ZINC

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

Domestic Production and Use: The estimated value of zinc mined in 2022 was about $3.2 billion. Zinc was mined in five States at seven mining operations by five companies. Three smelter facilities, one primary and two secondary, operated by three companies, produced commercial-grade zinc metal. 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:	2018	2019	2020	2021	2022[e]
Production:					
Zinc in ores and concentrates	824	753	723	704	770
Refined zinc[e, 1]	116	115	180	220	220
Imports for consumption:					
Zinc in ores and concentrates	([2])	([2])	3	13	6
Refined zinc	775	830	700	702	700
Exports:					
Zinc in ores and concentrates	806	792	546	644	660
Refined zinc	23	5	2	13	10
Shipments from Government stockpile[3]	—	—	—	—	1
Consumption, apparent, refined zinc[4]	868	939	878	908	910
Price, average, cents per pound:					
North American[5]	141.0	124.1	110.8	145.8	190
London Metal Exchange (LME), cash	132.7	115.6	102.7	136.3	160
Stocks, reported producer and consumer, refined zinc, yearend	119	116	120	110	100
Employment, number:					
Mine and mill[6]	2,630	2,470	2,360	2,470	2,600
Smelter, primary	250	250	220	220	220
Net import reliance[7] as a percentage of apparent consumption:					
Ores and concentrates	E	E	E	E	E
Refined zinc	87	88	79	76	76

Recycling: In 2022, an estimated 60% 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 (2018–21): Ores and concentrates: Peru, 71%; Canada, 15%; China, 7%, Taiwan, 4%; and other, 3%. Refined metal: Canada, 66%; Mexico, 16%; Peru, 6%; Spain, 6%; and other, 6%. Waste and scrap (gross weight): Canada, 62%; Mexico, 36%; and other, 2%. Combined total (includes gross weight of waste and scrap): Canada, 66%; Mexico, 16%; Peru, 6%; Spain, 6%; and other, 6%.

Tariff: Item	Number	Normal Trade Relations 12–31–22
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]

		FY 2022		FY 2023	
Material	Inventory as of 9–30–22	Potential acquisitions	Potential disposals	Potential acquisitions	Potential disposals
Zinc	6.46	—	7.25	—	2.27

Prepared by **Amy C. Tolcin [(703) 648–4940, atolcin@usgs.gov]**

ZINC

Events, Trends, and Issues: On February 24, 2022, a final U.S. critical minerals list was published in the Federal Register (87 FR 10381). The 2022 critical minerals list was an update of the list of critical minerals published in 2018 in the Federal Register (83 FR 23295). The 2022 critical minerals list contained 50 individual mineral commodities instead of 35 minerals and mineral groups. The changes in the 2022 list from the prior list were the addition of nickel and zinc and the removal of helium, potash, rhenium, strontium, and uranium. The list is to be updated every 3 years and revised as necessary consistent with available data.

U.S. zinc mine production increased by 9% in 2022 compared with that in 2021. Zinc production at the Red Dog zinc-lead mine in Alaska, the largest zinc mine in the United States, increased notably compared with that in 2021 owing to higher mill throughput and zinc ore grades. The owner of the Empire State zinc mine in New York received permitting to begin open pit mining activities. An open pit mine would operate alongside the active underground mine and was expected to contribute to an increase in mill throughput in the first half of 2023. Several other zinc exploration and mine expansion projects were in active development in the United States during 2022. The North American price for Special High Grade (SHG) zinc was estimated to have increased by 30% in 2022 from that in 2021. The North American premium to the LME cash price reached historical highs in 2022 amid decreasing stocks on the London Metal Exchange, reduced production by zinc smelters in Europe because of high energy costs, and the permanent closure of a zinc smelter in Canada. Other zinc smelters in Canada and Mexico reported equipment and operational issues that negatively affected production during the year.

According to the International Lead and Zinc Study Group,[9] estimated global refined zinc production in 2022 was forecast to decrease by 2.7% to 13.49 million tons and estimated metal consumption to decrease by 1.9% to 13.79 million tons, resulting in a production-to-consumption deficit of 297,000 tons.

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

	Mine production[10]		Reserves[11]
	2021	2022[e]	
United States	704	770	7,300
Australia	1,320	1,300	[12]66,000
Bolivia	500	520	NA
Canada	310	250	1,800
China	4,140	4,200	31,000
India	777	830	9,600
Kazakhstan	194	200	7,400
Mexico	724	740	12,000
Peru	1,530	1,400	17,000
Russia	280	280	22,000
Sweden	234	240	4,000
Other countries	1,960	2,000	30,000
World total (rounded)	12,700	13,000	210,000

World Resources:[10] 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.

[e]Estimated. E Net exporter. NA Not available. — Zero.

[1]Includes primary and secondary zinc metal production.

[2]Less than ½ unit.

[3]Defined as changes in total inventory from prior yearend inventory. If negative, increase in inventory.

[4]Defined as refined production + refined imports – refined exports ± adjustments for Government stock changes.

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

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

[7]Defined as imports – exports ± adjustments for Government stock changes.

[8]See Appendix B for definitions.

[9]Source: International Lead and Zinc Study Group, 2022, ILZSG session/forecasts: Lisbon, Portugal, International Lead and Zinc Study Group press release, October 12, [4] p.

[10]Zinc content of concentrates and direct shipping ores.

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

[12]For Australia, Joint Ore Reserves Committee-compliant or equivalent reserves were 23 million tons.