

Mineral Industry Surveys

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ZINC IN OCTOBER 2023

Domestic mine production (recoverable) of zinc in October 2023 was 74,000 metric tons (t) (tables 1, 2). Mine production (recoverable) for the year through October was 619,000 t, 3% less than that in the same period in 2022. Average daily (recoverable) mine production in October was 2,390 t, 24% more than the revised amount in the previous month and 35% more compared with the revised amount in October 2022 (fig. 1, table 2).

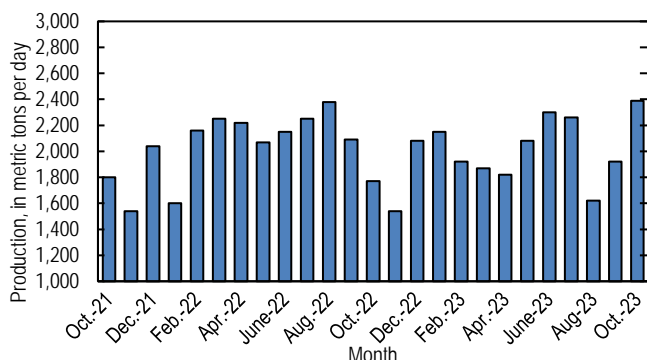


Figure 1. Average daily domestic zinc mine production (recoverable) from October 2021 through October 2023.

Stocks and Prices

There were no London Metal Exchange Ltd. (LME) stocks of Special High Grade (SHG) zinc held in U.S. warehouses at the end of October 2023, unchanged since the end of January 2023 and down from 650 t at the end of October 2022. Global LME stocks were 82,700 t at the end of October 2023, 20% less compared with stocks at the end of September 2023 but almost double those at the end of October 2022 (fig. 2, table 9). Reported off-warrant stocks of SHG zinc in LME-approved warehouses at the end of October 2023 increased to 74,846 t from 49,684 t at the end of September 2023; of which 97% were held in Asia and 3% in Europe (London Metal Exchange Ltd., 2023).

The monthly average S&P Global Platts Metals Week North American SHG zinc price in October 2023 was 139 cents per pound, slightly less than that in the previous month and 19% less than that in October 2022. The October 2023 average LME

cash price for SHG zinc was \$2,448.75 per metric ton (111 cents per pound), slightly less than that in the previous month and 17% less than that in October 2022 (fig. 3, table 8).

The North American premium to the LME cash price in October 2023 averaged 28 cents per pound, 4% less than that in the previous month and 27% less compared with that in October 2022 (fig. 3, table 8).

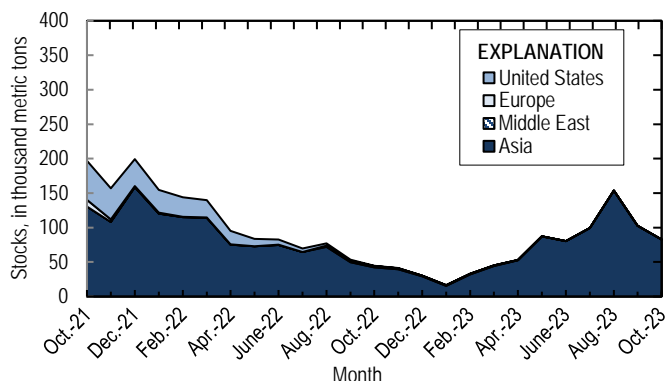


Figure 2. Global LME stocks of Special High Grade zinc, end of month, from October 2021 through October 2023. Source: London Metal Exchange Ltd.

Government Actions and Legislation

In September, the Federal Permitting Improvement Steering Council (Permitting Council) proposed to amend mining regulations under Title 41 of the Fixing America's Surface Transportation Act to focus on critical minerals and include the entire critical minerals supply chain—including beneficiation, refining, and recycling—in addition to mining. The expanded focus was expected to facilitate the permitting process of clean-energy infrastructure projects. In October, the Permitting Council announced that an initial \$155 million of \$350 million in funding was allocated from the Inflation Reduction Act to multiple Federal agencies to increase the efficiency of their infrastructure permitting process (Permitting Council Press Office, 2023a, b). Galvanized steel is used extensively in infrastructure, and zinc-based batteries have been used in long-duration renewable energy storage. The U.S. Geological Survey added zinc to its final critical minerals list in 2022.

