

Mineral Industry Surveys

For information, contact:

Kim B. Shedd, Cobalt Commodity Specialist
National Minerals Information Center
Telephone: (703) 648-4974
Email: kshed@usgs.gov

Annie Hwang (Data)
Telephone: (703) 648-7952
Email: ahwang@usgs.gov

Text prepared by:
Samantha Ewing, Mineral Commodity Specialist (Cobalt backup)

Internet: <https://www.usgs.gov/centers/national-minerals-information-center/mineral-industry-surveys>

COBALT IN OCTOBER 2023

The amount of cobalt contained in U.S. imports of cobalt metals and chemicals in October 2023 was 8% less than that imported during September 2023. For the first 10 months of 2023, the amount of cobalt contained in imports was 16% less than that imported during the same period in 2022 (table 2). The amount of cobalt contained in U.S. exports of unwrought cobalt and chemicals in October 2023 was 21% more than that exported during September 2023. During the first 10 months of 2023, the amount exported was essentially unchanged from the amount exported during the same period in 2022 (table 4).

than that in October 2022. The October 2023 monthly average U.S. spot cobalt price was 3% higher than in September 2023 and was 30% lower than that in October 2022 (fig. 1). The following listed prices are for cobalt metal in October, in dollars per pound.

Type	Price range	Average price
U.S. spot ¹	Not available	18.10
LME cash mean ²	14.84–14.86	14.85

¹Source: S&P Global Platts Metals Week, minimum 99.8% cobalt cathode.

²London Metal Exchange, mean of the cash buyer and cash seller price, minimum 99.8% cobalt briquettes, cathode, coarse grain powder, or rounds (converted from dollars per metric ton and rounded to the nearest cent).

Prices and Stocks

During the past 2 years, London Metal Exchange (LME) cobalt stocks have generally trended downward. In October 2023, LME cobalt stocks were unchanged from those in September 2023 (table 1). Monthly average cobalt prices trended up into the second quarter of 2022 then decreased through the first half of 2023, reaching lows in June 2023 not seen in the past two years. Prices increased in July but have since leveled out. In October, the LME cash mean price was unchanged from that in September 2023 and was 36% lower

Industry News

In its third quarter production report released in October, MMG Ltd. (Hong Kong) announced it completed construction and began commissioning a cobalt plant at the Kinsevere Copper Mine in Haut-Katanga Province, Congo (Kinshasa). The cobalt plant was part of a mine expansion project that also

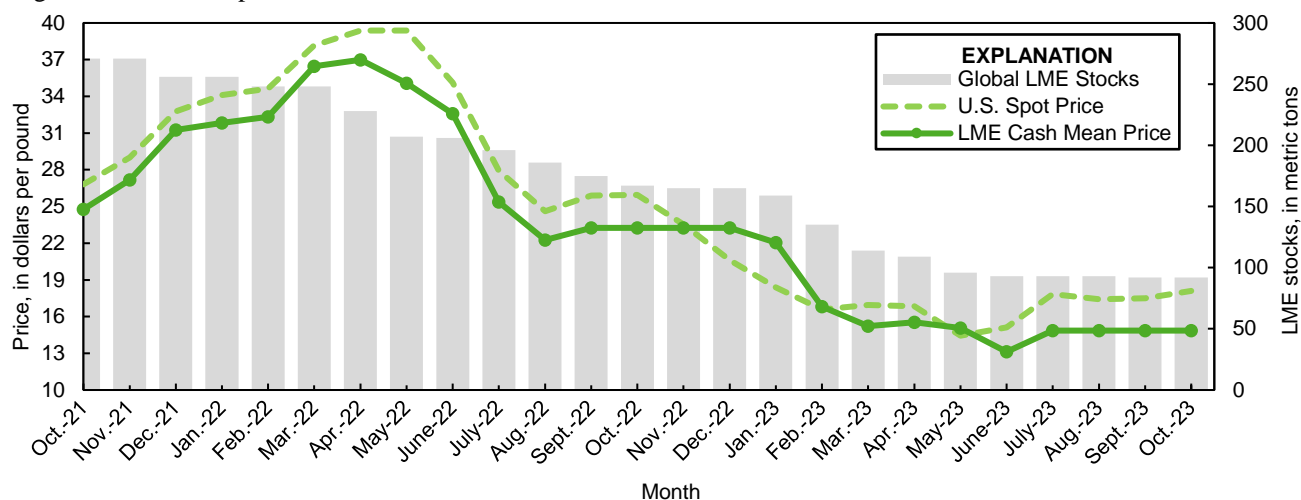


Figure 1. Global LME cobalt stocks, average U.S. spot cobalt prices, and average LME cash mean cobalt prices for October 2021 through October 2023. Sources: London Metal Exchange and S&P Global Platts Metals Week.

