

## ZINC

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

**Domestic Production and Use:** The value of zinc mined in 2004, based on contained zinc recoverable from concentrate, was about \$885 million. It was produced in 5 States by 10 mines operated by 6 companies. Alaska, Missouri, and Montana accounted for 99% of domestic mine output; the Red Dog Mine in Alaska alone accounted for about 90% of total U.S. production. Two primary and 12 large- and medium-sized secondary smelters refined zinc metal of commercial grade in 2004. 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>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004<sup>e</sup></b>
Production:					
Mine, zinc in ore <sup>1</sup>	852	842	780	738	770
Primary slab zinc	228	203	182	187	230
Secondary slab zinc	143	108	113	116	130
Imports for consumption:					
Ore and concentrate	53	84	122	164	220
Refined zinc	915	813	874	758	785
Exports:					
Ore and concentrate	523	696	822	841	850
Refined zinc	3	1	1	2	3
Shipments from Government stockpile	39	24	5	14	40
Consumption:					
Apparent, refined zinc	1,330	1,150	1,170	1,080	1,200
Apparent, all forms	1,630	1,420	1,420	1,340	1,470
Price, average, cents per pound:					
Domestic producers <sup>2</sup>	55.6	44.0	38.6	40.6	53.0
London Metal Exchange, cash	51.2	40.2	35.3	37.5	50.0
Stocks, slab zinc, yearend	77	75	78	73	55
Employment:					
Mine and mill, number <sup>e</sup>	2,600	2,400	1,500	1,000	1,200
Smelter primary, number <sup>e</sup>	1,000	900	600	600	600
Net import reliance <sup>3</sup> as a percentage of apparent consumption:					
Refined zinc	72	73	75	72	70
All forms of zinc	60	59	61	58	56

**Recycling:** In 2004, an estimated 400,000 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, 345,000 tons was derived from new scrap and 55,000 tons was derived from old scrap. About 35,000 tons of scrap was exported, mainly to China, and 10,000 tons was imported, most of which came from Canada.

**Import Sources (2000-03):** Ore and concentrate: Peru, 49%; Australia, 29%; Ireland, 10%; and other, 12%. Metal: Canada, 61%; Mexico, 16%; Kazakhstan, 8%; and other, 15%. Combined total: Canada, 55%; Mexico, 15%; Peru, 10%; and other, 20%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations<sup>4</sup> 12-31-04</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—9-30-04<sup>5</sup>**

<b>Material</b>	<b>Uncommitted inventory</b>	<b>Committed inventory</b>	<b>Authorized for disposal</b>	<b>Disposal plan FY 2004</b>	<b>Disposals FY 2004</b>
Zinc	65	13	65	45	40

**Events, Trends, and Issues:** The zinc industry worldwide was beginning to recover from lows reached in 2002, when the price of zinc on the London Metal Exchange (LME) reached its lowest level in 15 years and stocks were reaching 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 their operations entirely. Larger companies with ample financial resources and diversified production were in a better position to withstand the problems facing the zinc industry. Some companies even increased production in order to take advantage of economies of scale to ensure lower unit costs. As zinc prices began to improve in 2003 and 2004, several mines that were put on care and maintenance reopened, and some new mines came onstream.

The United States remained one of the leading 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:**

	<b>Mine production<sup>6</sup></b>		<b>Reserves<sup>7</sup></b>	<b>Reserve base<sup>7</sup></b>
	<b>2003</b>	<b>2004<sup>e</sup></b>		
United States	738	770	30,000	90,000
Australia	1,480	1,300	33,000	80,000
Canada	1,000	1,000	11,000	31,000
China	1,650	2,000	33,000	92,000
Kazakhstan	395	400	30,000	35,000
Mexico	460	420	8,000	25,000
Peru	1,250	1,400	16,000	20,000
Other countries	<u>2,040</u>	<u>1,810</u>	<u>59,000</u>	<u>87,000</u>
World total (rounded)	9,010	9,100	220,000	460,000

**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.