

Mineral Industry Surveys

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ZINC IN DECEMBER 2022

Domestic mine production (recoverable) of zinc in December 2022 was 63,500 metric tons (t) (tables 1, 2). Average daily (recoverable) mine production in December was 2,050 t, 35% more than the revised amount in the previous month but unchanged from that in December 2021 (fig. 1, table 2). Mine production (recoverable) in 2022 was 744,000 t, 8% more than that in 2021. The increase in annual mine production was mostly a result of an increase in zinc production at the Red Dog zinc-lead mine in Alaska, the largest zinc mine in the United States and one of the largest zinc mines globally. Teck Resources Ltd. (Canada) reported that zinc production at Red Dog was 553,100 t in 2022, 10% more than the 503,400 t produced in 2021. Higher zinc ore grades and an increase in the mill recovery rate offset a decrease in annual mill throughput (Teck Resources Ltd., 2022, p. 39).

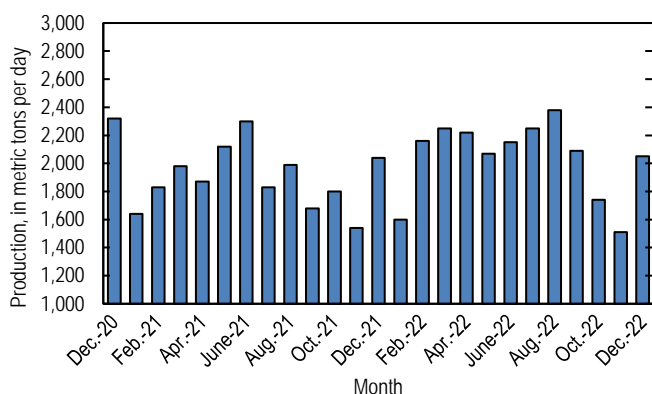


Figure 1. Average daily domestic zinc mine production (recoverable) from December 2020 through December 2022.

Zinc smelter production was estimated to have remained unchanged in 2022 compared with that in 2021 at 220,000 t. The two main zinc metal producers in the United States do not publicly disclose production (tables 1, 2).

Stocks and Prices

London Metal Exchange Ltd. (LME) stocks of Special High Grade (SHG) zinc held in U.S. warehouses were 25 t at yearend 2022, down from 350 t at the end of November 2021 and from

38,850 t at yearend 2021. Global LME stocks were 30,475 t at yearend 2022, 26% less than 41,225 t at the end of November 2021 and 85% less than 199,325 t at yearend 2021 (fig. 2, table 9). Reported off-warrant stocks of SHG zinc in LME-approved warehouses at the end of December 2022 increased to 37,640 t from 34,165 t at the end of November 2022; all of which were held in Asia (London Metal Exchange Ltd., 2023).

The monthly average S&P Global Platts Metals Week North American SHG zinc price in December 2022 was 179 cents per pound, 5% more than that in the previous month and 4% more than that in December 2021. The 2022 average North American price was 190 cents per pound, 30% more than that in 2021. The December 2022 average LME cash price for SHG zinc was \$3,127.50 per metric ton (142 cents per pound), 7% more than that in the previous month but 8% less than that in December 2021. The 2022 average LME cash price for SHG zinc was \$3,484.42 per metric ton (158 cents per pound), 16% more than that in 2021 (fig. 3, table 8).

The North American premium to the LME cash price in December 2022 averaged 36.9 cents per pound, 4% less than that in the previous month but about 2.1 times more than that in December 2021. The 2022 average North American premium was 32.1 cents per pound, about 3.4 times more than that in 2021 (fig. 3, table 8).

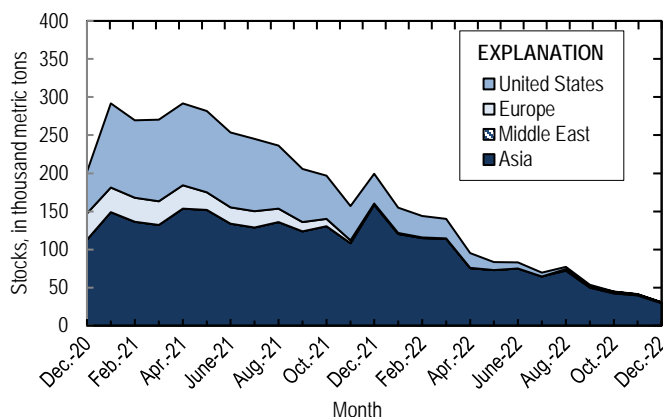


Figure 2. Global LME stocks of Special High Grade zinc, end of month, from December 2020 through December 2022. Source: London Metal Exchange Ltd.

