

# Mineral Industry Surveys

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

## COBALT IN JUNE 2023

The amount of cobalt contained in U.S. imports of cobalt metals and chemicals in June 2023 was essentially unchanged from that imported during May 2023. For the first 6 months of 2023, the amount of cobalt contained in imports was 13% 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 June 2023 was 37% less than that exported during May 2023 and during the first 6 months of 2023, the amount exported was slightly less than the amount exported during the same period in 2022 (table 4).

table 1). The following listed prices are for cobalt metal in June, in dollars per pound.

Type	Price range	Average price
U.S. spot <sup>1</sup>	13.15–18.50	15.11
LME cash mean <sup>2</sup>	13.08–13.93	13.12

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

<sup>2</sup>London 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. Cobalt stocks in June 2023 were 3% less than those in May 2023. Monthly average cobalt prices trended up into the second quarter of 2022 and have generally trended downward since. In June 2023, the LME cash mean price was 13% lower than that in May 2023 and was 60% lower than that in June 2022. The June 2023 monthly average U.S. spot cobalt price was 5% higher than that in May 2023 and was 57% lower than that in June 2022 (fig. 1,

## Industry News

In June, the U.S. Army Corps of Engineers revoked a permit required for construction and operation of the NorthMet Project in Minnesota. The Clean Water Act Section 404 permit, initially granted in 2019, was revoked following a determination that the project did not ensure compliance with water quality standards for downstream waters of the Fond du Lac Band of Lake Superior Chippewa. The NorthMet Project is part of the Duluth Complex in northeastern Minnesota and contains cobalt, copper,

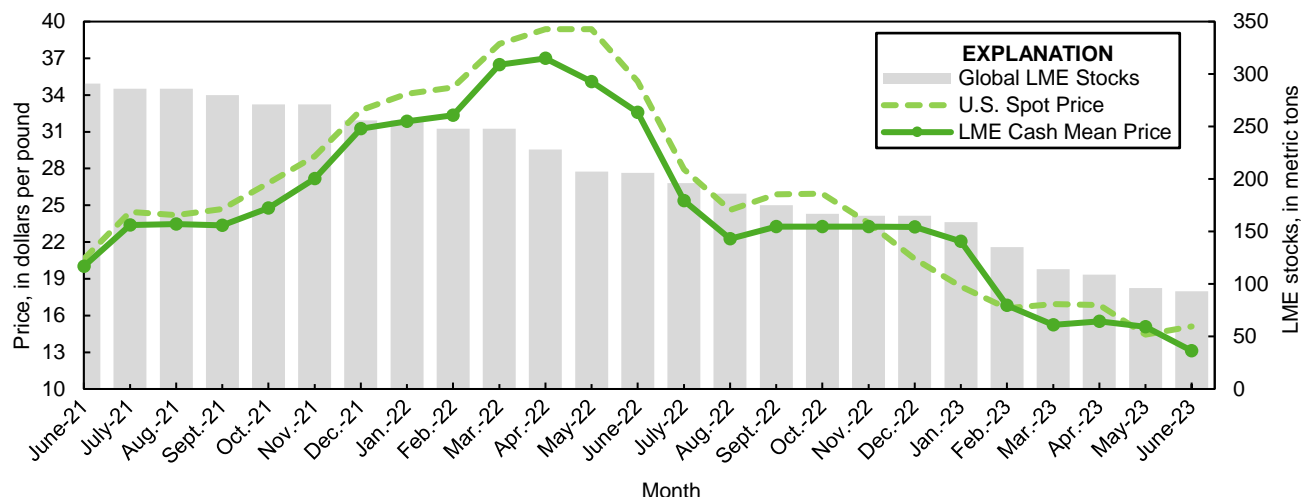


Figure 1. Global LME cobalt stocks, average U.S. spot cobalt prices, and average LME cash mean cobalt prices for June 2021 through June 2023. Sources: S&P Global Platts Metals Week and London Metal Exchange.

nickel, and platinum-group metals. The project was operated by NewRange Copper Nickel LLC, a 50-50 joint venture formed in February 2023 between PolyMet Mining Corp. and Teck American Inc., a subsidiary of Teck Resources Ltd. (Canada). Proven and probable ore reserves for the NorthMet Project were 290 million metric tons with 74 parts per million cobalt (PolyMet Mining Corp. 2022, 2023; U.S. Army Corps of Engineers, undated).

