

ZINC

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

Domestic Production and Use: The value of zinc mined in 1998, based on contained zinc recoverable from concentrate, was about \$840 million. It was produced in 7 States by 19 mines operated by 7 mining companies. Alaska, Tennessee, New York, and Missouri accounted for 95% of domestic mine output; Alaska alone accounted for more than 62%. Three primary and eight secondary smelters refined zinc metal of commercial grade in 1998. Of zinc metal consumed, about 75% was used in Illinois, Indiana, Michigan, New York, Ohio, and Pennsylvania, mostly by steel companies. Of the total zinc consumed, about 55% was used in galvanizing, 19% in zinc-base alloys, 13% in brass and bronze, and 13% 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:	1994	1995	1996	1997	1998^e
Production: Mine, recoverable ¹	570	614	598	605	655
Primary slab zinc	217	232	226	227	245
Secondary slab zinc	139	131	140	140	145
Imports for consumption:					
Ore and concentrate	27	10	15	50	30
Refined zinc 793	856	827	876	830	
Exports: Ore and concentrate	389	424	425	461	500
Refined zinc	6	3	2	4	2
Shipments from Government stockpile	39	14	15	32	25
Consumption: Apparent, refined zinc	1,180	1,230	1,210	1,260	1,290
Apparent, all forms	1,400	1,460	1,450	1,490	1,520
Price, average, cents per pound:					
Domestic producers ²	49.3	55.8	51.1	64.6	52.0
London Metal Exchange, cash	45.3	46.8	46.5	59.7	47.0
Stocks, slab zinc, yearend	94	92	88	104	63
Employment: Mine and mill, number ^e	2,700	2,700	2,700	2,500	2,400
Smelter primary, number ^e	1,000	1,000	1,000	1,000	1,000
Net import reliance ³ as a percent of apparent consumption of:					
Refined zinc 70	71	70	71	70	
All forms of zinc	35	35	33	35	35

Recycling: In 1998, an estimated 375,000 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 scrap recycled, 285,000 tons was derived from new scrap and 90,000 tons was derived from old scrap. About 28,000 tons of scrap was exported, mainly to Taiwan, and 26,000 tons imported, mainly from Canada.

Import Sources (1994-97): Ore and concentrate: Peru, 42%; Mexico, 35%; Australia, 19%; and other, 4%. Metal: Canada, 58%; Mexico, 11%; Spain, 10%; Peru, 3%; and other, 18%. Combined total: Canada, 56%; Mexico, 12%; Spain, 10%; Peru, 5%; and other, 17%.

Tariff: Item	Number	Normal Trade Relations (NTR) 12/31/98	Canada 12/31/98	Mexico 12/31/98	Non-NTR⁴ 12/31/98
Ore and concentrate	2608.00.0030	0.3¢/kg on lead content	Free	Free	3.7¢/kg on zinc content.
Unwrought metal	7901.11.0000	1.5% ad val.	Free	Free	5.0% ad val.
Alloys, casting-grade	7901.12.1000	6.2% ad val.	Free	Free	45.0% ad val.
Alloys	7901.20.0000	6.2% ad val.	Free	Free	45.0% ad val.
Waste and scrap	7902.00.0000	Free	Free	Free	11.0% ad val.
Hard zinc spelter	2620.11.0000	0.3% ad val.	Free	0.7% 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—9-30-98⁵

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1998	Disposals FY 1998
Zinc	193	14	193	45	28

Events, Trends, and Issues: Despite closure of the Clinch Valley Mine in Tennessee, domestic mine production increased in 1998, 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 in correspondence to increased production. The United States is the world's largest exporter of zinc concentrates; it is also the largest importer of zinc metal. The lack of refinery capacity will be partially rectified by expansion of the Clarksville, TN, refinery from 105,000 tons per year to 300,000 tons per year by the first quarter of 2001. With a small increase of capacity at Sauget, IL, primary annual capacity in the United States was 245,000 tons in 1998.

Domestic consumption of zinc metal continued to increase in 1998, 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, both primary and secondary, 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 because concentrate and metal imports can be imported from them duty-free.

After a high of more than 79 cents per pound in the summer of 1997, the domestic producer price during 1998 fluctuated between 50 cents and 55 cents per pound of zinc metal.

World Mine Production, Reserves, and Reserve Base:

	Mine production ⁶		Reserves ⁷	Reserve base ⁷
	1997	1998 ^e		
United States	632	730	25,000	80,000
Australia	1,040	1,100	36,000	90,000
Canada	1,060	1,100	14,000	39,000
China	1,200	1,250	33,000	80,000
Mexico	379	380	6,000	8,000
Peru	865	870	7,000	12,000
Other countries	<u>2,290</u>	<u>2,370</u>	<u>72,000</u>	<u>130,000</u>
World total (may be rounded)	7,460	7,800	190,000	440,000

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.

²Platt's Metals Week price for North American Special High Grade zinc.

³Defined as imports - exports + adjustments for Government and industry stock changes.

⁴See Appendix B.

⁵See Appendix C for definitions.

⁶Zinc content of concentrate and direct shipping ore.

⁷See Appendix D for definitions.