included construction of a sulfide plant to produce copper cathode from sulfide ore. This was in addition to ongoing copper production from oxide ore. The expansion project was expected to extend the Kinsevere Mine life by 13 years and add 4,000 metric tons per year (t/yr) to 6,000 t/yr of cobalt production in hydroxide (MMG Ltd., 2023, p. 7)

CMOC Group Ltd. (China) cobalt mine production in Congo (Kinshasa) increased by 144% in the first nine months of 2023 compared to the same period in 2022. The increase was owing to start-up of the Kisanfu copper and cobalt project and the addition of a third production line at Tenke Fungurume. Year-to-date production from both mines at the end of the third quarter was 37,259 metric tons (t) of cobalt in hydroxide. The 2023 full-year production guidance was 45,000 t to 54,000 t of cobalt in hydroxide, which was more than twice as much as the 20,286 t of cobalt in hydroxide produced in Congo (Kinshasa) at Tenke Fungurume in 2022 (CMOC Group Ltd., 2023a, p. 33, 54, 81; 2023b, p. 15–16; 2023c, p. 9–10).

In October, the National Food and Strategic Reserves Administration of China planned to purchase approximately 3,000 t of cobalt for stockpiling. This would be the second cobalt purchase for stockpiling in China in 2023. The National Food and Strategic Reserves Administration purchased approximately 5,000 t in July (Lee and others, 2023).

Lithium-ion battery recycler, Li-Cycle Holdings Corp. (Canada), paused construction of its hydrometallurgical plant in Rochester, New York, citing rising project costs. Further work on the facility was pending re-evaluation of project scope, budget, and construction strategy. Earlier in the year, Li-Cycle expected to begin plant commissioning by yearend 2023. Li-Cycle planned to produce up to 7,500 t of cobalt sulfate (along with nickel sulfate and lithium carbonate) from shredded lithium-ion battery scrap (black mass) generated at its processing facilities in Alabama, Arizona, New York, and Ontario, Canada. Li-Cycle's metal salts would be sold for manufacturing new lithium-ion batteries. In February 2023, Li-Cycle confirmed receipt of a conditional \$375 million loan through the Department of Energy's Advanced Technology Vehicles Manufacturing Program to support development of the Rochester facility (Li-Cycle Holdings Corp., 2023a,b,c).

References Cited

- CMOC Group Ltd., 2023a, 2022 annual report: Luoyang City, China, CMOC Group Ltd., March 17, 372 p. (Accessed December 13, 2023, at <https://www1.hkexnews.hk/listedco/listconews/sehk/2023/0428/2023042804425.pdf>.)
- CMOC Group Ltd., 2023b, 2023 interim report: Luoyang City, China, CMOC Group Ltd., August 25, 276 p. (Accessed December 13, 2023, at <https://www1.hkexnews.hk/listedco/listconews/sehk/2023/0825/2023082501647.pdf>.)
- CMOC Group Ltd., 2023c, 2023 third quarterly financial report: Luoyang City, China, CMOC Group Ltd., October 27, 17 p. (Accessed December 13, 2023, at https://en.cmoc.com/html/2023/Performance_1110/77.html.)
- Lee, Annie, Cang, Alfred, and Burton, Mark, 2023, China plans to boost state cobalt reserves after prices drop: Bloomberg L.P., October 23. (Accessed December 13, 2023, at <https://www.bloomberg.com/news/articles/2023-10-23/china-plans-to-buy-more-cobalt-for-reserves-after-prices-plunge?leadSource=uverify%20wall>.)
- Li-Cycle Holdings Corp., 2023a, Li-Cycle announces review of the Rochester Hub Project: Toronto, Ontario, Canada, Li-Cycle Holdings Corp. news release, October 23. (Accessed December 13, 2023, at <https://li-cycle.com/press-releases/li-cycle-announces-review-of-the-rochester-hub-project/>.)
- Li-Cycle Holdings Corp., 2023b, Li-Cycle receives conditional commitment for \$375 million loan from the U.S. Department of Energy ATVM Program: Toronto, Ontario, Canada, Li-Cycle Holdings Corp. news release, February 27. (Accessed December 13, 2023, at <https://li-cycle.com/press-releases/li-cycle-receives-conditional-commitment-for-375-million-loan-from-the-u-s-department-of-energy-atvm-program/>.)
- Li-Cycle Holdings Corp., 2023c, Li-Cycle reports operational and financial results for two-month period ended December 31, 2022: Toronto, Ontario, Canada, Li-Cycle Holdings Corp. news release, March 30. (Accessed December 13, 2023, at <https://li-cycle.com/press-releases/li-cycle-reports-operational-and-financial-results-for-two-month-period-ended-december-31-2022/>.)
- MMG Ltd., 2023, Third quarter production report: Hong Kong, MMG Ltd., October 25, 16 p. (Accessed December 13, 2023, at https://www.mmg.com/wp-content/uploads/2023/10/e_2023-10-25_third-QPR-Production-Report.pdf.)