U.S. News

Nucor Corp. (Charlotte, NC) announced that California Steel Industries Inc. (CSI) planned to build a continuous galvanizing line at its mill in Fontana, CA. The line would have a capacity of 363,000 metric tons per year (t/yr) (400,000 short tons per year) and would serve construction markets in the western United States. Investment costs were \$370 million, and construction would take 30 months to complete following regulatory approval. CSI, a joint venture between JFE Steel Corp. (Japan) and Nucor, currently operated two continuous galvanizing lines with a combined capacity of about 726,000 t/yr (about 800,000 short tons per year) (California Steel Industries Inc., 2022; Nucor Corp., 2022).

World News

In early December, Nyrstar NV (operating business wholly owned by Trafigura Group Pte. Ltd., Singapore) reported that scheduled maintenance work at its zinc smelter in Auby, France, which began in October, had been completed. However, the smelter was placed on care-and-maintenance status until further notice owing to challenging market conditions (Nyrstar NV, 2022). Zinc production capacity at the Auby smelter was previously reported to be 172,000 t/yr.

Noranda Income Fund (Canada) recommissioned its 265,000-t/yr zinc smelter in Salaberry-de-Valleyfield, Quebec, Canada, following a 6-week shutdown to assess and make repairs to the cellhouse. The Fund noted that it would eventually need to replace all cells in the cellhouse to improve operating conditions in the long term, but this replacement work would not commence before 2024. Canadian Electrolytic Zinc Ltd., a subsidiary of Glencore plc (Switzerland), operated and managed the smelter (Noranda Income Fund, 2022).

According to initial data compiled by the International Lead and Zinc Study Group (2023), global zinc mine production decreased by 2.5% in 2022 to 12.5 million metric tons (Mt) primarily due to production decreases in Australia, Canada,

China, and Peru. Metal production in 2022 decreased by 4% to 13.3 Mt owing mainly to decreased production by smelters in Europe because of a sharp increase in electricity prices. Metal production also decreased notably in China, Kazakhstan, and Mexico. Global zinc metal consumption decreased by 3% to 13.6 Mt mostly because of a significant decrease in consumption in China, as well as decreases in Europe, Australia, Brazil, Japan, the Republic of Korea, and Taiwan. The resulting zinc metal deficit was 306,000 t.

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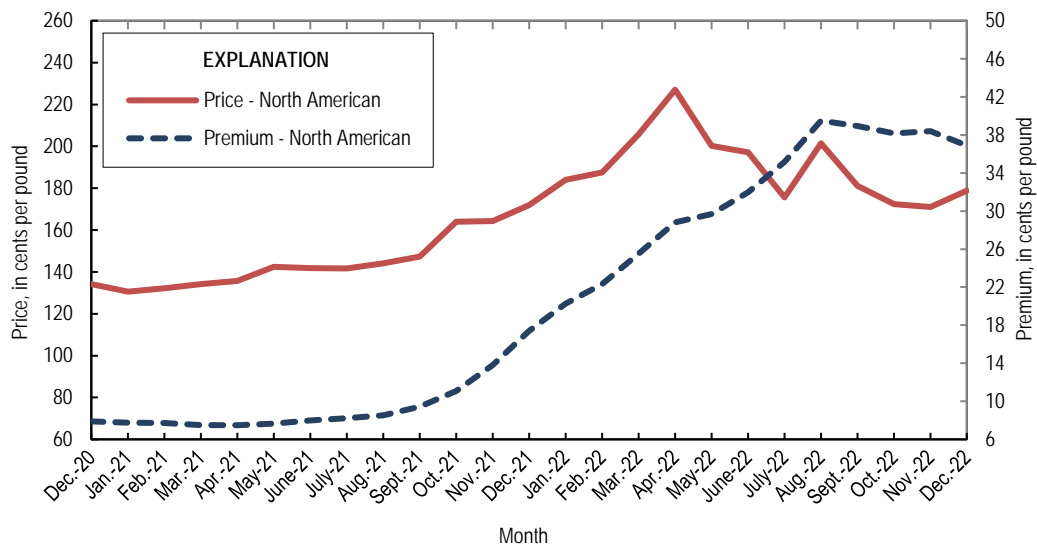


Figure 3. Average monthly North American price and premium for Special High Grade zinc from December 2020 through December 2022. The North American price is based on the London Metal Exchange cash price plus the North American premium. Source: S&P Global Platts Metals Week.

