

ZINC

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

Domestic Production and Use: The value of zinc mined in 1999, based on contained zinc recoverable from concentrate, was about \$860 million. It was produced in 6 States by 17 mines operated by 7 mining companies. Alaska, Tennessee, New York, and Missouri accounted for 97% of domestic mine output; Alaska alone accounted for nearly 70%. Three primary and eight secondary smelters refined zinc metal of commercial grade in 1999. 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 56% was used in galvanizing, 19% in zinc-base alloys, 13% in brass and bronze, and 12% 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:	1995	1996	1997	1998	1999^e
Production: Mine, recoverable ¹	614	600	605	722	775
Primary slab zinc	232	226	226	234	235
Secondary slab zinc	131	140	140	134	135
Imports for consumption:					
Ore and concentrate	10	15	50	46	50
Refined zinc	856	827	876	879	965
Exports: Ore and concentrate	424	425	461	552	600
Refined zinc	3	2	4	2	1
Shipments from Government stockpile	14	15	32	26	21
Consumption: Apparent, refined zinc	1,230	1,210	1,240	1,280	1,355
Apparent, all forms	1,460	1,450	1,480	1,580	1,630
Price, average, cents per pound:					
Domestic producers ²	55.8	51.1	64.6	51.4	51.0
London Metal Exchange, cash	46.8	46.5	59.7	46.5	45.0
Stocks, slab zinc, yearend	78	76	104	92	92
Employment: Mine and mill, number ^e	2,700	2,700	2,500	2,400	2,500
Smelter primary, number ^e	1,000	1,000	1,000	1,000	1,000
Net import reliance ³ as a percent of apparent consumption:					
Refined zinc	71	70	71	70	73
All forms of zinc	35	33	35	35	30

Recycling: In 1999, an estimated 430,000 tons of zinc was recovered from waste and scrap; about 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, 340,000 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 24,000 tons imported, mainly from Canada.

Import Sources (1995-98): Ore and concentrate: Peru, 45%; Mexico, 25%; Australia, 20%; and other, 10%. Metal: Canada, 57%; Mexico, 10%; Peru, 7%; and other, 26%. Combined total: Canada, 52%; Mexico, 11%; Peru, 9%; and other, 28%.

Tariff: Item	Number	Normal Trade Relations 12/31/99	Canada and Mexico 12/31/99
Ore and concentrate	2608.00.0030	Free	Free.
Unwrought metal	7901.11.0000	1.5% ad val.	Free.
Alloys, casting-grade	7901.12.1000	3% ad val.	Free.
Alloys	7901.20.0000	3% ad val.	Free.
Waste and scrap	7902.00.0000	Free	Free.
Hard zinc spelter	2620.11.0000	Free	Free.
Zinc oxide	2817.00.0000	Free	Free.

Depletion Allowance: 23% (Domestic), 15% (Foreign).

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Government Stockpile:

Stockpile Status—9-30-99⁴

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1999	Disposals FY 1999
Zinc	179	3	179	45	14

Events, Trends, and Issues: In spite of the closure of the Clinch Valley Mine in Tennessee and the Leadville Mine in Colorado, domestic mine production increased in 1999, 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 with increased production. The United States is the world's largest exporter of zinc concentrates; it is also the largest importer of zinc metal. The planned tripling of refinery capacity at the Clarksville, TN, smelter was suspended by Pasmaenco Ltd. of Australia, after hostile takeover of Savage Resources Ltd., the previous owners of the Clarksville smelter.⁵ The small increase of refining capacity, to 345,000 tons, was the result of improved efficiencies at all three primary smelters.

Domestic consumption of zinc metal continued to increase in 1999, 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 all three main forms of zinc trade—concentrate, metal, and scrap—can be imported duty free.

After a high of more than 79 cents per pound in the summer of 1997, the domestic producers' price declined to a low of about 47 cents per pound in January 1999.

World Mine Production, Reserves, and Reserve Base:

	Mine production ⁶		Reserves ⁷	Reserve base ⁷
	1998	1999 ^e		
United States	755	810	25,000	80,000
Australia	1,059	1,100	34,000	85,000
Canada	1,057	1,100	11,000	31,000
China	1,100	1,050	33,000	80,000
Mexico	395	390	6,000	8,000
Peru	869	870	7,000	12,000
Other countries	<u>2,310</u>	<u>2,320</u>	<u>72,000</u>	<u>130,000</u>
World total (may be rounded)	7,550	7,640	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 die-casting 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 for definitions.

⁵Platt's Metals Week, 1999, Pasmaenco wins battle for Savage Resources: Platt's Metals Week, v. 70, no. 6, February 8, p. 1.

⁶Zinc content of concentrate and direct shipping ore.

⁷See Appendix C for definitions.