

Mineral Industry Surveys

For information, contact:

Samantha M. Ewing, Cobalt Commodity Specialist
National Minerals Information Center
Telephone: (703) 648-6183
Email: sewing@usgs.gov

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

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

COBALT IN DECEMBER 2023

The amount of cobalt contained in U.S. imports of cobalt metals and chemicals in December 2023 was 3% less than that imported during November 2023. In 2023, cobalt imports totaled 9,490 metric tons (t) of contained cobalt, a 10% decrease from 10,500 t in 2022. Based on contained cobalt, the following four countries supplied 76% of U.S. imports in December 2023: Norway, 25%; Canada and Japan, 18% each; and Finland, 15% (table 2).

The amount of cobalt contained in U.S. exports of unwrought cobalt and chemicals in December 2023 was essentially unchanged from that exported during November 2023. In 2023, cobalt exports totaled 5,090 t of contained cobalt, a 5% decrease from 5,360 t in 2022 (table 4).

Prices and Stocks

During the past 2 years, London Metal Exchange (LME) cobalt stocks have generally trended downward through June 2023, then remained essentially unchanged through December 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 with

only minor fluctuation. In December, the LME cash mean price was 8% lower than that in November 2023 and was 41% lower than that in December 2022. The December 2023 monthly average U.S. spot cobalt price was slightly lower than in November 2023 and was 11% lower than that in December 2022 (fig. 1). The following listed prices are for cobalt metal in December, in dollars per pound.

| Type | Price range | Average price |
|----------------------------|---------------|---------------|
| U.S. spot ¹ | Not available | 18.40 |
| LME cash mean ² | 12.90–14.86 | 13.67 |

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).

Industry News

In December, Fortune Minerals Ltd. (Canada) announced a \$660,000 (CAN \$887,170) funding award by the Government of Canada to support metallurgical test work for its NICO cobalt-gold-bismuth-copper project. The project was under development and included a planned open pit and underground

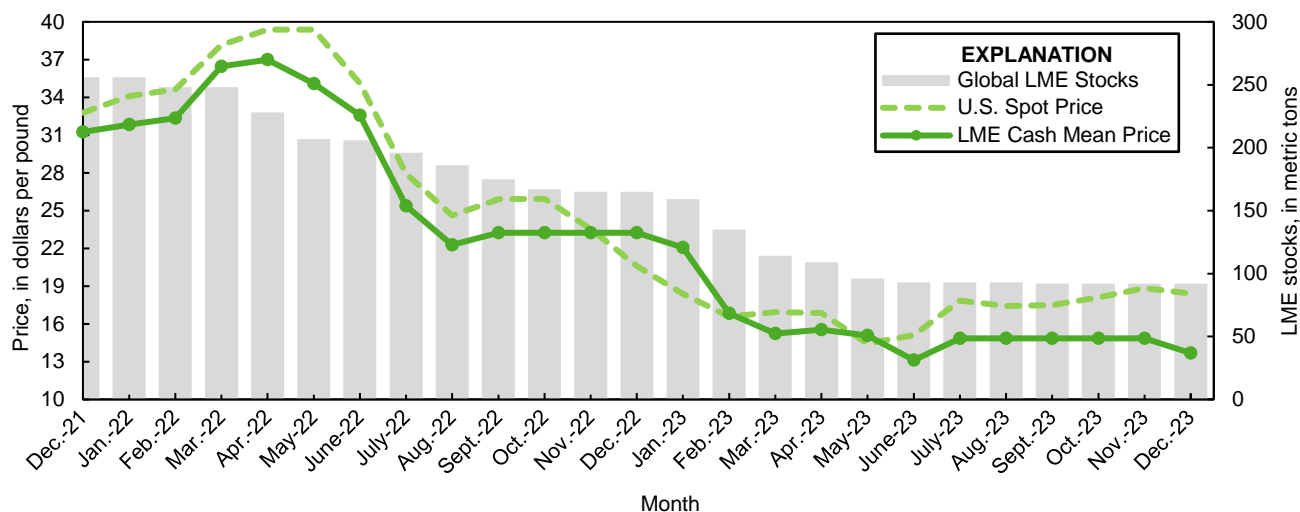


Figure 1. Global LME cobalt stocks, average U.S. spot cobalt prices, and average LME cash mean cobalt prices for December 2021 through December 2023. Sources: London Metal Exchange and S&P Global Platts Metals Week.

mine, a concentrator in the Northwest Territories, and a hydrometallurgical refinery to be built in Alberta. Fortune Minerals planned to produce 1,800 metric tons per year of cobalt sulfate for lithium-ion batteries from concentrate produced at the mine site. (Fortune Minerals Ltd., 2023; 2024, p. 7; undated).