Domestic News

Nyrstar NV (a subsidiary of Trafigura Group Pte. Ltd., Singapore) announced that production at the Middle Tennessee zinc mines in Gordonsville, TN, would be suspended beginning November 30 owing to market conditions, including decreasing zinc prices, and the effects of inflation on operating costs. Concentrate produced at the Middle Tennessee Mines was processed at Nyrstar's nearby zinc smelter in Clarksville, TN, along with concentrate produced at the East Tennessee Mines. The company would replace the Middle Tennessee concentrate with zinc concentrate from external sources at Clarksville. Nyrstar still planned to invest in the recovery of byproduct gallium and germanium at the Clarksville smelter and would conduct exploration and definition drilling at Middle Tennessee to identify additional gallium, germanium, and zinc resources (Nyrstar NV, 2023).

World News

Newmont Corp. (Denver, CO) announced the end of a strike of unionized workers at the company's Peñasquito Mine in Zacatecas, Mexico, after a deal was negotiated to increase worker salaries. The 4-month long strike began June 7 and ended October 13. The Peñasquito gold mine was a leading zinc-producing mine in Mexico, producing 171,000 t of payable zinc in 2022. The company forecast production in 2023 to decrease to about 104,000 t of payable zinc (Newmont Corp., 2023a, p. 48; 2023b; 2023c, p. 6).

Mexico's National Chamber of the Iron and Steel Industry (CANACERO) expected companies to invest a total of \$5.6 billion into Mexico's steel industry between 2023 and 2025, about 60% more than the amount invested in the previous 3 years. Part of this investment would finance additional galvanized steel production capacity (Peroni, 2023).

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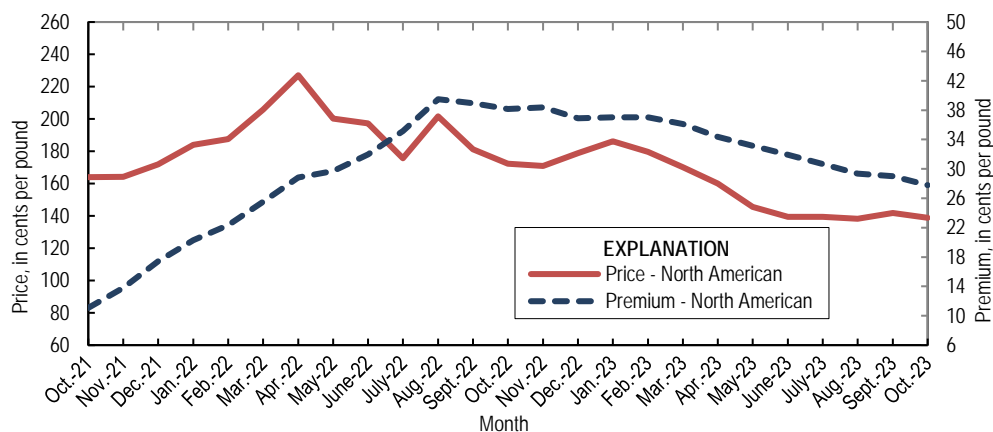


Figure 3. Average monthly North American price and premium for Special High Grade zinc from October 2021 through October 2023. The North American price is based on the London Metal Exchange cash price plus the North American premium. Source: S&P Global Platts Metals Week.

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TABLE 1
SALIENT ZINC STATISTICS¹

(Metric tons, unless otherwise specified)

	2022	2023		
	January– December ^p	September	October	January– October ²
Production:				
Mine, zinc content of concentrate ³	763,000 ^r	58,900 ^r	75,700	633,000
Mine, recoverable zinc ³	747,000 ^r	57,500 ^r	74,000	619,000
Smelter, refined zinc ^{e,4}	220,000	18,000	18,000	180,000
Consumption of refined zinc, apparent ⁵	974,000	65,900	64,600	782,000
Imports for consumption:				
Ore and concentrate (zinc content)	4,870	246	176	15,600
Refined zinc	762,000	48,100	46,700	606,000
Exports:				
Ore and concentrate (zinc content)	644,000	129,000	45,400	591,000
Refined zinc	8,070	155	91	3,810
Price: ⁶				
London Metal Exchange cash, average, dollars per metric ton	3,484.42	2,487.75	2,448.75	2,673.69
North American, ⁷ average, cents per pound	190.19	141.86	138.87	153.92

^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.

⁴Monthly and annual smelter production data are estimated to avoid disclosing company proprietary data and do not reflect actual production reported to the U.S. Geological Survey.

⁵Smelter production plus imports for consumption minus domestic exports. Apparent consumption may not reflect actual consumption owing to significant changes in unreported stocks.

⁶Special High Grade Zinc.

⁷S&P Global Platts Metals Week.

