## **ZINC**

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

Domestic Production and Use: The value of zinc mined in 2003, based on contained zinc recoverable from concentrate, was about \$664 million. It was produced in 5 States by 10 mines operated by 7 companies. Alaska, Missouri, and Tennessee accounted for 97% of domestic mine output; the Red Dog Mine in Alaska alone accounted for about three-fourths of total U.S. production. Two primary and 12 large- and medium-sized secondary smelters refined zinc metal of commercial grade in 2003. 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.

Salient Statistics—United States:	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	2003 <sup>e</sup>
Production:	<u></u>	<u> </u>			
Mine, zinc in ore <sup>1</sup>	852	852	842	780	770
Primary slab zinc	241	228	203	182	210
Secondary slab zinc	131	143	108	113	120
Imports for consumption:					
Ore and concentrate	75	53	84	122	160
Refined zinc	1,060	915	813	874	780
Exports:					
Ore and concentrate	531	523	696	822	830
Refined zinc	2	3	1	1	1
Shipments from Government stockpile	22	39	23	3	5
Consumption:					
Apparent, refined zinc	1,430	1,330	1,150	1,170	1,110
Apparent, all forms	1,700	1,630	1,410	1,430	1,370
Price, average, cents per pound:					
Domestic producers <sup>2</sup>	53.5	55.6	44.0	38.6	39.0
London Metal Exchange, cash	48.8	51.2	40.2	35.7	36.0
Stocks, slab zinc, yearend	84	77	75	78	78
Employment:					
Mine and mill, number <sup>e</sup>	2,500	2,600	2,400	1,500	1,400
Smelter primary, number <sup>e</sup>	1,000	1,000	900	600	600
Net import reliance <sup>3</sup> as a percentage of					
apparent consumption:					
Refined zinc	74	72	73	75	70
All forms of zinc	62	60	59	61	57

**Recycling:** In 2003, 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, 320,000 tons was derived from new scrap and 50,000 tons was derived from old scrap. About 50,000 tons of scrap was exported, mainly to China, India, and Taiwan, and 30,000 tons was imported, 95% of which came from Canada.

Import Sources (1999-2002): Ore and concentrate: Peru, 52%; Australia, 26%; Mexico, 13%; and other, 9%. Metal: Canada, 57%; Mexico, 26%; Kazakhstan, 10%; and other, 7%. Combined total: Canada, 53%; Mexico, 24%; Peru, 10%; and other, 13%.

Number	Normal Trade Relations <sup>4</sup> 12/31/03
2608.00.0030	Free.
7901.11.0000	1.5% ad val.
7901.12.1000	3% ad val.
7901.20.0000	3% ad val.
7902.00.0000	Free.
2620.11.0000	Free.
2817.00.0000	Free.
	2608.00.0030 7901.11.0000 7901.12.1000 7901.20.0000 7902.00.0000 2620.11.0000

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

## ZINC

## **Government Stockpile:**

## Stockpile Status—9-30-03<sup>5</sup>

	Uncommitted	Committed	Authorized	Disposal plan	Disposals
Material	inventory	inventory	for disposal	FY 2003	FY 2003
Zinc	102	1	102	45	7

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 loses and were forced to either temporarily suspend production or close their operations. Larger companies with ample financial resources and diversified production were in better position to withstand the problems facing the zinc industry. Some even increased production in order to take advantage of economies of scale to ensure lower unit prices. During the past 3 years, five underground mines were closed in the United States; an additional three were put on care and maintenance, and the largest zinc recycling company filed for Chapter 11 bankruptcy protection. 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 domestically. 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:

<u></u>	Mine production <sup>6</sup>		Reserves <sup>7</sup>	Reserve base <sup>7</sup>
	<u>2002</u>	2003 <sup>e</sup>		
United States	780	770	30,000	90,000
Australia	1,150	1,600	33,000	80,000
Canada	894	1,000	11,000	31,000
China	1,550	1,700	33,000	92,000
Kazakhstan	390	350	30,000	35,000
Mexico	475	500	8,000	25,000
Peru	1,100	1,250	16,000	20,000
Other countries	2,020	1,300	59,000	87,000
World total (rounded)	8,360	8,500	220,000	460,000

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

<u>Substitutes</u>: 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.

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

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

<sup>&</sup>lt;sup>3</sup>Defined as imports – exports + adjustments for Government and industry stock changes.

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

<sup>&</sup>lt;sup>5</sup>See Appendix B for definitions.

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

<sup>&</sup>lt;sup>7</sup>See Appendix C for definitions.