

## ZINC

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

**Domestic Production and Use:** The value of zinc mined in 2002, based on contained zinc recoverable from concentrate, was about \$660 million. It was produced in 5 States by 12 mines operated by 7 companies. Alaska, Missouri, New York, and Tennessee accounted for 98% of domestic mine output; Alaska alone accounted for about 85% of production. Two primary and 13 large- and medium-sized secondary smelters refined zinc metal of commercial grade in 2002. 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, 17% in zinc-base alloys, 13% in brass and bronze, and 15% 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 order of decreasing tonnage, were lead, sulfur, cadmium, silver, gold, and germanium.

<b>Salient Statistics—United States:</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002<sup>e</sup></b>
Production:					
Mine, zinc in ore <sup>1</sup>	755	852	852	842	740
Primary slab zinc	234	241	228	203	210
Secondary slab zinc	134	131	143	108	130
Imports for consumption:					
Ore and concentrate	46	75	53	84	80
Refined zinc	879	1,060	915	813	900
Exports:					
Ore and concentrate	552	531	523	696	710
Refined zinc	2	2	3	1	1
Shipments from Government stockpile	26	22	39	18	20
Consumption:					
Apparent, refined zinc	1,290	1,430	1,330	1,140	1,244
Apparent, all forms	1,590	1,700	1,630	1,400	1,500
Price, average, cents per pound:					
Domestic producers <sup>2</sup>	51.4	53.5	55.6	44.0	40.0
London Metal Exchange, cash	46.4	48.8	51.2	40.2	36.0
Stocks, slab zinc, yearend	68	84	77	75	90
Employment:					
Mine and mill, number <sup>e</sup>	2,400	2,500	2,600	2,400	2,000
Smelter primary, number <sup>e</sup>	1,000	1,000	1,000	900	900
Net import reliance <sup>3</sup> as a percentage of apparent consumption:					
Refined zinc	71	74	72	73	73
All forms of zinc	58	62	60	59	60

**Recycling:** In 2002, an estimated 370,000 tons of zinc was recovered from waste and scrap; about 30% was recovered in the form of slab zinc and the remainder in alloys, oxide, and chemicals. Of the total amount of scrap recycled, 300,000 tons was derived from new scrap and 70,000 tons was derived from old scrap. About 25,000 tons of scrap was exported, mainly to China, Canada, and Taiwan, and 40,000 tons was imported, 90% of which came from Canada.

**Import Sources (1998-2001):** Ore and concentrate: Peru, 53%; Mexico, 19%; Australia, 17%; and other, 11%. Metal: Canada, 57%; Mexico, 12%; Kazakhstan, 9%; and other, 22%. Combined total: Canada, 54%; Mexico, 12%; Kazakhstan, 8%; and other, 26%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations<sup>4</sup> 12/31/02</b>
Ore and concentrate	2608.00.0030	Free.
Unwrought metal	7901.11.0000	1.5% ad val.
Alloys, casting-grade	7901.12.1000	3% ad val.
Alloys	7901.20.0000	3% ad val.
Waste and scrap	7902.00.0000	Free.
Hard zinc spelter	2620.11.0000	Free.
Zinc oxide	2817.00.0000	Free.

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

## ZINC

### Government Stockpile:

#### Stockpile Status—9-30-02<sup>5</sup>

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2002	Disposals FY 2002
Zinc	110	3	110	45	4

**Events, Trends, and Issues:** In 2002, the price of zinc on the London Metal Exchange (LME) reached its lowest level in 15 years. At the same time, LME stocks were reaching greater heights, not seen since the beginning of 1996. Reaction of mining companies to declining prices and rising stocks reflected their individual size and financial strength. Smaller companies that operated small underground mines or low-capacity smelters could not absorb prolonged financial losses and were forced to either temporarily suspend production or close the entire operation. Larger companies with ample financial resources and diversified production were in better position to withstand the downturn of the zinc industry. Some even increased production in order to take advantage of economies of scale to ensure lower unit prices. During the past 2 years, four underground mines were closed in the United States and another three mines were put on care and maintenance. In addition, one company suspended mining operation while another postponed development of a new underground mine. These closures deprived the smelters of domestically produced zinc concentrates, forcing one smelter to convert solely to zinc recycling. These market-imposed closures in the United States and around the world may hasten consolidation of the zinc industry, as favored by many industry experts.

The United States remained one of the largest consumers of zinc and zinc products. However, 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 for 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 from those sources.

**World Mine Production, Reserves, and Reserve Base:** Reserves and reserve base estimates for Mexico and Peru have been significantly increased based on new information from those countries.

	Mine production <sup>6</sup>		Reserves <sup>7</sup>	Reserve base <sup>7</sup>
	<u>2001</u>	<u>2002<sup>e</sup></u>		
United States	842	740	30,000	90,000
Australia	1,520	1,520	33,000	80,000
Canada	1,000	1,000	11,000	31,000
China	1,700	1,500	33,000	92,000
Mexico	429	475	8,000	25,000
Peru	1,060	1,150	16,000	20,000
Other countries	<u>2,300</u>	<u>2,500</u>	<u>69,000</u>	<u>110,000</u>
World total (may be rounded)	8,850	8,900	200,000	450,000

**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.

<sup>e</sup>Estimated.

<sup>1</sup>Zinc recoverable after smelting and refining was reported for mine production prior to Mineral Commodity Summaries 2001.

<sup>2</sup>Platts Metals Week price for North American Special High Grade zinc.

<sup>3</sup>Defined as imports - exports + adjustments for Government and industry stock changes.

<sup>4</sup>No tariff for Canada and Mexico for items shown.

<sup>5</sup>See Appendix B for definitions.

<sup>6</sup>Zinc content of concentrate and direct shipping ore.

<sup>7</sup>See Appendix C for definitions.