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

(Metric tons)

Period	Mine ²		Smelter ^{e, 3}
	Zinc content	Recoverable	
2022:			
October	56,200 ^r	54,900 ^r	18,000
November	47,300 ^r	46,200 ^r	18,000
December	65,800 ^r	64,400 ^r	18,000
January–December	763,000 ^r	747,000 ^r	220,000
2023:			
January	68,300	66,800	18,000
February	55,200	53,900	18,000
March	59,500	58,100	18,000
April	55,900	54,600	18,000
May	65,900	64,500	18,000
June	70,700	69,100	18,000
July	72,000 ^r	69,900 ^r	18,000
August	51,300	50,100	18,000
September	58,900 ^r	57,500 ^r	18,000
October	75,700	74,000	18,000
January–October	633,000	619,000	180,000

^eEstimated. ^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.

³Monthly and annual smelter production data are estimated to avoid disclosing company proprietary data and do not reflect actual production reported to the U.S. Geological Survey.

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

Period	Quantity (metric tons)
2022:	
October	1,350,000
November	1,320,000
December	1,250,000
January–October	13,800,000
January–December	16,300,000
2023:	
January	1,290,000
February	1,280,000
March	1,380,000
April	1,410,000
May	1,440,000
June	1,410,000
July	1,360,000
August	1,410,000
September	1,280,000
October	1,330,000
January–October	13,600,000

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	2022		2023			
	Quantity (metric tons)	Value (thousands)	October		January–October ²	
			Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Ore and concentrate (zinc content)	4,870	\$9,880	176	\$158	15,600	\$16,800
Unwrought:						
Refined zinc	762,000	2,710,000	46,700	136,000	606,000	1,940,000
Zinc alloys	3,770	15,200	434	1,360	4,020	14,000
Wrought:						
Bars, rods, profiles, wire	3,500	16,200	258	1,130	3,330	13,800
Plates, sheets, strip, foil	1,680	9,840	242	1,130	1,430	8,120
Ash and residues: ³						
Hard zinc spelter	--	--	--	--	(4)	22
Zinc dross and skimmings	4,370	8,550	218	388	4,900	7,980
Other (zinc content)	5,610	12,000	36	36	1,640	1,170
Other:						
Powders, flakes, dust	19,800	92,600	1,920	82,000	14,100	62,200
Waste and scrap	10,900	23,300	876	1,840	9,030	18,600
Chemicals:						
Lithopone	1,110	4,520	8	20	226	1,000
Zinc chloride	419	2,830	138	650	593	3,100
Zinc oxide	104,000	371,000	8,700	26,200	82,300	265,000
Zinc sulfate	95,200	124,000	7,830	6,630	57,300	53,600
Zinc sulfide	1,930	9,710	324	1,780	1,940	11,200

-- 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.

⁴Less than ½ unit.

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		
	2022	2023		2022	2023	
		October	January–October ²		October	January–October ²
Ore and concentrate (zinc content):						
Canada	1,610	176	1,830	1,610	176	1,830
China	358	--	--	358	--	--
Korea, Republic of	--	--	3,860	--	--	3,860
Peru	2,670	--	--	2,670	--	--
Turkey	--	--	9,950	--	--	9,950
Other	232	--	9	232	--	9
Total	4,870	176	15,600	4,870	176	15,600
Refined zinc:						
Australia	69,000	--	39,700	74,000	--	39,700
Belgium	--	59	286	1,800	59	286
Brazil	--	499	22,400	10	499	22,400
Bulgaria	--	--	43	--	--	43
Canada	378,000	30,500	293,000	378,000	30,500	293,000
China	(3)	78	2,050	502	78	2,050
Denmark	(3)	--	--	(3)	--	--
Germany	983	--	10	983	--	10
India	--	18	4,940	--	18	4,940
Italy	3	25	27	3	25	27
Japan	2	19	1,750	2	19	1,750
Kazakhstan	17,700	--	39,400	17,700	--	39,400
Korea, Republic of	88,600	3,390	50,400	94,000	3,390	50,400
Luxembourg	--	--	75	--	--	75
Mexico	108,000	8,110	91,300	108,000	8,110	91,300
Netherlands	--	--	--	1,240	--	--
Nigeria	320	--	--	320	--	--
Peru	52,900	3,990	57,500	52,900	3,990	57,500
Poland	241	--	780	241	--	780
Singapore	21	--	25	21	--	25
Spain	5,500	--	--	31,600	--	--
Taiwan	21	--	9	21	--	9
Thailand	(3)	--	--	(3)	--	--
United Kingdom	20	--	1,640	20	--	1,640
Total	722,000	46,700	606,000	762,000	46,700	606,000
Oxide:						
Australia	197	29	406	148	29	430
Canada	44,200	3,240	30,300	44,200	3,240	30,300
China	800	20	157	800	30	141
Germany	1,870	24	480	1,870	24	480
Greece	375	48	686	375	48	686
Japan	1,210	23	429	1,210	23	429
Korea, Republic of	428	82	309	428	82	309
Mexico	41,300	3,760	41,100	41,300	3,760	41,100
Netherlands	6,900	963	2,940	6,900	963	2,940
Peru	5,850	430	4,900	5,850	430	4,900
Other	494	75	572	494	75	572
Total	104,000	8,690	82,300	104,000	8,700	82,300

