	\$104	2,110	\$24,700
Singapore	--	--	11,100	4,580	--	--	10,400	2,430	4	29
St. Lucia	--	--	--	--	--	--	11	5	--	--
Sweden	--	--	260	121	90	\$9	93	22	49,900	39,100
Switzerland	55	\$23	105	57	--	--	2,020	665	60,900	1,680,000
Taiwan	191	95	174,000	97,200	302	57	10,900	2,320	1,580	3,130
Thailand	4,260	1,020	6,490	3,240	--	--	3,050	770	23	94
Trinidad and Tobago	--	--	--	--	--	--	252	100	2	10
Turkey	94	15	--	--	--	--	1,190	579	--	--
United Arab Emirates	481	160	--	--	--	--	2,580	445	--	--
United Kingdom	1,760	638	72,900	37,800	75	11	22,700	4,780	137,000	1,070,000
Venezuela	--	--	56	22	798	94	104	40	--	--
Vietnam	839	328	32	15	--	--	634	109	99	495
Other (25 countries)	147	41	38	21	196	29	280	112	339	5,850
Total	47,700	15,700	890,000	473,000	34,900	3,260	720,000	199,000	2,570,000	4,290,000

<sup>1</sup>Revised. -- Zero.

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Containing 99.5% or more by weight of silver.

Source: U.S. Census Bureau.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF SILVER, BY COUNTRY<sup>1</sup>

Year and country	Silver 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)		Silver content (kilograms)	Value (thousands)	
2007	381	\$130	\$1,630	7,260	\$1,720,000	\$324,000	551,000	\$324,000	4,770,000	\$2,050,000			4,770,000	\$2,050,000	
2008:															
Australia	--	--	--	--	12,300	6,540	--	--	12,300	6,540	--	--	12,300	6,540	--
Bolivia	--	--	--	--	--	--	42,400	15,200	42,400	15,200	--	--	42,400	15,200	--
Canada	--	--	--	--	781,000	365,000	170	61	781,000	365,000	61	61	781,000	365,000	61
Chile	--	--	--	--	69,500	34,500	95,800	106,000	165,000	141,000	--	--	165,000	141,000	--
China	--	--	--	--	103,000	55,900	--	--	103,000	55,900	--	--	103,000	55,900	--
Colombia	--	--	--	--	475	199	5,940	3,210	6,420	3,410	--	--	6,420	3,410	--
Costa Rica	--	--	--	--	--	--	432	123	432	123	--	--	432	123	--
Dominican Republic	--	--	--	--	--	--	11	6	11	6	--	--	11	6	--
El Salvador	--	--	--	--	8	9	--	--	8	9	--	--	8	9	--
Guatemala	--	--	--	--	--	--	47,400	78,800	47,400	78,800	--	--	47,400	78,800	--
Honduras	--	--	--	--	--	--	68	40	68	40	--	--	68	40	--
Hong Kong	--	--	--	--	19,200	9,250	--	--	19,200	9,250	--	--	19,200	9,250	--
Israel	32	31	--	--	--	--	--	--	32	31	--	--	32	31	--
Italy	--	--	--	--	67	33	300	156	367	188	--	--	367	188	--
Japan	--	--	6	1	--	--	--	--	1	6	--	--	1	6	--
Mexico	--	--	--	--	2,370,000	1,140,000	236,000	173,000	2,610,000	1,310,000	--	--	2,610,000	1,310,000	--
Norway	--	--	--	--	--	--	40	5	40	5	--	--	40	5	--
Panama	--	--	--	--	--	--	793	319	793	319	--	--	793	319	--
Peru	--	--	--	--	500,000	237,000	144,000	340,000	645,000	577,000	--	--	645,000	577,000	--
Taiwan	--	--	1,280	4,850	--	--	--	--	4,850	1,280	--	--	4,850	1,280	--
Ukraine	--	--	--	--	--	--	1,010	310	1,010	310	--	--	1,010	310	--
United Kingdom	--	--	--	--	274	115	--	--	274	115	--	--	274	115	--
Total	32	31	1,280	4,850	3,860,000	1,850,000	574,000	717,000	4,440,000	2,570,000			4,440,000	2,570,000	

-- Zero.