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TABLE 1
SALIENT ZINC STATISTICS¹

(Metric tons, unless otherwise specified)

	2021	2022		
	January– December ^p	November	December	January– December ²
Production:				
Mine, zinc content of concentrate ³	704,000	46,400 ^r	64,900	761,000
Mine, recoverable zinc ³	688,000	45,400 ^r	63,500	744,000
Smelter, refined zinc ^e	220,000	18,000	18,000	220,000
Consumption of refined zinc, apparent ⁴	908,000	83,400	123,000	973,000
Imports for consumption:				
Ore and concentrate (zinc content)	13,400	76	39	4,870
Refined zinc	702,000	65,800	106,000	762,000
Exports:				
Ore and concentrate (zinc content)	644,000	32,800	11,300	644,000
Refined zinc	13,200	302	585	8,630
Price: ⁵				
London Metal Exchange cash, average, dollars per metric ton	3,004.76	2,922.97	3,127.50	3,484.42
North American, ⁶ average, cents per pound	145.85	170.98	178.75	190.19

^eEstimated. ^pPreliminary. ^rRevised.

¹Data are rounded to no more than three significant digits, except prices; may not add to totals shown.

²May include revisions to previously published data.

³Reported zinc content in both zinc and lead concentrates.

⁴Smelter production plus imports for consumption minus domestic exports.

⁵Special High Grade Zinc.

⁶S&P Global Platts Metals Week.

TABLE 2
MINE AND SMELTER PRODUCTION OF ZINC
IN THE UNITED STATES¹

(Metric tons)

Period	Mine ²		Smelter ^c
	Zinc content	Recoverable	
2021:			
December	64,800	63,400	18,000
January–December	704,000	688,000	220,000
2022:			
January	50,700	49,500	18,000
February	61,700	60,400	18,000
March	71,200	69,700	18,000
April	68,200	66,700	18,000
May	65,500	64,100	18,000
June	65,900	64,400	18,000
July	71,500	69,900	18,000
August	75,400	73,800	18,000
September	64,100	62,700	18,000
October	55,300	54,000	18,000
November	46,400 ^r	45,400 ^r	18,000
December	64,900	63,500	18,000
January–December	761,000	744,000	220,000

^cEstimated. ^rRevised.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes the zinc content in both lead and zinc concentrates.

TABLE 3
U.S. SHIPMENTS OF
GALVANIZED STEEL SHEET AND STRIP¹

Period	Quantity (metric tons)
2021:	
December	1,480,000
January–December	18,000,000
2022:	
January	1,380,000
February	1,320,000
March	1,460,000
April	1,460,000
May	1,440,000
June	1,360,000
July	1,320,000
August	1,370,000
September	1,310,000
October	1,350,000
November	1,320,000
December	1,250,000
January–December	16,300,000

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: American Iron and Steel Institute.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF ZINC¹

(Gross weight, unless otherwise specified)

Material	2021		2022			
	Quantity (metric tons)	Value (thousands)	December		January–December ²	
			Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Ore and concentrate (zinc content)	13,400	\$19,400	39	\$20	4,870	\$9,880
Unwrought:						
Refined zinc	702,000	2,040,000	106,000	349,000	762,000	2,720,000
Zinc alloys	6,330	19,200	498	2,280	3,770	15,200
Wrought:						
Bars, rods, profiles, wire	3,780	14,200	297	1,270	3,520	16,300
Plates, sheets, strip, foil	1,940	9,910	167	1,040	1,680	9,840
Ash and residues: ³						
Hard zinc spelter	--	--	--	--	--	--
Zinc dross and skimmings	4,330	8,130	552	1,260	4,370	8,550
Other (zinc content)	6,350	8,770	449	260	5,610	12,000
Other:						
Powders, flakes, dust	23,500	93,300	2,150	9,930	19,800	92,600
Waste and scrap	12,600	21,500	823	1,630	10,900	23,300
Chemicals:						
Lithopone	1,820	5,380	20	139	1,110	4,520
Zinc oxide	109,000	306,000	7,300	24,100	104,000	373,000
Zinc chloride	180	1,260	27	162	453	2,990
Zinc sulfate	111,000	119,000	4,020	4,590	95,100	123,000
Zinc sulfide	1,190	7,110	93	675	1,930	9,710

-- Zero.