List services and web feed subscribers are the first to receive notification of USGS minerals information publications and data releases. For information on how to subscribe, go to <https://www.usgs.gov/centers/national-minerals-information-center/minerals-information-publication-list-services>.

TABLE 1
REPORTED LME¹ STOCKS
OF COBALT METAL, END OF PERIOD²

(Metric tons, contained cobalt)

Period	U.S. warehouse	Non-U.S. warehouse	Total
2022:			
October	34	133	167
November	34	131	165
December	34	131	165
2023:			
January	34	125	159
February	34	101	135
March	34	80	114
April	34	75	109
May	34	62	96
June	34	59	93
July	34	59	93
August	34	59	93
September	34	58	92
October	34	58	92

¹London Metal Exchange.

²U.S. Government National Defense Stockpile inventory statistics are no longer available.

TABLE 2
U.S. IMPORTS FOR CONSUMPTION OF COBALT, BY COUNTRY OR LOCALITY¹

Period and country or locality of origin	Metals ²		Oxides and hydroxides		Salts and compounds ³		Total cobalt content for the period ⁴ (metric tons)	Cobalt content, year to date ^{4,5} (metric tons)
	Gross weight (metric tons)	Value ⁶ (thousands)	Gross weight (metric tons)	Value ⁶ (thousands)	Gross weight (metric tons)	Value ⁶ (thousands)		
2022:								
October	579	\$29,600	117	\$5,030	200	\$2,550	725	8,990
November	571	29,100	109	4,990	260	2,810	721	9,710
December	678	34,400	100	3,400	197	1,700	805	10,500
January–October	5,960	394,000 ^r	1,710	80,700	6,440	45,700	8,990	XX
January–December	7,200	458,000	1,920	89,100	6,900	50,200	10,500	XX
2023:								
January	593	27,700	184	6,160	262	3,760	803	803
February	559	26,200	94	3,220	243	1,870	694	1,500
March	838	33,000	287	7,220	226	2,940	1,120	2,610
April	670	25,100	96	2,630	170	1,700	790	3,400
May	671	25,500	20	489	96	878	712	4,120
June	562	20,000	135	3,020	170	2,060	717	4,830
July	641	24,000	110	2,810	147	1,630	770	5,600
August	426	15,000	120	2,690	191	1,730	572	6,180
September	614	21,500	71	1,330	183	1,960	722	6,900
October:								
Australia	--	--	(7)	8	--	--	(7)	65
Belgium	--	--	19	442	--	--	13	62
Brazil	--	--	--	--	22	207	8	90
Canada	197	7,470	--	--	--	--	197	1,470
China	--	--	3	52	3	29	3	108
Finland	(7)	25	88	1,880	233	1,530	127	1,200
France	(7)	9	--	--	--	--	(7)	6
Germany	25	2,130	--	--	--	--	25	118
Japan	160	5,840	--	--	--	--	160	1,200
Madagascar	63	2,240	--	--	--	--	63	695
Mexico	--	--	--	--	2	25	(7)	17
Morocco	22	671	--	--	--	--	22	170
Netherlands	--	--	--	--	--	--	--	17
Norway	--	--	--	--	--	--	--	1,880
Philippines	--	--	--	--	--	--	--	12
Russia	--	--	--	--	--	--	--	50
South Africa	17	134	--	--	--	--	17	126
Taiwan	--	--	8	216	18	204	10	79
Turkey	8	151	--	--	--	--	8	16
United Kingdom	4	304	(7)	24	3	42	5	158
Zambia	5	158	--	--	--	--	5	22
Other	--	--	(7)	8	--	--	(7)	11
Total	502	19,100	118	2,640	282	2,040	663	7,560
January–October	6,080	237,000	1,230	32,200	1,970	20,600	7,560	XX

¹Revised. XX Not applicable. -- Zero.

²Data are rounded to no more than three significant digits; may not add to totals shown.

³Unwrought cobalt, excluding alloys; includes cobalt cathode and cobalt metal powder; may include intermediate products of cobalt metallurgy.

⁴Includes cobalt acetates, cobalt carbonates, cobalt chlorides, and cobalt sulfates.

⁵Estimated from gross weights.

⁶May include revisions to previously published data.

⁷Customs value.