<sup>1</sup>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<sup>1</sup>

Year and country	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)
	222,000	\$82,800	47,000 <sup>r</sup>	\$6,590 <sup>r</sup>	496	\$128	397,000	\$138,000	3,420,000 <sup>r</sup>	\$482,000
2007:										
2008:										
Argentina	--	--	--	--	--	--	--	--	32,200	9,150
Aruba	--	--	--	--	--	--	--	--	5	55
Australia	175	78	373	63	--	--	678	213	21,900	5,340
Austria	--	--	--	--	--	--	--	--	10	224
Belgium	--	--	--	--	--	--	--	--	7,940	637
Bolivia	--	--	--	--	--	--	--	--	154	1,780
Brazil	--	--	1,190	202	--	--	786	335	8,830	2,300
Canada	127,000	42,400	11,900	647	--	--	72,500	32,700	760,000	127,000
Chile	--	--	--	--	--	--	--	--	35	680
China	106	19	6,560	1,180	--	--	8	2	130,000	31,400
Colombia	75	42	--	--	--	--	--	--	59,300	3,710
Costa Rica	141	88	--	--	--	--	--	--	91,600	3,530
Czech Republic	--	--	--	--	--	--	--	--	47	66
Dominican Republic	39	10	12	2	--	--	--	--	12,500	5,250
Ecuador	--	--	--	--	--	--	--	--	3	60
El Salvador	--	--	--	--	--	--	--	--	10,000	90
Finland	--	--	--	--	--	--	--	--	10	526
France	--	--	239	41	--	--	--	--	172,000	3,830
Germany	280	33	32,900	5,900	6	4	3,050	1,820	1,270,000	177,000
Guatemala	--	--	--	--	--	--	--	--	20,800	11,800
Honduras	--	--	--	--	--	--	--	--	44	632
Hong Kong	--	--	--	--	--	--	--	--	31	683
Iceland	--	--	--	--	--	--	--	--	4	70
India	281	151	104	18	--	--	84	39	23,500	945
Indonesia	18	17	--	--	--	--	--	--	--	--
Ireland	--	--	--	--	--	--	--	--	2	3
Israel	--	--	--	--	--	--	--	--	8,200	353
Italy	577	233	(3)	5	--	--	88	39	2,950	69,500
Jamaica	--	--	--	--	--	--	--	--	2	33
Japan	--	--	1,090	88	--	--	5	4	2,530	58,800
Jordan	--	--	--	--	--	--	--	--	367	475
Korea, Republic of	14,500	3,270	291	51	--	--	--	--	27,700	14,300
Kuwait	--	--	--	--	--	--	--	--	16	304
Lebanon	--	--	--	--	--	--	--	--	28	525
Malaysia	--	--	881	87	--	--	--	--	631,000	10,000
Mali	--	--	--	--	--	--	--	--	88,100	850
Mexico	96,200	38,600	416	71	--	--	260,000	58,500	1,430,000	17,200
Netherlands	372	67	41	7	13	3	39	47	14,500	288

See footnotes at end of table.

TABLE 7—Continued  
U.S. IMPORTS FOR CONSUMPTION OF SILVER, BY COUNTRY<sup>1</sup>

Year and country	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)
2008—Continued:										
Netherlands Antilles	--	--	--	--	--	--	--	--	(3)	\$4
New Zealand	--	--	--	--	--	--	--	--	596	3,090
Nicaragua	--	--	--	--	--	--	--	--	3,220	4
Panama	--	--	--	--	--	--	--	--	190	425
Peru	2,680	\$1,850	--	--	1,700	\$478	80,900	\$40,500	72	346
Philippines	--	--	--	--	--	--	--	--	110,000	4,210
Poland	300	88	--	--	--	--	--	--	--	--
Saudi Arabia	--	--	--	--	--	--	--	--	31	2,110
Singapore	--	--	--	--	--	--	--	--	1,820	11,400
South Africa	--	--	--	--	--	--	--	--	69	1,280
Spain	--	--	--	--	--	--	--	--	14	3
Switzerland	350	195	73	\$12	--	--	--	--	1	20
Syria	--	--	--	--	--	--	--	--	7	129
Taiwan	--	--	20	10	--	--	19	19	61,900	45,500
Thailand	1	8	--	--	--	--	5	3	138	1,420
Ukraine	631	332	--	--	--	--	--	--	--	--
United Arab Emirates	--	--	--	--	--	--	--	--	2,020	1,430
United Kingdom	1,770	520	4,920	478	9,020	3,790	6	17	184,000	49,600
Uruguay	--	--	--	--	--	--	--	--	8	143
Venezuela	15	6	--	--	--	--	--	--	60	41
Total	246,000	88,000	61,000	8,860	10,700	4,280	418,000	134,000	5,190,000	681,000

<sup>1</sup>Revised. -- Zero.

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Containing 99.5% or more by weight of silver.

<sup>4</sup>Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 8  
SILVER: WORLD MINE PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Metric tons)