-- 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	2022		2023			
	Quantity (metric tons)	Value (thousands)	October		January–October ²	
			Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Ore and concentrate (zinc content)	644,000	\$1,530,000	45,400	\$68,400	591,000	\$889,000
Unwrought:						
Refined zinc	8,070	28,300	91	1,000	3,810	12,600
Zinc alloys	44,300	124,000	2,550	9,100	30,600	97,700
Wrought:						
Bars, rods, profiles, wire	3,220	21,200	176	840	1,820	8,790
Plates, sheets, strip, foil	5,830	24,800	692	3,040	4,590	18,900
Ash and residues: ³						
Hard zinc spelter	12,300	29,300	1,670	3,060	11,400	21,800
Other (zinc content)	26,900	52,900	2,940	4,640	20,500	33,100
Other:						
Powders, flakes, dust	10,600	51,700	588	2,680	6,240	30,200
Waste and scrap	190,000	183,000	3,170	3,780	39,000	46,400
Chemicals:						
Lithopone	510	1,900	80	236	357	1,210
Zinc chloride	1,250	1,550	240	430	1,120	1,910
Zinc oxide	71,300	137,000	6,680	9,270	61,200	92,500
Zinc sulfate	808	769	24	27	465	396
Zinc sulfide	2,400	14,500	48	818	1,660	10,800

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	2022	2023	
		October	January–October ²
Ore and concentrate (zinc content):			
Australia	19,300	--	63,500
Belgium	45,200	--	48,700
Canada	241,000	42,700	209,000
China	49,400	2,680	29,000
Finland	23,300	--	23,900
Japan	63,400	--	37,400
Korea, Republic of	120,000	--	116,000
Netherlands	3,080	--	--
Spain	79,500	--	61,100
Other	43	2	2,840
Total	644,000	45,400	591,000
Refined zinc:			
Belgium	758	--	--
Brazil	--	(3)	1,880
Canada	1,460	48	735
Italy	2,470	8	10
Mexico	2,840	35	1,160
Other	543	--	27
Total	8,070	91	3,810
Oxide:			
Belgium	387	1	240
Brazil	285	8	139
Canada	3,710	451	2,030
Colombia	275	15	212
Finland	797	--	715
India	828	18	1,100
Italy	108	1	175
Japan	38	9	362
Mexico	63,500	6,000	54,700
United Kingdom	145	43	267
Other	1,260	129	1,250
Total	71,300	6,680	61,200

-- 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 8
AVERAGE PRICES FOR SPECIAL HIGH GRADE ZINC

Period	North American		London Metal Exchange	
	Premium	Price ¹	cash ²	
	¢/lb.	¢/lb.	¢/lb.	\$/t
2022:				
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
2023:				
January	37.0	186.20	149.17	3,288.55
February	37.0	179.60	142.57	3,143.04
March	36.1	170.16	134.06	2,955.59
April	34.4	160.11	125.74	2,772.06
May	33.1	145.49	112.36	2,477.10
June	31.9	139.33	107.39	2,367.64
July	30.7	139.33	108.68	2,395.99
August	29.4	138.23	108.88	2,400.48
September	29.0	141.86	112.84	2,487.75
October	27.8	138.87	111.07	2,448.75
January–October	32.6	153.92	121.28	2,673.70

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

²Average 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				
2022:							
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
2023:							
January	--	--	--	15,475	--	1,000	16,475
February	--	--	--	32,225	--	1,000	33,225
March	--	--	--	44,300	--	750	45,050
April	--	--	--	52,525	--	400	52,925
May	--	--	--	87,400	--	50	87,450
June	--	--	--	80,225	--	50	80,275
July	--	--	--	99,300	--	50	99,350
August	--	--	--	153,525	--	50	153,575
September	--	--	--	102,725	--	50	102,775
October	--	--	--	82,650	--	50	82,700

-- Zero.

Source: London Metal Exchange, Ltd.