

ANTIMONY

(Data in metric tons of antimony content, unless otherwise noted)

Domestic Production and Use: One silver mine in Idaho produced antimony as a byproduct, and an additional very small amount was recovered as a byproduct of the smelting of lead and silver-copper ores. Virtually all primary antimony metal and oxide produced domestically was derived from imports. Primary antimony metal and oxide were produced by six companies at processing plants that used both foreign and domestic feed material. Two plants were in Texas, and single plants were in Idaho, Montana, Nebraska, and New Jersey. The estimated value of primary antimony metal and oxide produced in 1997 was \$70 million. Secondary antimony was recovered, mostly in alloy form, at lead smelters; its value, based on the price of antimony metal, was about \$17 million. The estimated distribution of antimony uses was flame retardants, 55%; transportation, including batteries, 18%; chemicals, 10%; ceramics and glass, 7%; and other, 10%.

Salient Statistics—United States:		1993	1994	1995	1996	1997^e
Production:	Mine (recoverable antimony) ¹	266	215	262	242	NA
	Smelter: Primary	22,000	25,500	23,500	25,700	24,000
	Secondary ²	9,620	12,200	10,500	7,900	7,000
Imports for consumption		30,900	41,500	36,600	37,600	36,000
Exports of metal, alloys, ³ oxide, and waste and scrap ³		4,220	7,850	8,200	4,450	4,500
Shipments from Government Stockpile		2,660	1,850	1,130	4,300	4,500
Consumption, apparent ⁴		38,900	46,100	43,300	45,000	NA
Price, metal, average, cents per pound ⁵		77	178	228	147	110
Stocks, yearend		9,080	10,900	10,600	11,200	10,000
Employment, plant, number ^e		100	100	100	100	100
Net import reliance ⁶ as a percent of apparent consumption		75	73	75	82	NA

Recycling: Traditionally, the bulk of secondary antimony has been recovered as antimonial lead, most of which was generated and then also consumed by the battery industry. However, changing trends in this industry in recent years have caused lesser amounts of secondary antimony to be produced.

Import Sources (1993-96): Metal: China, 79%; Hong Kong, 5%; Mexico, 6%; Kyrgyzstan, 6%; and other, 4%. Ore and concentrate: Bolivia, 46%; China, 19%; Canada, 16%; Kyrgyzstan, 10%; and other, 9%. Oxide: China, 38%; Mexico, 18%; South Africa, 16%; Bolivia, 14%; and other, 14%. Total: China, 55%; Mexico, 11%; Bolivia, 10%; South Africa, 7%; and other, 17%.

Tariff: Item	Number	Most favored nation (MFN) 12/31/97	Non-MFN⁷ 12/31/97
Ore and concentrates	2617.10.0000	Free	Free.
Antimony and articles thereof, including waste and scrap	8110.00.0000	Free	4.4¢/kg.
Antimony oxide	2825.80.0000	Free	4.4¢/kg.

Depletion Allowance: 22% (Domestic), 14% (Foreign).

Government Stockpile:

Material	Stockpile Status—9-30-97⁸				
	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1997	Disposals FY 1997
Antimony	21,300	2,640	21,200	4,540	3,650

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Events, Trends, and Issues: In 1997, antimony production from domestic source materials was derived mainly from the recycling of lead-acid batteries. Recycling plus the small U.S. mine output supplied only about one-fifth of the estimated domestic demand.

The antimony metal price experienced a fairly steady decline during 1997. The price started the year at \$1.30 per pound; by spring it had declined to \$1.10 per pound, and by fall it had slipped to \$1.05 per pound. These prices were still somewhat higher than the price range for antimony metal that had prevailed for years prior to the sharp price increases of 1994.

A major domestic nonferrous producer announced that its lead refinery in Omaha, NE, had ceased operation as of June 30, 1997. The plant was also a smelter/refiner for antimony and bismuth products. In its antimony operations, this plant processed primarily antimony ore, but also treated crude antimony trioxide, upgrading it to a higher purity. It was one of only six domestic antimony smelter/refiners.

Government stockpile sales of antimony continued for the fifth year, after being resumed in 1993 for the first time since 1988. Public Law 104-201 provided the authorization for the sales. During the year, the Defense Logistics Agency (DLA) changed its date of sales for antimony from the second Tuesday of the month to the fourth Tuesday of the month, with the format still being the negotiated bid process. The DLA announced that its Annual Materials Program for fiscal year 1997 permitted the disposal of up to 5,000 tons of antimony, up from the 3,000 tons allotted for fiscal year 1996. Antimony was stockpiled in 12 DLA depots, with the largest inventories stored in New Haven, IN, and Somerville, NJ.

Environmental and ecological problems associated with the treatment of antimony raw materials were minimal, because all domestic processors of raw materials now avoid sulfide-containing materials.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ⁹	Reserve base ⁹
	<u>1996</u>	<u>1997^e</u>		
United States	242	NA	80,000	90,000
Bolivia	6,600	7,000	310,000	320,000
China	98,000	95,000	900,000	1,900,000
Kyrgyzstan	1,200	1,200	120,000	150,000
Russia	6,000	6,000	350,000	370,000
South Africa	4,800	4,500	240,000	250,000
Tajikistan	500	500	50,000	60,000
Other countries	<u>9,000</u>	<u>9,000</u>	<u>25,000</u>	<u>75,000</u>
World total (may be rounded)	126,000	124,000	2,400,000	3,600,000

World Resources: U.S. resources are mainly in Alaska, Idaho, Montana, and Nevada. Principal identified world resources are in Bolivia, China, Mexico, Russia, and South Africa. Additional antimony resources may occur in "Mississippi Valley Type" lead deposits in the Eastern United States.

Substitutes: Compounds of chromium, tin, titanium, zinc, and zirconium substitute for antimony chemicals in paint, pigments, frits, and enamels. Combinations of cadmium, calcium, copper, selenium, strontium, sulfur and tin can be used as substitutes for hardening lead. Selected organic compounds and hydrated aluminum oxide are widely accepted substitutes as flame-retardants.

^eEstimated. NA Not available.

¹Data for 1993-96 from 10-K reports.

²After intensive review of the industry, secondary antimony figures were revised downward to reflect a changing industry pattern.

³Gross weight.

⁴Domestic mine production + secondary production from old scrap + net import reliance (see footnote 6).

⁵New York dealer price for 99.5% to 99.6% metal, c.i.f. U.S. ports.

⁶Defined as imports - exports + adjustments for Government and industry stock changes.

⁷See Appendix B.

⁸See Appendix C for definitions.

⁹See Appendix D for definitions.