¹Data are rounded to no more than three significant digits.

²May include revisions to previously published data.

³Other than from the manufacture of iron and steel; containing mainly zinc.

Source: U.S. Census Bureau.

TABLE 5
U.S. IMPORTS OF ZINC, BY TYPE OF MATERIAL AND COUNTRY OR LOCALITY¹

(Metric tons, gross weight, unless otherwise specified)

Material and country or locality	General imports			Imports for consumption		
	2021	2022		2021	2022	
		December	January–December ²		December	January–December ²
Ore and concentrate (zinc content):						
Canada	2,470	(3)	1,610	2,470	(3)	1,610
China	151	--	358	151	--	358
Mexico	396	--	1	396	--	1
Peru	9,700	--	2,670	9,700	--	2,670
Other	712	39	230	712	39	230
Total	13,400	39	4,870	13,400	39	4,870
Refined zinc:						
Australia	2,230	30,600	69,000	28,100	30,600	74,000
Belgium	--	--	--	4,940	--	1,800
Brazil	350	--	--	8,830	--	10
Canada	468,000	18,800	378,000	468,000	18,800	378,000
China	(3)	--	(3)	1,050	--	502
Denmark	--	--	(3)	--	--	(3)
Germany	861	--	983	861	--	983
Italy	--	1	3	--	1	3
Japan	(3)	(3)	2	(3)	(3)	2
Kazakhstan	--	--	17,700	--	--	17,700
Korea, Republic of	9,110	33,500	88,600	30,500	33,500	94,000
Mexico	105,000	12,100	108,000	105,000	12,100	108,000
Netherlands	--	--	--	124	--	1,240
Nigeria	--	--	320	--	--	320
Peru	37,600	5,100	52,900	37,600	5,100	52,900
Poland	197	--	241	197	--	241
Singapore	--	--	21	--	--	21
Spain	--	5,500	5,500	15,900	5,500	31,600
Taiwan	--	--	21	--	--	21
Thailand	--	(3)	(3)	--	(3)	(3)
United Kingdom	--	20	20	--	20	20
Total	624,000	106,000	722,000	702,000	106,000	762,000
Oxide:						
Canada	45,800	2,690	44,200	45,800	2,690	44,200
China	296	--	820	296	--	820
Germany	1,330	311	1,870	1,330	311	1,870
Greece	539	82	375	539	82	375
Japan	728	150	1,250	728	150	1,250
Korea, Republic of	210	35	428	210	35	428
Mexico	44,200	2,970	41,300	44,200	2,970	41,300
Netherlands	9,110	695	6,900	9,110	695	6,900
Nigeria	299	--	72	299	--	72
Peru	5,230	311	5,830	5,230	311	5,830
Other	975	82	620	975	57	570
Total	109,000	7,320	104,000	109,000	7,300	104,000

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²May include revisions to previously published data.

³Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 6
U.S. EXPORTS OF ZINC¹

(Gross weight, unless otherwise specified)

Material	2021		2022			
	Quantity (metric tons)	Value (thousands)	December		January–December ²	
			Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Ore and concentrate (zinc content)	644,000	\$1,460,000	11,300	\$24,400	644,000	\$1,540,000
Unwrought:						
Refined zinc	13,200	34,500	585	2,330	8,630	27,000
Zinc alloys	28,300	91,000	2,480	7,610	44,300	124,000
Wrought:						
Bars, rods, profiles, wire	8,130	26,500	422	1,650	3,220	21,200
Plates, sheets, strip, foil	7,740	30,300	360	1,540	5,840	24,900
Ash and residues: ³						
Hard zinc spelter	13,300	26,200	673	1,480	12,300	29,100
Other (zinc content)	26,300	45,000	1,550	2,730	26,900	52,900
Other:						
Powders, flakes, dust	11,000	41,000	693	3,200	10,600	51,600
Waste and scrap	64,100	67,900	5,610	6,430	190,000	183,000
Chemicals:						
Lithopone	447	2,400	61	144	510	1,900
Zinc oxide	69,100	110,000	3,980	7,320	71,400	137,000
Zinc chloride	318	563	220	233	1,250	1,550
Zinc sulfate	578	502	221	145	805	764
Zinc sulfide	2,130	17,800	298	859	2,400	14,500

¹Data are rounded to no more than three significant digits.