⁸Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 3
U.S. IMPORTS FOR CONSUMPTION OF ADDITIONAL COBALT MATERIALS, BY COUNTRY OR LOCALITY¹

Period and country or locality of origin	Unwrought cobalt alloys		Cobalt waste and scrap		Wrought cobalt and cobalt articles	
	Gross weight (metric tons)	Value ² (thousands)	Gross weight (metric tons)	Value ² (thousands)	Gross weight (metric tons)	Value ² (thousands)
2022:						
October	32	\$1,730	133	\$2,200	42	\$3,790
November	31	1,670	117	1,710	33	4,480
December	39	1,970	88	1,930	36	4,780
January–October	237 ^r	13,400 ^r	1,540	23,100	364 ^r	41,400 ^r
January–December	307	17,000	1,740	26,700	433	50,700
2023:						
January	61	3,180	150	2,350	26	3,850
February	19	1,240	140	2,210	36	5,740
March	30	1,510	146	2,220	42	4,830
April	18	929	139	1,540	38	4,450
May	38	1,900	148	2,350	34	4,430
June	34	1,680	178	2,200	30	4,650
July	19	926	131	2,330	31	4,490
August	21	1,050	134	1,800	33	4,650
September	7	331	93	1,370	58	4,680
October:						
Belgium	2	92	--	--	--	--
Canada	1	187	15	186	2	840
France	--	--	25	608	5	302
Germany	--	--	18	8	4	362
Ireland	--	--	49	117	(3)	30
Italy	--	--	17	50	3	61
Korea, Republic of	--	--	2	31	--	--
Mexico	--	--	2	18	(3)	6
Switzerland	--	--	5	73	(3)	69
Taiwan	--	--	8	247	(3)	11
Tunisia	--	--	12	119	--	--
United Kingdom	19	989	52	1,370	13	1,570
Other	(3)	5	1	15	1	726
Total	23	1,270	207	2,850	28	3,980
January–October	271	14,000	1,470	21,200	356	45,700

^rRevised. -- Zero.

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

²Customs value.

³Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 4
U.S. EXPORTS OF COBALT MATERIALS¹

Period	Unwrought cobalt, powders, matte, waste and scrap ²		Oxides and hydroxides		Salts and compounds ³		Total cobalt content for the period ⁴ (metric tons)	Cobalt content, year to date ^{4,5} (metric tons)
	Gross weight (metric tons)	Value ⁶ (thousands)	Gross weight (metric tons)	Value ⁶ (thousands)	Gross weight (metric tons)	Value ⁶ (thousands)		
2022:								
October	584	\$16,900	2	\$64	--	--	585	4,370
November	525	13,800	7	281	--	--	530	4,900
December	460	13,600	1	31	--	--	460	5,360
January–October	4,350 ^r	141,000	35	1,460	1	\$16	4,370 ^r	XX
January–December	5,330	169,000	43	1,770	1	16	5,360	XX
2023:								
January	408	13,000	3	114	(7)	4	411	411
February	327	12,500	1	41	--	--	328	738
March	535	15,300	6	202	--	--	539	1,280
April	434	15,900	12	175	--	--	442	1,720
May	522	15,700	2	88	--	--	524	2,240
June	318	11,300	18	246	--	--	331	2,570
July	523	14,300	13	530	(7)	4	532	3,110
August	299	11,100	(7)	12	1	10	299	3,410
September	448	14,500	(7)	4	--	--	448	3,850
October	541	17,800	(7)	8	(7)	4	541	4,400
January–October	4,350	141,000	56	1,420	2	24	4,400	XX

¹Revised. XX Not applicable. -- Zero.

²Data are rounded to no more than three significant digits; may not add to totals shown.

³May include other intermediate products of cobalt metallurgy and unwrought cobalt alloys.

⁴Cobalt acetates and cobalt chlorides.

⁵Estimated from gross weights.

⁶May include revisions to previously published data.

⁷Free alongside ship (f.a.s.) value.

⁸Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 5
U.S. EXPORTS OF WROUGHT COBALT, COBALT ORE,
AND CONCENTRATES¹

Period	Wrought cobalt and cobalt articles		Cobalt ore and concentrates	
	Gross weight (metric tons)	Value ² (thousands)	Gross weight (metric tons)	Value ² (thousands)
2022:				
October	121	\$17,200	--	--
November	181	24,400	--	--
December	182	21,000	--	--
January–October	1,510 ^r	182,000 ^r	(3)	\$12
January–December	1,870	228,000	(3)	12
2023:				
January	186	27,000	--	--
February	118	19,300	(3)	4
March	126	18,500	(3)	7
April	157	19,700	1	20
May	129	16,600	2	60
June	144	18,300	--	--
July	101	17,500	(3)	3
August	119	16,600	--	--
September	113	16,300	--	--
October	135	17,700	--	--
January–October	1,330	188,000	3	94

^rRevised. -- Zero.

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

²Free alongside ship (f.a.s.) value.

³Less than ½ unit.

Source: U.S. Census Bureau.