The Government of Finland awarded \$13 million to Jervois Global Ltd. (Australia) to support expansion of its refinery at the Kokkola Industrial Park in Finland from 6,250 metric tons per year (t/yr) refined cobalt to 12,250 t/yr refined cobalt. Jervois expected to restart the Kokkola Refinery expansion bankable feasibility study (BFS) that was paused earlier this year. Jervois would also separately continue the BFS for a U.S. refinery, funded by a U.S. Department of Defense, Defense Production Act Title III award for \$15 million granted June 2023. The U.S. refinery BFS would be based on a refinery with capacity of 6,000 t/yr of cobalt in cobalt sulfate targeting the electric vehicle industry. The Department of Defense award would also support drilling activity to further define the cobalt resource at Jervois Idaho Cobalt Operations near Salmon, Idaho. (Jervois Global Ltd., 2022, p. 30; 2023a, b, c).

Nth Cycle Inc. commissioned a nickel and cobalt refinery in Fairfield, OH, June 2023 Nth Cycle used electro extraction to recover nickel and cobalt from low-grade ore, waste or scrap and produced a mixed hydroxide precipitate (MHP) that was over 90% nickel and cobalt hydroxide. The electro extraction equipment could also be co-located at mines, refineries, and recycling facilities. Nth Cycle's MHP product was an intermediate for nickel and cobalt sulfate producers (Nth Cycle Inc., 2023a, b).

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TABLE 1  
REPORTED LME<sup>1</sup> STOCKS  
OF COBALT METAL, END OF PERIOD<sup>2</sup>

(Metric tons, contained cobalt)

Period	U.S. warehouse	Non-U.S. warehouse	Total
2022:			
June	39	167	206
July	39	157	196
August	39	147	186
September	34	141	175
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

<sup>1</sup>London Metal Exchange.

<sup>2</sup>U.S. Government National Defense Stockpile inventory statistics are no longer available.

TABLE 2  
U.S. IMPORTS FOR CONSUMPTION OF COBALT, BY COUNTRY OR LOCALITY<sup>1</sup>

Period and country or locality of origin	Metals <sup>2</sup>		Oxides and hydroxides		Salts and compounds <sup>3</sup>		Total cobalt content for the period <sup>4</sup> (metric tons)	Cobalt content, year to date <sup>4,5</sup> (metric tons)
	Gross weight (metric tons)	Value <sup>6</sup> (thousands)	Gross weight (metric tons)	Value <sup>6</sup> (thousands)	Gross weight (metric tons)	Value <sup>6</sup> (thousands)		
2022:								
June	499	\$37,900	160	\$8,640	993	\$5,750	886	5,550
July	685	50,500	193	10,500	1,430	7,190	1,210	6,760
August	530	36,900	134	6,130	153	2,010	671	7,440
September	578	34,600	200	7,120	310	4,410	827	8,260
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–June	3,580 <sup>r</sup>	243,000	1,060	51,900	4,340	29,600	5,550 <sup>r</sup>	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:								
Australia	--	--	--	--	--	--	--	14
Belgium	(7)	4	11	269	--	--	8	43
Brazil	--	--	--	--	17	291	8	46
Canada	157	6,100	--	--	--	--	157	931
China	12	162	--	--	--	--	12	72
Finland	(7)	15	116	2,500	117	1,370	126	765
France	--	--	--	--	--	--	--	6
Germany	21	1,850	--	--	--	--	21	82
Japan	237	7,420	--	--	--	--	237	750
Madagascar	84	2,840	--	--	--	--	84	397
Mexico	--	--	--	--	--	--	--	16
Morocco	10	298	--	--	--	--	10	86
Netherlands	--	--	--	--	--	--	--	7
Norway	20	728	--	--	--	--	20	1,280
Russia	--	--	--	--	--	--	--	50
South Africa	14	109	--	--	--	--	14	89
Taiwan	--	--	8	242	36	396	14	60
Turkey	--	--	--	--	--	--	--	7
United Kingdom	5	277	(7)	4	--	--	5	124
Other	2	164	(7)	3	--	--	2	6
Total	562	20,000	135	3,020	170	2,060	717	4,830
January–June	3,890	157,000	815	22,700	1,170	13,200	4,830	XX

<sup>†</sup>Revised. XX Not applicable. -- Zero.

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

<sup>2</sup>Unwrought cobalt, excluding alloys; includes cobalt cathode and cobalt metal powder; may include intermediate products of cobalt metallurgy.

