

SILVER

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

Domestic Production and Use: In 1999, U.S. silver production was about 1,860 tons with an estimated value of \$320 million. Nevada was the largest producer, with more than 490 tons. Precious metal ores accounted for approximately one-half of domestic silver production; the other one-half was recovered as a byproduct from processing of copper, lead, and zinc ores. There were 22 principal refiners of commercial-grade silver with an estimated output of approximately 4,000 tons. About 30 fabricators accounted for more than 90% of the silver consumed in arts and industry. The remainder was consumed mostly by small companies and artisans. Aesthetic uses of silver for decorative articles, jewelry, tableware, and coinage were overshadowed by industrial and technical uses. Industrial and technical uses include photographic materials, electrical products, catalysts, brazing alloys, dental amalgam, and bearings.

Salient Statistics—United States:	1995	1996	1997	1998	1999^o
Production: Mine	1,560	1,570	2,180	2,060	1,860
Refinery: Primary	NA	NA	2,200	2,300	2,300
Secondary	NA	NA	1,360	1,700	1,700
Imports for consumption ²	3,250	3,010	2,540	3,330	2,800
Exports ²	2,890	2,950	3,080	2,250	2,000
Shipments from Government stockpile excesses	220	232	109	—	—
Consumption, apparent	NA	NA	4,980	4,300	4,500
Price, dollars per troy ounce ³	5.15	5.19	4.89	5.54	5.20
Stocks, yearend: Treasury Department ⁴	520	402	484	582	500
COMEX, CBT ⁵	6,290	4,550	3,430	2,360	2,390
Department of Defense	13	10	—	—	—
Employment, mine and mill, ⁶ number	1,200	1,400	1,550	1,550	1,600
Net import reliance ⁷ as a percent of apparent consumption	NA	NA	E	14	14

Recycling: About 1,700 tons of silver was recovered from old and new scrap in 1999.

Import Sources² (1995-98): Mexico, 30%; Canada, 26%; Peru, 8; Chile, 3%; and other, 33%.

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

Depletion Allowance: 15% (Domestic and foreign).

Government Stockpile: The Government continued to dispose of the silver held in the National Defense Stockpile, using it primarily for the production of commemorative coins and the Eagle silver bullion coins. During the past 17 years, from 1982 through September 30, 1999, the Government has reduced the quantity of silver held in the Stockpile from 4,300 tons to about 815 tons.

Stockpile Status—9-30-99^o

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1999	Disposals FY 1999
Silver	815	—	815	311	277

SILVER

Events, Trends, and Issues: Representatives of the Silver Users Association (SUA), the Silver Institute, and the International Precious Metals Institute met with officials of the Office of Occupational Safety and Health Administration (OSHA) to discuss an SUA initiative seeking revision to the Permissible Exposure Limit (PEL) for airborne silver in workroom air. In 1998, SUA submitted its study, "The Effect of Exposure to Silver, a Survey of the Literature," to accompany its request to OSHA for revising the PEL for silver in workroom air. The study agreed with the European view that soluble silver should be regulated differently from insoluble silver. After a detailed review of the survey, which resulted from SUA interviews in Europe and an exchange of information from Europe and Japan, OSHA requested that the association clarify further some of the findings by the overseas researchers who have studied the exposure of individuals working with silver.

Photographic applications account for about 28% of total silver demand, and digital imaging is considered to be a potential threat to this sector of the market. In contrast to the use of silver halide film in conventional photography, digital technology converts images directly into electronic form, thereby avoiding the need for silver. Silver halide pictures may also be scanned into electronic form, which necessitates the use of silver in taking and printing the picture but eliminates the need for silver halide technology in further processing. The major advantage of using digital cameras is the ability to immediately capture a digital picture that can be manipulated on a personal computer using readily available software. The major disadvantage is that digital cameras are expensive and produce poorer picture quality compared to conventional cameras.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ⁹	Reserve base ⁹
	1998	1999 ^e		
United States	2,060	1,860	33,000	72,000
Australia	1,469	1,500	29,000	33,000
Canada	1,179	1,100	37,000	47,000
Mexico	2,680	2,700	37,000	40,000
Peru	1,934	1,900	25,000	37,000
Other countries	<u>7,070</u>	<u>6,700</u>	<u>120,000</u>	<u>190,000</u>
World total (rounded)	16,400	15,900	280,000	420,000

World Resources: Approximately two-thirds of world silver resources are associated with copper, lead, and zinc deposits, often at great depths. The remaining one-third is in vein deposits in which gold is the most valuable metallic component. Although most recent discoveries have been primarily gold and silver deposits, significant future reserves and resources are expected from major base metal discoveries that contain byproduct silver. Even though the price of silver and improved technology may appear to increase sharply the quantity of minable reserves, the extraction of silver from these resources will depend on the salability of the primary base metals.

Substitutes: Aluminum and rhodium can be substituted for silver in mirrors and other reflecting surfaces. Tantalum can be used in place of silver for surgical plates, pins, and sutures. Stainless steel is an alternate material used widely in the manufacture of table flatware. Nonsilver batteries being developed may replace silver batteries in some applications. Silverless black and white film, xerography, and film with reduced silver content are alternatives to some uses of silver in photography.

^eEstimated. E Net exporter. NA Not available.

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

²Refined bullion, plus silver content of ores, concentrates, precipitates, and doré; excludes coinage, waste, and scrap material.

³Handy & Harman quotations.

⁴Balance in U.S. Mint only.

⁵COMEX: Commodity Exchange Inc., New York. CBT: Chicago Board of Trade.

⁶Source: Mine Safety and Health Administration.

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

⁸See Appendix B for definitions.

⁹Includes silver recoverable from base metal ores. See Appendix C for definitions.