

ZINC

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

Domestic Production and Use: The value of zinc mined in 1997, based on contained zinc recoverable from concentrate, was about \$1.1 billion. It was produced in 8 States, at 21 mines operated by 8 mining companies. Alaska, Tennessee, New York, and Missouri accounted for 94% of domestic mine output; Alaska alone accounted for more than one-half. Three primary and five secondary smelters refined zinc metal of commercial grade in 1997. Of zinc metal consumed, about 75% was used in Illinois, Indiana, Michigan, New York, Ohio, and Pennsylvania. Of the total zinc consumed, about 54% was used in galvanizing, 19% in zinc-base alloys, 13% in brass and bronze, and 14% in other uses. Zinc compounds and dust were used principally by the agriculture, chemical, paint, and rubber industries. Major coproducts of zinc mining and smelting, in decreasing order, were lead, sulfur, cadmium, silver, gold, and germanium.

Salient Statistics—United States:	1993	1994	1995	1996	1997^e
Production: Mine, recoverable ¹	488	570	614	600	607
Primary slab zinc	240	217	232	226	235
Secondary slab zinc	141	139	131	140	145
Imports for consumption:					
Ore and concentrate	33	27	10	15	30
Refined zinc	724	793	856	827	861
Exports: Ore and concentrate	311	389	424	425	425
Refined zinc	1	6	3	2	2
Shipments from Government stockpile	18	39	14	15	40
Consumption: Apparent, refined zinc	1,120	1,180	1,230	1,210	1,280
Apparent, all forms	1,340	1,400	1,460	1,450	1,500
Price, average, cents per pound:					
Domestic producers	46.2	49.3	55.8	51.1	81.0
London Metal Exchange, cash	43.6	45.3	46.8	46.5	75.0
Stocks, slab zinc, yearend	77	80	78	74	78
Employment: Mine and mill, number ^e	2,500	2,700	2,700	2,700	2,700
Smelter primary, number ^e	1,300	1,000	1,000	1,000	1,000
Net import reliance ² as a percent of apparent consumption of:					
Refined zinc	67	70	71	70	70
All forms of zinc	36	35	35	33	35

Recycling: In 1997, an estimated 380,000 tons of zinc was recovered from waste and scrap; more than one-third was recovered in the form of slab zinc and the remainder in alloys, oxide, and chemicals. Of the total amount of zinc recycled, 265,000 tons from new scrap and 115,000 tons from old scrap. About 45,000 tons of scrap was exported, mainly to Taiwan, and 31,000 tons imported.

Import Sources (1993-96): Ore and concentrate: Mexico, 59%; Peru, 35%; Australia, 5%; and other, 1%. Metal: Canada, 59%; Mexico, 12%; Spain, 9%; Peru, 4%; and other, 16%. Combined total: Canada, 60%; Mexico, 14%; Spain, 10%; and other, 16%.

Tariff: Item	Number	Most favored nation (MFN) <u>12/31/97</u>	Canada <u>12/31/97</u>	Mexico <u>12/31/97</u>	Non-MFN³ <u>12/31/97</u>
Ore and concentrate	2608.00.0030	0.7¢/kg on lead content	0.1¢/kg on lead content	Free	3.7¢/kg on zinc content.
Unwrought metal	7901.11.0000	1.5% ad val.	0.1% ad val.	Free	5.0% ad val.
Alloys, casting-grade	7901.12.1000	9.4% ad val.	1.9% ad val.	11.4% ad val.	45.0% ad val.
Alloys	7901.20.0000	9.4% ad val.	1.9% ad val.	Free	45.0% ad val.
Waste and scrap	7902.00.0000	Free	Free	Free	11.0% ad val.
Hard zinc spelter	2620.11.0000	0.6% ad val.	0.1% ad val.	0.9% ad val.	5.0% ad val.
Zinc oxide	2817.00.0000	Free	Free	Free	5.5% ad val.

ZINC

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

Government Stockpile:

Stockpile Status—9-30-97⁴

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1997	Disposals FY 1997
Zinc	221	7	221	45	38

Events, Trends, and Issues: Domestic mine production increased slightly in 1997, mainly because of increased output at the Red Dog Mine in Alaska, the leading producer in the United States. Because most of the production from the Red Dog Mine is processed in Canada, exports of zinc concentrate increased correspondingly to increased mine production. The United States is the world's largest exporter of zinc concentrates; it is also the largest importer of zinc metal, because of inadequate refinery production capacity. Expansion of refinery capacity at Clarksville, TN, and Sauget, IL, is anticipated. Available primary annual capacity in 1997 was 231,000 tons.

After a slight decrease in 1996, domestic consumption of zinc metal increased in 1997, mainly because of increased use of galvanized steel. The United States is the largest consumer of zinc and zinc products, but domestic metal production capacity accounts for less than one-third of the quantity consumed. Canada and Mexico are the leading sources of zinc to the United States, because of their geographical proximity and low tariffs.

After stagnant metal prices during the previous years, the price for zinc metal started to increase at the end of 1996 and continued its rapid increase in 1997.

World Mine Production, Reserves, and Reserve Base:

	Mine production ⁵		Reserves ⁶	Reserve base ⁶
	<u>1996</u>	<u>1997^e</u>		
United States	628	635	19,000	60,000
Australia	1,071	1,100	39,000	100,000
Canada	1,235	1,200	15,000	40,000
China	1,010	1,000	33,000	80,000
Mexico	378	380	6,000	8,000
Peru	761	780	7,000	12,000
Other countries	<u>2,357</u>	<u>2,700</u>	<u>72,000</u>	<u>130,000</u>
World total (may be rounded)	7,440	7,800	190,000	430,000

World Resources: Identified zinc resources of the world are about 1.9 billion tons.

Substitutes: Aluminum, steel, and plastics substitute for galvanized sheet. Aluminum, plastics, and magnesium are major competitors as diecasting materials. Plastic coatings, paint, and cadmium and aluminum alloy coatings replace zinc for corrosion protection; aluminum alloys are used in place of brass. Many elements are substitutes for zinc in chemical, electronic, and pigment uses.

^eEstimated.

¹Zinc recoverable after smelting and refining.

²Defined as imports - exports + adjustments for Government and industry stock changes.

³See Appendix B.

⁴See Appendix C for definitions.

⁵Zinc content of concentrate and direct shipping ore.

⁶See Appendix D for definitions.