

SILVER

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

Domestic Production and Use: In 2012, the United States produced approximately 1,050 tons of silver with an estimated value of \$1.01 billion. 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. There were 21 U.S. refiners of commercial-grade silver, with an estimated total output of 6,500 tons from domestic and foreign ores and concentrates, and from old and new scrap. Silver's traditional use categories include coins and medals, electrical and electronics, jewelry and silverware, and photography. The physical properties of silver include ductility, electrical conductivity, malleability, and reflectivity. The demand for silver in other applications 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, 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 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. In 2012, the estimated uses were electrical and electronics, 35%; coins and medals, 25%; photography, 10%; jewelry and silverware, 8%; and other, 22%.

Salient Statistics—United States:	2008	2009	2010	2011	2012^e
Production:					
Mine	1,250	1,250	1,280	1,120	1,050
Refinery:					
Primary	779	796	819	790	750
Secondary (new and old scrap)	1,210	1,340	1,330	1,710	1,500
Imports for consumption ²	4,430	3,450	5,370	6,410	5,300
Exports ²	638	419	709	904	1,200
Consumption, apparent	6,320	6,110	7,540	7,910	5,900
Price, dollars per troy ounce ³	15.00	14.69	20.20	35.26	30.00
Stocks, yearend:					
Treasury Department ⁴	220	220	220	220	220
COMEX	3,970	3,500	3,250	3,650	4,400
Exchange Traded Funds ⁵	10,600	14,600	18,400	17,600	19,000
Employment, mine and mill, ⁶ number	770	740	760	950	1,100
Net import reliance ⁷ as a percentage of apparent consumption	61	58	65	64	57

Recycling: In 2012, approximately 1,500 tons of silver was recovered from new and old scrap.

Import Sources (2008–11):² Mexico, 51%; Canada, 23%; Peru, 6%; Poland, 6%; and other, 14%.

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 October 2012, silver prices averaged \$30.34 per troy ounce, 16% lower than the average of the first 10 months of 2011. The overall decline in silver prices corresponded to drop in industrial consumption because of a depressed global economic environment. However, investment demand for silver continued to increase as investors sought safe-haven investments and helped to keep the price of silver above \$30 per troy ounce. Holdings in 13 silver exchange traded funds (ETF), including 2 ETF that began in 2011, were about 19,000 tons at the end of October.

Industrial demand for silver in photography continued to decline, and in the United States, demand for silver in photography fell to about 550 tons, compared with a high of about 2,000 tons in 2000. Although silver was 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 photographic applications, jewelry, electronic applications, and coins declined; however, the use of silver in brazing alloys and solders and other industrial applications increased slightly. Silver was used as a replacement metal for platinum in catalytic converters in automobiles, and silver was also used as a catalyst in numerous chemical reactions. 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 was also increasing.

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World silver mine production increased to a new record of 24,000 tons as a result of increased production from mines in China, Kazakhstan, and Mexico, as well as increased recoveries from mines in Indonesia and Peru. Production also increased in Australia because of the start up of the Wonawinta Mine (lead-zinc) in New South Wales and a major expansion for the Mount Isa (copper-lead-zinc), which was processing ore from the newly opened Lady Loretta Mine (copper) in Queensland. In 2012, the Sindesar Khurd Mine (lead-zinc) in India was estimated to have produced 70 tons more of silver than it produced in 2011. Overall, domestic silver production declined, with the temporary closure of Lucky Friday Mine, ID, in January 2012, the leading domestic primary silver mine in 2011. The mine was ordered closed by the Mine Safety and Health Administration after an accident and rock burst at yearend 2011 that led to a buildup of material in the Silver Shaft, the primary access to Lucky Friday. Production was expected to resume in early 2013. Output also fell at Bingham Canyon Mine, UT (copper-molybdenum), at the Mission Complex, AZ (copper-molybdenum), and at the Midas Mine, NV (gold). Some of the output losses were partially offset by production gains at the Rochester Mine (primary silver) and at the Smoky Valley Common Operations (gold), both in Nevada.

World Mine Production and Reserves: Reserve data for Chile were revised based on new information from Government and industry sources.

	Mine production		Reserves ⁸
	2011	2012 ^e	
United States	1,120	1,050	25,000
Australia	1,730	1,900	69,000
Bolivia	1,210	1,300	22,000
Canada	572	530	7,000
Chile	1,290	1,130	77,000
China	3,700	3,800	43,000
Mexico	4,150	4,250	37,000
Peru	3,410	3,450	120,000
Poland	1,170	1,170	85,000
Russia	1,350	1,500	NA
Other countries	3,600	3,900	50,000
World total (rounded)	23,300	24,000	540,000

World Resources: Silver was 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 was 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, and doré; excludes coinage, and waste and scrap material.

³Handy & Harman quotations.

⁴Balance in U.S. Mint only.

⁵Held in 13 ETFs in which silver was part or whole of the ETF. Represents only the amount of silver held in the ETF.

⁶Source: U.S. Department of Labor, Mine Safety and Health Administration.

⁷Defined as imports – exports + adjustments for Government and industry stock changes.

⁸See Appendix C for resource/reserve definitions and information concerning data sources.