

## ZINC

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

**Domestic Production and Use:** The value of zinc mined in 2001, based on contained zinc recoverable from concentrate, was about \$824 million. It was produced in 6 States by 19 mines operated by 8 companies. Alaska, Missouri, New York, and Tennessee accounted for 98% of domestic mine output; Alaska alone accounted for about three-fourths of production. Three primary and 12 large- and medium-sized secondary smelters refined zinc metal of commercial grade in 2001. 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>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001<sup>e</sup></b>
Production:					
Mine, zinc in ore <sup>1</sup>	632	755	813	829	830
Primary slab zinc	226	234	241	228	230
Secondary slab zinc	140	134	131	143	133
Imports for consumption:					
Ore and concentrate	50	46	75	53	50
Refined zinc	876	879	966	915	850
Exports:					
Ore and concentrate	461	552	531	523	530
Refined zinc	4	2	2	3	2
Shipments from Government stockpile	32	26	22	39	22
Consumption:					
Apparent, refined zinc	1,260	1,290	1,340	1,330	1,210
Apparent, all forms	1,490	1,580	1,610	1,610	1,500
Price, average, cents per pound:					
Domestic producers <sup>2</sup>	64.6	51.4	53.5	55.6	45.0
London Metal Exchange, cash	59.7	46.5	48.8	51.1	42.0
Stocks, slab zinc, yearend	88	68	84	77	100
Employment:					
Mine and mill, number <sup>e</sup>	2,500	2,400	2,500	2,600	2,400
Smelter primary, number <sup>e</sup>	1,000	1,000	1,000	1,000	900
Net import reliance <sup>3</sup> as a percentage of apparent consumption:					
Refined zinc	70	71	72	72	70
All forms of zinc	59	58	60	60	60

**Recycling:** In 2001, an estimated 440,000 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, 330,000 tons was derived from new scrap and 110,000 tons was derived from old scrap. About 12,000 tons of scrap was exported, mainly to Taiwan, and 43,000 tons was imported, mainly from Canada.

**Import Sources (1997-2000):** Ore and concentrate: Peru, 48%; Mexico, 20%; Australia, 19%; and other, 13%. Metal: Canada, 55%; Mexico, 9%; Kazakhstan, 7%; and other, 29%. Combined total: Canada, 53%; Mexico, 10%; Peru, 7%; and other, 30%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations<sup>4</sup> 12/31/01</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).

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### Government Stockpile:

#### Stockpile Status—9-30-01<sup>5</sup>

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2001	Disposals FY 2001
Zinc	114	6	114	45	24

**Events, Trends, and Issues:** In 2001, the price of zinc on the London Metal Exchange reached its lowest level in over a decade. Since the global economy is showing little, if any, sign of improvement and because new zinc production continues to come on-stream, a price recovery seems unlikely. Reaction to declining price by mining companies ranged from curtailment of mine production to outright closure of some mines through the sale of mining operations.

U.S. mine production greatly exceeded smelter capacity, necessitating exports of concentrate. More than one-third of all concentrate exports, which were supplied entirely by the Red Dog Mine in Alaska, was processed at the Trail smelter in Canada; the remaining two-thirds went mainly to Asian smelters. The United States is the world's largest exporter of zinc concentrates; it is also the largest importer of zinc metal.

Decline in domestic zinc consumption in 2001 reflected slowdown of the U.S. economy. Despite declining consumption, 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:

	Mine production <sup>6</sup>		Reserves <sup>7</sup>	Reserve base <sup>7</sup>
	2000	2001 <sup>e</sup>		
United States	829	830	25,000	80,000
Australia	1,420	1,500	32,000	80,000
Canada	936	950	11,000	31,000
China	1,710	1,700	34,000	93,000
Mexico	393	390	6,000	8,000
Peru	910	1,050	8,000	13,000
Other countries	<u>2,530</u>	<u>2,510</u>	<u>74,000</u>	<u>130,000</u>
World total (may be rounded)	8,730	8,930	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.

<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.