

## ZINC

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

**Domestic Production and Use:** The value of zinc mined in 2015, based on zinc contained in concentrate, was about \$1.78 billion. Zinc was mined in 5 States at 15 mines operated by 4 companies. Four facilities, one primary and three secondary, operated by three companies, produced commercial-grade zinc metal. Of the total reported zinc consumed, about 80% was used in galvanizing, 6% in brass and bronze, 5% in zinc-base alloys, and 9% in other uses.

<b>Salient Statistics—United States:</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015<sup>e</sup></b>
Production:					
Mine, zinc in concentrate	769	738	784	832	850
Metal production:					
At primary smelters	110	114	106	110	125
At secondary smelters	138	147	127	70	50
Imports for consumption:					
Zinc in ore and concentrate	27	6	3	( <sup>1</sup> )	( <sup>1</sup> )
Refined zinc	716	655	713	805	800
Exports:					
Zinc in ore and concentrate	653	591	669	644	740
Refined zinc	18	14	12	20	15
Shipments from Government stockpile	—	—	—	—	—
Consumption, apparent, refined zinc <sup>2</sup>	946	902	935	965	960
Price, average, cents per pound:					
North American <sup>3</sup>	106.2	95.8	95.6	107.1	95.0
London Metal Exchange (LME), cash	99.5	88.3	86.6	98.1	87.0
Reported producer and consumer stocks, refined zinc, yearend	72	74	74	84	85
Employment:					
Mine and mill, number <sup>4</sup>	2,240	2,310	2,560	2,620	2,680
Smelter, primary, number	244	252	257	259	259
Net import reliance <sup>5</sup> as a percentage of apparent consumption (refined zinc)	74	71	75	81	82

**Recycling:** In 2015, about 37% (65,000 tons) of the refined zinc produced in the United States was recovered from secondary materials at both primary and secondary smelters. Secondary materials included galvanizing residues and crude zinc oxide recovered from electric arc furnace dust.

**Import Sources (2011–14):** Ore and concentrate: Peru, 50%; Canada, 30%; Mexico, 16%; and Turkey, 4%. Refined metal: Canada, 64%; Mexico, 13%; Peru, 8%; Australia, 7%; and other, 8%. Waste and scrap: Canada, 72%; Mexico, 24%; and other, 4%. Combined total: Canada, 64%; Mexico, 14%; Peru, 9%; Australia, 7%; and other, 6%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations<sup>6</sup> 12–31–15</b>
Zinc ores and concentrates, Zn content	2608.00.0030	Free.
Zinc oxide; zinc peroxide	2817.00.0000	Free.
Unwrought zinc, not alloyed:		
Containing 99.99% or more zinc	7901.11.0000	1.5% ad val.
Containing less than 99.99% zinc:		
Casting-grade	7901.12.1000	3% ad val.
Other	7901.12.5000	1.5% ad val.
Zinc alloys	7901.20.0000	3% ad val.

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

**Government Stockpile:****Stockpile Status—9–30–15<sup>7</sup>**

<b>Material</b>	<b>Inventory</b>	<b>Disposal Plan FY 2015</b>	<b>Disposals FY 2015</b>
Zinc	7	—	—

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**Events, Trends, and Issues:** Global zinc mine production in 2015 was 13.4 million tons, essentially unchanged from that of 2014. According to the International Lead and Zinc Study Group,<sup>8</sup> global refined zinc production in 2015 increased by 4% to 14.0 million tons, and metal consumption rose slightly to 13.9 million tons, resulting in a production-to-consumption surplus of about 100,000 tons of refined zinc. Domestic zinc mine production increased slightly in 2015, owing mostly to the reopening of the Pend Oreille Mine in Washington in late 2014. The mine was expected to reach full production by yearend 2015. Refined zinc production decreased slightly; an increase in primary production was more than offset by a decrease in secondary production. Rampup of a new 140,000-metric-ton-per-year zinc recycling facility in Mooresboro, NC, continued to be delayed by technical issues. Apparent zinc consumption remained unchanged. Growth in the domestic galvanizing industry has been limited by the stronger dollar and a significant increase in galvanized steel imports from China. In June, six steel producers with operations in the United States filed antidumping and countervailing duty petitions asserting that imports of galvanized steel from China, India, Italy, the Republic of Korea, and Taiwan during the past 3 years have materially injured the domestic steel industry and that producers in these countries have benefitted significantly from Government-sponsored subsidy programs that allowed them to price products at less than fair value.

North American Special High Grade zinc prices averaged \$1.03 per pound in the first quarter of 2015 and \$1.08 per pound in the second quarter, reaching an average monthly high of \$1.12 per pound in May. Zinc prices then decreased significantly in the second half of the year, in tandem with a general decrease in base metal prices, falling to an average of \$0.86 per pound in September. Decreasing metal prices during this time were attributed to weakening global economic conditions with slowing growth in China.

**World Mine Production and Reserves:** Reserves estimates for Bolivia, Canada, India, Ireland, Kazakhstan, Mexico, and other countries were revised based on company data. The reserves estimates for Australia, China, and Peru were revised based on data from Government reports.

	Mine production <sup>9</sup>		Reserves <sup>10</sup>
	2014	2015 <sup>e</sup>	
United States	832	850	11,000
Australia	1,560	1,580	<sup>11</sup> 63,000
Bolivia	449	430	4,600
Canada	353	300	6,200
China	4,930	4,900	38,000
India	706	830	10,000
Ireland	283	230	1,100
Kazakhstan	345	340	4,000
Mexico	660	660	15,000
Peru	1,320	1,370	25,000
Other countries	<u>1,860</u>	<u>1,870</u>	<u>26,000</u>
World total (rounded)	13,300	13,400	200,000

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

**Substitutes:** Aluminum and plastics substitute for galvanized sheet in automobiles; and aluminum alloy, cadmium, paint, and plastic coatings replace zinc coatings in other applications. Aluminum- and magnesium-based alloys are major competitors for zinc-based die-casting alloys. Many elements are substitutes for zinc in chemical, electronic, and pigment uses.

<sup>e</sup>Estimated. — Zero.

<sup>1</sup>Less than ½ unit.

<sup>2</sup>Defined as primary refined production + secondary refined production + refined imports – refined exports + adjustments for Government stock changes.

<sup>3</sup>Platts Metals Week price for North American SHG zinc; based on the LME cash price plus premium.

<sup>4</sup>Includes mine and mill employment at all zinc-producing mines. Source: Mine Safety and Health Administration.

<sup>5</sup>Defined as imports – exports + adjustments for Government stock changes.

<sup>6</sup>No tariff for Canada, Mexico, and Peru for items shown.

<sup>7</sup>See [Appendix B](#) for definitions.

<sup>8</sup>International Lead and Zinc Study Group, 2015, ILZSG session/forecasts: Lisbon, Portugal, International Lead and Zinc Study Group press release, October 9, 5 p.

<sup>9</sup>Zinc content of concentrate and direct shipping ore.

<sup>10</sup>See [Appendix C](#) for resource/reserve definitions and information concerning data sources.

<sup>11</sup>For Australia, Joint Ore Reserves Committee-compliant reserves were about 25 million tons.