²May include revisions to previously published data.

³Other than from the manufacture of iron and steel; containing mainly zinc.

Source: U.S. Census Bureau.

TABLE 7
U.S. EXPORTS OF ZINC, BY TYPE OF MATERIAL AND COUNTRY OR LOCALITY¹

(Metric tons, gross weight, unless otherwise specified)

Material and country or locality	2021	2022	
		December	January-December ²
Ore and concentrate (zinc content):			
Australia	63,600	--	19,300
Belgium	43,300	--	45,200
Canada	261,000	4,990	241,000
China	17,400	1,830	49,400
Finland	21,400	--	23,300
Germany	29,200	--	--
Italy	25,500	--	--
Japan	46,400	2,480	63,400
Korea, Republic of	79,900	1,970	119,000
Netherlands	--	--	3,080
Peru	5,060	--	--
Spain	51,400	--	79,500
Other	40	2	43
Total	644,000	11,300	644,000
Refined zinc:			
Belgium	1,980	--	760
Canada	1,220	412	1,440
Italy	5,480	--	3,050
Mexico	3,390	173	2,840
Spain	1,000	--	250
Other	91	--	293
Total	13,200	585	8,630
Oxide:			
Belgium	32	1	431
Brazil	249	11	285
Canada	4,640	337	3,710
China	216	9	127
Finland	--	100	797
France	286	--	57
Germany	295	--	85
India	531	119	828
Mexico	61,100	3,320	63,500
Peru	246	--	--
United Kingdom	214	--	145
Other	1,320	79	1,410
Total	69,100	3,980	71,400

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²May include revisions to previously published data.

Source: U.S. Census Bureau.

TABLE 8
AVERAGE PRICES FOR SPECIAL HIGH GRADE ZINC

Period	North American		London Metal Exchange	
	Premium	Price ¹	cash ²	
	¢/lb.	¢/lb.	¢/lb.	\$/t
2021:				
December	17.4	171.95	154.55	3,407.32
January–December	9.6	145.85	136.29	3,004.76
2022:				
January	20.3	184.00	163.71	3,609.29
February	22.3	187.60	165.27	3,643.68
March	25.5	205.75	180.24	3,973.62
April	28.8	227.06	198.24	4,370.41
May	29.7	200.19	170.50	3,758.77
June	32.0	197.24	165.26	3,643.29
July	35.2	175.63	140.46	3,096.58
August	39.5	201.52	162.03	3,572.13
September	39.0	181.18	142.23	3,135.72
October	38.2	172.40	134.22	2,959.05
November	38.4	170.98	132.58	2,922.97
December	36.9	178.75	141.86	3,127.50
January–December	32.1	190.19	158.05	3,484.42

¹ S&P Global Platts Metals Week North American price. Based on the London Metal Exchange cash price plus the North American premium.

² Average of the cash buyer price and the cash seller and settlement price.

Source: S&P Global Platts Metals Week.

TABLE 9
LONDON METAL EXCHANGE (LME) STOCKS OF SPECIAL HIGH GRADE ZINC, END OF PERIOD

(Metric tons)

Period	United States			Asia	Europe	Middle East	Total LME
	Baltimore, MD	New Orleans, LA	Total				
2021:							
December	6,575	32,275	38,850	158,825	1,650	--	199,325
2022:							
January	5,400	27,750	33,150	120,350	1,350	--	154,850
February	4,825	23,500	28,325	115,050	525	--	143,900
March	4,425	20,925	25,350	114,100	500	--	139,950
April	3,700	15,900	19,600	75,375	375	--	95,350
May	1,800	8,875	10,675	72,875	25	--	83,575
June	1,650	6,075	7,725	75,050	25	--	82,800
July	1,300	3,950	5,250	64,450	25	--	69,725
August	1,000	2,150	3,150	72,025	25	1,950	77,150
September	975	750	1,725	49,925	25	1,950	53,625
October	650	--	650	42,450	25	1,700	44,825
November	350	--	350	39,550	25	1,300	41,225
December	25	--	25	29,425	25	1,000	30,475

-- Zero.

Source: London Metal Exchange, Ltd.