Country	2004	2005	2006	2007	2008 <sup>e</sup>
Algeria	(3)	(3)	(3)	(3)	(3) <sup>4</sup>
Argentina	172	264	254 <sup>r</sup>	256 <sup>r</sup>	256
Armenia <sup>e</sup>	4	4	4	4	4
Australia	2,224	2,417	1,727	1,879	1,926 <sup>4</sup>
Bolivia	407	420 <sup>r</sup>	472 <sup>r</sup>	525 <sup>r</sup>	1,114 <sup>p,4</sup>
Brazil <sup>5</sup>	35	38	30 <sup>e</sup>	36 <sup>r,p</sup>	35
Bulgaria <sup>e</sup>	45 <sup>r</sup>	55 <sup>r</sup>	65 <sup>r</sup>	55 <sup>r</sup>	55
Burma	1	2	1	(3) <sup>r</sup>	--
Canada	1,337	1,124	995	860 <sup>r</sup>	728 <sup>p,4</sup>
Chile	1,360	1,400	1,607	1,936	1,405 <sup>4</sup>
China <sup>e</sup>	2,450	2,500	2,600	2,700	2,800
Colombia	9	7	8	10	10 <sup>p,4</sup>
Congo (Kinshasa)	33	54	68	76	34 <sup>4</sup>
Costa Rica <sup>e</sup>	(3)	--	--	--	--
Ecuador	(3)	(3)	(3)	(3)	(3) <sup>p,4</sup>
Ethiopia	1	1	1	(3)	(3)
Finland	37	49	50	50	48
France <sup>e</sup>	1	1	1	1	1
Ghana	3	4	3	3	3
Greece	79	79 <sup>e</sup>	25	26	28
Guatemala	--	7	50	88 <sup>r</sup>	100 <sup>4</sup>
Honduras	48	54	55	50 <sup>r</sup>	12 <sup>4</sup>
India	15	32	31	82 <sup>r</sup>	96
Indonesia	262	321	261 <sup>r</sup>	269 <sup>r</sup>	201 <sup>4</sup>
Iran <sup>e</sup>	25	25	25	26	25
Ireland	7	6	4	4	4
Italy <sup>e,6</sup>	(3)	(3)	(3)	(3)	(3)
Jamaica	(3) <sup>e</sup>	--	--	--	--
Japan	79	54	11	5	2 <sup>4</sup>
Kazakhstan	733	832	830	800	700
Korea, North <sup>e</sup>	20	20	20	20	20
Korea, Republic of	5	4	2 <sup>r</sup>	1 <sup>r</sup>	1 <sup>4</sup>
Macedonia <sup>e</sup>	10	--	--	--	--
Malaysia	(3)	(3)	(3)	(3)	(3)
Mexico	2,569	2,894	2,970	3,135 <sup>r</sup>	3,236 <sup>p,4</sup>
Mongolia <sup>e</sup>	28	28	28	29 <sup>r</sup>	28
Morocco	196	196 <sup>e</sup>	195	195 <sup>e</sup>	190
Namibia	27	30	31 <sup>r</sup>	30	30
New Zealand	30	43	27	11 <sup>r</sup>	31 <sup>4</sup>
Nicaragua	3	3	3	3 <sup>e</sup>	3
Oman <sup>e</sup>	(3)	(3)	4 <sup>r,4</sup>	4 <sup>r,4</sup>	2 <sup>4</sup>
Papua New Guinea	56	51	51	51	51
Peru	3,060	3,206 <sup>r</sup>	3,471	3,494	3,686 <sup>4</sup>
Philippines	9	19	24 <sup>r</sup>	28 <sup>r</sup>	13 <sup>4</sup>
Poland	1,419 <sup>r</sup>	1,293 <sup>r</sup>	1,242 <sup>r</sup>	1,215 <sup>r</sup>	1,193 <sup>4</sup>
Portugal	24	24 <sup>r</sup>	20	24 <sup>r</sup>	24
Romania <sup>e</sup>	18	15	18	18	18
Russia <sup>e</sup>	1,277 <sup>3</sup>	1,350 <sup>3</sup>	1,250	1,200	1,300
Saudi Arabia	14	14	9 <sup>e</sup>	9	8 <sup>4</sup>
Serbia	1 <sup>r,7</sup>	3 <sup>r,7</sup>	2 <sup>e</sup>	4 <sup>r</sup>	4
South Africa	71	88	87	70	75 <sup>p,4</sup>
Spain	4	4	4 <sup>r</sup>	4	4
Sudan <sup>e</sup>	3 <sup>r</sup>	3 <sup>r</sup>	2 <sup>r,4</sup>	2 <sup>r,4</sup>	2
Sweden	293	310	268	270	265

See footnotes at end of table.

TABLE 8—Continued  
SILVER: WORLD MINE PRODUCTION, BY COUNTRY<sup>1,2</sup>

(Metric tons)

Country	2004	2005	2006	2007	2008 <sup>e</sup>
Tajikistan <sup>e</sup>	5	5	5	5	5
Tanzania	13	13 <sup>r</sup>	15	12 <sup>r</sup>	12
Tunisia <sup>e</sup>	2 <sup>3</sup>	1 <sup>3</sup>	--	--	--
Turkey	97 <sup>r</sup>	138 <sup>r</sup>	167 <sup>r</sup>	198 <sup>r</sup>	180
United States	1,250	1,230	1,160	1,280	1,250 <sup>4</sup>
Uzbekistan <sup>e</sup>	80	83	83	83	83
Zimbabwe	3	3	1	1	1
Total	20,000 <sup>r</sup>	20,800	20,300 <sup>r</sup>	21,100	21,300

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

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

<sup>2</sup>Recoverable content of ores and concentrates produced unless otherwise specified. Table includes data available through August 8, 2009.

<sup>3</sup>Less than ½ unit.

<sup>4</sup>Reported figure.

<sup>5</sup>Includes the following quantities, in kilograms, identified as secondary silver: 2004–08—50,000.

<sup>6</sup>Includes production from imported ores.

<sup>7</sup>Montenegro and Serbia formally declared independence in June 2006 from each other and dissolved their union.