

ZINC

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

Domestic Production and Use: The estimated value of zinc mined in 2023 was about \$2.4 billion. Zinc was mined in five States at seven mining operations by five companies. Two smelter facilities, one primary and one secondary, operated by two companies, accounted for most of the commercial-grade zinc metal produced in the United States. Of the total reported zinc consumed, most was used to produce galvanized steel, followed by brass and bronze, zinc-base alloys, and other uses.

Salient Statistics—United States:	2019	2020	2021	2022	2023^e
Production:					
Mine, zinc in concentrates	753	723	704	761	750
Refined zinc ^{e, 1}	115	180	220	220	220
Imports for consumption:					
Zinc in ores and concentrates	(2)	3	13	5	20
Refined zinc	830	700	701	762	750
Exports:					
Zinc in ores and concentrates	792	546	644	644	730
Refined zinc	5	2	13	8	5
Shipments from Government stockpile ³	—	—	—	1	NA
Consumption, apparent, refined zinc ⁴	939	878	908	975	970
Price, average, cents per pound:					
North American ⁵	124.1	110.8	145.8	190.2	152
London Metal Exchange (LME), cash	115.6	102.7	136.3	158.1	120
Stocks, reported producer and consumer, refined zinc, yearend	116	120	120	100	100
Employment, number:					
Mine and mill ⁶	2,470	2,360	2,480	2,500	2,600
Smelter, primary	250	220	220	220	340
Net import reliance ⁷ as a percentage of apparent consumption:					
Ores and concentrates	E	E	E	E	E
Refined zinc	88	79	76	77	77

Recycling: 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 (2019–22): Ores and concentrates: Peru, 67%; Canada, 19%; China, 7%, Taiwan, 3%; and other, 4%. Refined metal: Canada, 62%; Mexico, 16%; Peru, 6%; Republic of Korea, 5%; and other, 11%. Waste and scrap (gross weight): Canada, 61%; Mexico, 37%; and other, 2%. Combined total (includes gross weight of waste and scrap): Canada, 62%; Mexico, 16%; Peru, 7%; Republic of Korea, 5%; and other, 10%.

Tariff:	Item	Number	Normal Trade Relations 12–31–23
	Zinc ores and concentrates, zinc content	2608.00.0030	Free.
	Zinc oxide; zinc peroxide	2817.00.0000	Free.
	Zinc sulfate	2833.29.4500	1.6% ad valorem.
	Unwrought zinc, not alloyed:		
	Containing 99.99% or more zinc	7901.11.0000	1.5% ad valorem.
	Containing less than 99.99% zinc:		
	Casting-grade	7901.12.1000	3% ad valorem.
	Other	7901.12.5000	1.5% ad valorem.
	Zinc alloys	7901.20.0000	3% ad valorem.
	Zinc waste and scrap	7902.00.0000	Free.

Depletion Allowance: 22% (domestic), 14% (foreign).

Government Stockpile:⁸

Material	FY 2023		FY 2024	
	Potential acquisitions	Potential disposals	Potential acquisitions	Potential disposals
Zinc	—	2.27	—	2.27

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Events, Trends, and Issues: U.S. zinc mine production was estimated to have decreased slightly in 2023 compared with that in 2022. Production was suspended at two zinc-producing mines in the second half of the year. In August, a fire took place at an underground silver-lead-zinc mine in Idaho; no personnel were in the mine at the time of the fire. Production was suspended for the remainder of 2023 while work was carried out to bypass the damaged area. In late November, production was temporarily paused at the Middle Tennessee zinc mines in response to decreasing zinc prices and the effect of inflation on input costs. During the closure, drilling work would be conducted to define additional zinc, germanium, and gallium resources. Domestic refined production was estimated to have remained unchanged in 2023 compared with that in the previous year, and apparent consumption was essentially unchanged alongside an estimated slight decrease in net imports of refined zinc.

The annual average LME cash price for Special High Grade (SHG) zinc was projected to decrease by 24% in 2023 from that in 2022. Average monthly prices decreased particularly during the first half of the year. High interest rates in the United States and Europe, the relative strength of the United States dollar, high energy prices in Europe, and concerns over a downturn in China's real estate sector were cited as factors contributing to the price decrease. The monthly average North American premium to the LME cash price decreased during 2023, but remained high compared with historical levels. According to the International Lead and Zinc Study Group,⁹ estimated global refined zinc production in 2023 was forecast to increase by 3.7% to 13.8 million tons and estimated metal consumption to increase by 1.1% to 13.6 million tons, resulting in a production-to-consumption surplus of 248,000 tons.

World Mine Production and Reserves: Reserves for Australia, China, India, Kazakhstan, Mexico, Peru, Russia, Sweden, the United States, and "Other countries" were revised based on company and Government reports.

	Mine production ¹⁰		Reserves ¹¹
	2022	2023 ^e	
United States	761	750	6,600
Australia	1,240	1,100	¹² 64,000
Bolivia	518	490	NA
China	4,040	4,000	44,000
India	840	860	7,400
Kazakhstan	312	330	6,700
Mexico	744	690	14,000
Peru	1,370	1,400	21,000
Russia	^e 300	310	25,000
South Africa	238	230	6,200
Sweden	234	220	4,100
Other countries	1,940	1,800	25,000
World total (rounded)	12,500	12,000	220,000

World Resources:¹¹ Identified zinc resources of the world are about 1.9 billion tons.

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

^eEstimated. E Net exporter. NA Not available. — Zero.

¹Includes primary and secondary zinc metal production.

²Less than ½ unit.

³Defined as changes in total inventory from prior yearend inventory. If negative, increase in inventory. Beginning in 2023, Government stock changes no longer available.

⁴Defined for 2019–22 as refined production + refined imports – refined exports ± adjustments for Government stock changes. Beginning in 2023, Government stock changes no longer included.

⁵Source: S&P Global Platts Metals Week, North American SHG zinc; based on the LME cash price plus premium.

⁶Includes mine and mill employment at zinc-containing deposits. Excludes office workers. Source: Mine Safety and Health Administration.

⁷Defined for 2019–22 as imports – exports ± adjustments for Government stock changes. Beginning in 2023, Government stock changes no longer included.

⁸See Appendix B for definitions.

⁹Source: International Lead and Zinc Study Group, 2023, ILZSG session/forecasts: Lisbon, Portugal, International Lead and Zinc Study Group press release, October 9, [4] p.

¹⁰Zinc content of concentrates and direct shipping ores.

¹¹See Appendix C for resource and reserve definitions and information concerning data sources.

¹²For Australia, Joint Ore Reserves Committee-compliant or equivalent reserves were 21 million tons.