SILVER

(Data in metric tons[1] of silver content unless otherwise noted)

Domestic Production and Use: In 2016, U.S. mines produced approximately 1,100 tons of silver with an estimated value of $570 million. Silver was produced at 3 silver mines and as a byproduct or coproduct from 37 domestic base- and precious-metal mines. Alaska continued as the country's leading silver-producing State, followed by Nevada. There were 24 U.S. refiners that reported production of commercial-grade silver with an estimated total output of 2,100 tons from domestic and foreign ores and concentrates and from old and new scrap. The physical properties of silver include high ductility, electrical conductivity, malleability, and reflectivity. In 2016, the estimated domestic uses for silver were electrical and electronics, 30%; coins and medals, 27%; jewelry and silverware, 7%; photography, 6%; and other, 30%. Other applications for silver include use in antimicrobial bandages, clothing, pharmaceuticals, and plastics; batteries; bearings; brazing and soldering; catalytic converters in automobiles; electroplating; inks; mirrors; photovoltaic solar cells; water purification; and wood treatment. Mercury and silver, the main components of dental amalgam, are biocides, and their use in amalgam inhibits recurrent decay.

Salient Statistics—United States:	2012	2013	2014	2015	2016[e]
Production:					
Mine	1,060	1,040	1,180	1,090	1,100
Refinery:					
Primary	796	800	800	800	800
Secondary (new and old scrap)	1,660	1,700	1,400	1,200	1,300
Imports for consumption[2]	5,070	5,080	4,960	5,930	6,300
Exports[2]	946	409	380	818	850
Consumption, apparent[3]	5,910	6,670	6,890	8,000	7,230
Price, average, dollars per troy ounce[4]	31.22	23.87	19.37	15.72	19.62
Stocks, yearend:					
Industry	109	110	120	130	150
Treasury Department[5]	498	498	498	498	498
New York Commodities Exchange—COMEX	4,610	5,350	5,610	5,000	5,600
Employment, mine and mill,[6] number	709	819	792	750	785
Net import reliance[7] as a percentage of apparent consumption	54	59	63	71	67

Recycling: In 2016, approximately 1,300 tons of silver was recovered from new and old scrap, about 18% of apparent consumption.

Import Sources (2012–15):[2] Mexico, 48%; Canada, 32%; Peru, 5%; Poland, 4%; and other, 11%.

Tariff: Item	**Number**	**Normal Trade Relations 12–31–16**
Silver ores and concentrates	2616.10.0040	Free.
Bullion	7106.91.1010	Free.
Dore	7106.91.1020	Free.

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

Government Stockpile: The U.S. Department of the Treasury maintains stocks of silver (see salient statistics above).

Events, Trends, and Issues: The estimated average silver price in 2016 was 25% higher than the average price in 2015. The price began the year at $14.15 per troy ounce, the lowest since August 2009, and decreased to $13.80 on January 14, before increasing to a high of $24.84 per troy ounce on August 2, 2016. Multiple factors contributed to the increase in silver prices, including strong industrial demand, uncertain world economic and political climates that spurred investment demand, and increasing gold prices.

Prepared by **Shawnna M. Bennett [(703) 648–7715, smbennett@usgs.gov]**

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In 2016, global physical demand for silver was projected to decrease in most sectors, including electrical and electronics, brazing solders and alloys, and photography. Consumption of silver in ethylene oxide production was projected to remain unchanged and use in photovoltaics was projected to increase by about 8%. Although global silver coin sales increased by 29% in the first quarter of 2016 compared with that in the first quarter of 2015, continuing the upward trend in sales from that in the second half of 2015, consumption of silver for coins and bars for full-year 2016 was projected to decrease by more than 20% from that in 2015.[8] Global yearend stocks of refined silver were projected to be at a 10-year high.

World silver mine production increased slightly in 2016 to 26,800 tons, principally as a result of increased production from mines in China, Mexico, Peru, and Poland. Domestic silver mine production increased slightly in 2016 compared with that in 2015. Reported production at the top two domestic silver mines increased by 19% and 3%, respectively, through the third quarter of 2016 compared with production during the same period in 2015.

World Mine Production and Reserves: Reserves for Australia and China were revised based on new information from Government sources.

	Mine production		Reserves[9]
	2015	2016[e]	
United States	1,090	1,100	25,000
Australia	1,430	1,400	89,000
Bolivia	1,190	1,300	22,000
Chile	1,370	1,500	77,000
China	3,100	3,600	39,000
Mexico	5,370	5,600	37,000
Peru	3,850	4,100	120,000
Poland	1,180	1,400	85,000
Russia	1,430	1,400	20,000
Other countries	5,000	5,400	57,000
World total (rounded)	25,100	27,000	570,000

World Resources: Although silver was a principal product at several mines, silver was primarily 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 reserves and resources in the future.

Substitutes: Digital imaging, film with reduced silver content, silverless black-and-white film, and xerography substitute for traditional photographic applications for silver. Surgical pins and plates may be made with stainless steel, tantalum, and titanium in place of silver. Stainless steel may be substituted for silver flatware. 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.

[e]Estimated.
[1]One metric ton (1,000 kilograms) = 32,150.7 troy ounces.
[2]Silver content of base metal ores and concentrates, refined bullion, and dore; excludes coinage, and waste and scrap material.
[3]Defined as mine production + secondary production + imports – exports + adjustments for Government and industry stock changes. Series has been updated to include changes in COMEX stocks.
[4]Engelhard quotations.
[5]Balance in U.S. Mint only; includes deep storage and working stocks.
[6]Source: U.S. Department of Labor, Mine Safety and Health Administration. Only includes mines where silver is the primary product; Greens Creek Mine is included under zinc.
[7]Defined as imports – exports + adjustments for Government and industry stock changes.
[8]Wiebe, Johann, 2016, The silver market in 2016—The Silver Institute—2016 interim report: GFMS,Thompson Reuters, November 16, 32 p.
[9]See Appendix C for resource and reserve definitions and information concerning data sources.