<sup>3</sup>Includes cobalt acetates, cobalt carbonates, cobalt chlorides, and cobalt sulfates.

<sup>4</sup>Estimated from gross weights.

<sup>5</sup>May include revisions to previously published data.

<sup>6</sup>Customs value.

<sup>7</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 3  
U.S. IMPORTS FOR CONSUMPTION OF ADDITIONAL COBALT MATERIALS, BY COUNTRY OR LOCALITY<sup>1</sup>

Period and country or locality of origin	Unwrought cobalt alloys		Cobalt waste and scrap		Wrought cobalt and cobalt articles	
	Gross weight (metric tons)	Value <sup>2</sup> (thousands)	Gross weight (metric tons)	Value <sup>2</sup> (thousands)	Gross weight (metric tons)	Value <sup>2</sup> (thousands)
2022:						
June	25	\$1,690	155	\$2,070	44	\$4,940
July	29	1,760	99	2,060	38	4,080
August	14	867	152	2,530	27	3,950
September	35	1,780	200	2,850	33	4,190
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–June	127 <sup>r</sup>	7,240 <sup>r</sup>	953	13,400	225	25,400 <sup>r</sup>
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:						
Belgium	4	133	2	84	--	--
Canada	(3)	9	9	60	3	1,160
China	(3)	14	1	8	3	755
France	--	--	29	672	9	774
Ireland	--	--	65	159	(3)	55
Switzerland	--	--	16	205	(3)	120
Taiwan	--	--	6	232	--	--
Tunisia	--	--	10	98	(3)	2
United Kingdom	30	1,530	42	675	14	1,460
Other	--	--	(3)	2	1	319
Total	34	1,680	178	2,200	30	4,650
January–June	201	10,400	901	12,900	205	27,900

<sup>r</sup>Revised. -- Zero.

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

<sup>2</sup>Customs value.

<sup>3</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 4  
U.S. EXPORTS OF COBALT MATERIALS<sup>1</sup>

Period	Unwrought cobalt, powders, matte, waste and scrap <sup>2</sup>		Oxides and hydroxides		Salts and compounds <sup>3</sup>		Total cobalt content for the period <sup>4</sup> (metric tons)	Cobalt content, year to date <sup>4,5</sup> (metric tons)
	Gross weight (metric tons)	Value <sup>6</sup> (thousands)	Gross weight (metric tons)	Value <sup>6</sup> (thousands)	Gross weight (metric tons)	Value <sup>6</sup> (thousands)		
2022:								
June	414	\$12,500	2	\$79	(7)	\$6	416	2,640
July	381	14,500	3	145	--	--	384	3,020
August	420	12,300	7	297	(7)	4	425	3,450
September	335	11,900	7	298	--	--	340	3,790
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–June	2,630 <sup>r</sup>	85,600 <sup>r</sup>	16	654	(7)	11	2,640 <sup>r</sup>	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
January–June	2,540	83,800	42	866	(7)	4	2,570	XX

<sup>r</sup>Revised. XX Not applicable. -- Zero.

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

<sup>2</sup>May include other intermediate products of cobalt metallurgy and unwrought cobalt alloys.

<sup>3</sup>Cobalt acetates and cobalt chlorides.

<sup>4</sup>Estimated from gross weights.

<sup>5</sup>May include revisions to previously published data.

<sup>6</sup>Free alongside ship (f.a.s.) value.

<sup>7</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 5  
U.S. EXPORTS OF WROUGHT COBALT, COBALT ORE,  
AND CONCENTRATES<sup>1</sup>

Period	Wrought cobalt and cobalt articles		Cobalt ore and concentrates	
	Gross weight (metric tons)	Value <sup>2</sup> (thousands)	Gross weight (metric tons)	Value <sup>2</sup> (thousands)
2022:				
June	164	\$16,400	--	--
July	200	22,900	--	--
August	115	18,600	--	--
September	182	25,400	(3)	\$8
October	121	17,200	--	--
November	181	24,400	--	--
December	182	21,000	--	--
January-June	893 <sup>r</sup>	98,200 <sup>r</sup>	(3)	4
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	--	--
January-June	860	119,000	3	91

<sup>r</sup>Revised. -- Zero.

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

<sup>2</sup>Free alongside ship (f.a.s.) value.

<sup>3</sup>Less than ½ unit.

Source: U.S. Census Bureau.