

SILVER

(Data in metric tons¹ of silver content unless otherwise noted)

Domestic Production and Use: In 2010, the United States produced approximately 1,280 tons of silver with an estimated value of \$728 million. Silver was produced as a byproduct from 35 domestic base- and precious-metal mines. Alaska continued as the country's leading silver-producing State, followed by Nevada; however, company production data are proprietary and were withheld. There were 21 refiners of commercial-grade silver, with an estimated total output of 4,750 tons from domestic and foreign ores and concentrates, and from old and new scrap. Silver's traditional use categories include coins and medals, industrial applications, jewelry and silverware, and photography. The physical properties of silver include ductility, electrical conductivity, malleability, and reflectivity. The demand for silver in industrial applications continues to increase and includes use of silver in bandages for wound care, batteries, brazing and soldering, in catalytic converters in automobiles, in cell phone covers to reduce the spread of bacteria, in clothing to minimize odor, electronics and circuit boards, electroplating, hardening bearings, inks, mirrors, solar cells, water purification, and wood treatment to resist mold. Silver was used for miniature antennas in Radio Frequency Identification Devices (RFIDs) that were used in casino chips, freeway toll transponders, gasoline speed purchase devices, passports, and on packages to keep track of inventory shipments. Mercury and silver, the main components of dental amalgam, are biocides, and their use in amalgam inhibits recurrent decay.

<u>Salient Statistics—United States:</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010^e</u>
Production:					
Mine	1,160	1,280	1,250	1,250	1,280
Refinery:					
Primary	2,210	791	779	796	800
Secondary (new and old scrap)	1,110	1,220	1,530	1,340	1,600
Imports for consumption ²	4,840	5,000	4,680	3,590	3,840
Exports ²	1,670	797	685	478	600
Consumption, apparent ^e	5,130	5,380	6,150	5,360	5,850
Price, dollars per troy ounce ³	11.61	13.43	15.02	14.69	17.75
Stocks, yearend:					
Treasury Department ⁴	220	220	220	220	220
COMEX, NYSE Liffe ⁵	3,540	4,200	3,900	3,550	3,000
Exchange Traded Fund ⁶	3,770	5,350	8,240	12,400	16,000
Employment, mine and mill, ⁷ number	900	900	900	900	850
Net import reliance ⁸ as a percentage of apparent consumption ^e	67	66	70	64	65

Recycling: In 2010, approximately 1,600 tons of silver was recovered from old and new scrap. This includes 60 to 90 tons of silver that is reclaimed and recycled annually from photographic wastewater.

Import Sources (2006–09):² Mexico, 56%; Canada, 24%; Peru, 13%; Chile, 4%; and other, 3%.

Tariff: No duties are imposed on imports of unrefined silver or refined bullion.

Depletion Allowance: 15% (Domestic), 14% (Foreign).

Government Stockpile: None.

Events, Trends, and Issues: Through mid-year 2010, silver prices averaged \$17.75 per troy ounce. The overall rise in silver prices corresponded to continued investment interest and holdings in new silver exchange traded funds (ETF) that have opened since the first silver ETF was established in April 2006. Silver ETF inventories totaled 15,240 tons through the end of November.

Industrial demand for silver continued to decline, and in the United States, demand for silver in photography fell to slightly more than 160 tons, compared with a high of 190 tons in 2000. Although silver is still used in x-ray films, many hospitals have begun to use digital imaging systems. Approximately 99% of the silver in photographic wastewater may be recycled. Silver demand for use in coins, electronics, industrial applications, and jewelry increased, while photographic and silverware applications declined.

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Silver was used as a replacement metal for platinum in catalytic converters in automobiles. Silver also was used in clothing to help regulate body heat and to control odor in shoes and in sports and everyday clothing. The use of trace amounts of silver in bandages for wound care and minor skin infections is also increasing.

World silver mine production increased to 22,200 tons as a result of increased production at new and existing polymetallic mines. Global silver output increased owing to a full year's production from the San Cristobal Mine in Bolivia, the Dolores and Parmarejo Mines in Mexico, and the Kupol property in Russia. Production from several mines in Argentina also increased. Silver production increased at lead-zinc mines, such as the Lucky Friday Mine in Idaho, where production was at its highest level in 10 years. Production at the Greens Creek Mine in Alaska also increased owing to improved mining techniques, and production from the Bingham Canyon Mine in Utah increased because of increased mill throughput. In July, the Rochester Mine in Nevada was preparing to mine new ore zones that would extend mine life by several years.

World Mine Production and Reserves: Reserves information for Peru and Poland was revised based on new information from Government and industry sources.

	Mine production		Reserves ⁹
	2009	2010 ^e	
United States	1,250	1,280	25,000
Australia	1,630	1,700	69,000
Bolivia	1,300	1,360	22,000
Canada	600	700	7,000
Chile	1,300	1,500	70,000
China	2,900	3,000	43,000
Mexico	3,550	3,500	37,000
Peru	3,850	4,000	120,000
Poland	1,200	1,200	69,000
Russia	1,400	1,400	NA
Other countries	<u>2,820</u>	<u>2,600</u>	<u>50,000</u>
World total (rounded)	21,800	22,200	510,000

World Resources: Silver was obtained as a primary product from mines in Mexico, Peru, and Australia, in descending order of production. Silver was also obtained as a byproduct from lead-zinc mines, copper mines, and gold mines, in descending order of production. The polymetallic ore deposits from which silver is recovered account for more than two-thirds of U.S. and world resources of silver. Most recent silver discoveries have been associated with gold occurrences; however, copper and lead-zinc occurrences that contain byproduct silver will continue to account for a significant share of future reserves and resources.

Substitutes: Digital imaging, film with reduced silver content, silverless black-and-white film, and xerography substitute for silver that has traditionally been used in black-and-white as well as color printing applications. Surgical pins and plates may be made with tantalum and titanium in place of silver. Stainless steel may be substituted for silver flatware, and germanium added to silver flatware will make it tarnish resistant. Nonsilver batteries may replace silver batteries in some applications. Aluminum and rhodium may be used to replace silver that was traditionally used in mirrors and other reflecting surfaces. Silver may be used to replace more costly metals in catalytic converters for off-road vehicles.

^eEstimated. NA Not available.

¹One metric ton (1,000 kilograms) = 32,150.7 troy ounces.

²Ores and concentrates, refined bullion, doré, and other unwrought silver; excludes coinage, and waste and scrap material.

³Handy & Harman quotations.

⁴Balance in U.S. Mint only.

⁵NYSE Liffe: formerly Chicago Board of Trade.

⁶Held in the United Kingdom by ETF Securities and iShares Silver Trust and in Switzerland by Zürcher Kantonalbank.

⁷Source: U.S. Department of Labor, Mine Safety and Health Administration.

⁸Defined as imports – exports + adjustments for Government and industry stock changes.

⁹[See Appendix C for resource/reserve definitions and information concerning data sources.](#)