Annual Review of U.S. Mine Production

Preliminary estimated U.S. cobalt mine production in 2023 was 500 t of cobalt in concentrate, unchanged from the revised estimated production of 500 t in 2022. In 2023, the Lundin Mining Corp.'s (Canada) nickel-copper Eagle Mine on the Upper Peninsula of Michigan produced cobalt-bearing nickel concentrate. Missouri Cobalt, LLC produced a nickel-copper-cobalt concentrate from a tailings reprocessing operation at the former Madison lead, copper, nickel, and cobalt mine near Fredericktown, MO. Sibanye Stillwater Ltd. (South Africa) recovered negligible amounts of cobalt in crude nickel sulfate from ores mined at its Stillwater and East Boulder platinum-group metals operations in southern Montana. A fourth operation—the Jervois Global Ltd. (Australia) Idaho Cobalt Operations cobalt-copper-gold mine near Salmon, ID—suspended construction and concentrator commissioning in March 2023, citing low cobalt prices and increased construction costs owing to inflation (Jervois Global Ltd., 2023; Ewing, 2024).

References Cited

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- Fortune Minerals Ltd., 2023, Fortune Minerals announces government funding to advance the NICO critical minerals asset in Canada: London, Ontario, Canada, Fortune Minerals Ltd. news release, December 5. (Accessed January 18, 2023, at <https://www.fortuneminerals.com/news/press-releases/press-release-details/2023/Fortune-Minerals-Announces-Government-Funding-to-Advance-the-NICO-Critical-Minerals-Asset-in-Canada/default.aspx>.)
- Fortune Minerals Ltd., 2024, NICO critical minerals project presentation: London, Ontario, Canada, Fortune Minerals Ltd., January, 32 p. (Accessed February 12, 2024, at https://s1.q4cdn.com/337451660/files/doc_downloads/2024/240109-fortune-minerals-nico-project-presentation.pdf.)
- Jervois Global Ltd., 2023, Jervois suspends final construction at Idaho Cobalt Operations: Cremorne, Victoria, Australia, Jervois Global Ltd. news release, March 29, 3 p. (Accessed May 8, 2023, at <https://wcsecure.weblink.com.au/pdf/JRV/02648644.pdf>.)

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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, 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 |
| November | 34 | 58 | 92 |
| December | 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: | | | | | | | | |
| December | 678 | \$34,400 | 100 | \$3,400 | 197 | \$1,700 | 805 | 10,500 |
| 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 | 502 | 19,100 | 118 | 2,640 | 282 | 2,040 | 663 | 7,560 |
| November | 842 | 29,500 | 82 | 2,100 | 278 | 2,290 | 979 | 8,540 |
| December: | | | | | | | | |
| Australia | -- | -- | -- | -- | -- | -- | -- | 65 |
| Belgium | -- | -- | 9 | 211 | -- | -- | 6 | 75 |
| Brazil | -- | -- | -- | -- | 18 | 323 | 8 | 105 |
| Canada | 100 | 3,940 | -- | -- | 56 | 824 | 115 | 1,680 |
| China | 11 | 153 | (7) | 2 | 2 | 35 | 12 | 122 |
| Finland | 5 | 273 | 50 | 1,090 | 385 | 3,220 | 158 | 1,470 |
| France | 6 | 222 | -- | -- | -- | -- | 6 | 13 |
| Germany | 3 | 219 | 3 | 84 | -- | -- | 5 | 139 |
| India | -- | -- | -- | -- | 9 | 18 | 2 | 7 |
| Japan | 283 | 9,440 | 6 | 179 | -- | -- | 288 | 1,680 |
| Madagascar | 41 | 1,480 | -- | -- | -- | -- | 41 | 925 |
| Mexico | -- | -- | -- | -- | -- | -- | -- | 33 |
| Morocco | 49 | 1,580 | -- | -- | -- | -- | 49 | 222 |
| Netherlands | -- | -- | -- | -- | -- | -- | -- | 17 |
| Norway | 238 | 8,780 | -- | -- | -- | -- | 238 | 2,380 |
| Philippines | -- | -- | -- | -- | -- | -- | -- | 12 |
| Russia | -- | -- | -- | -- | -- | -- | -- | 50 |
| South Africa | 4 | 157 | -- | -- | -- | -- | 4 | 137 |
| Taiwan | -- | -- | 8 | 215 | 18 | 188 | 10 | 99 |
| Turkey | -- | -- | -- | -- | -- | -- | -- | 16 |
| United Kingdom | 5 | 394 | -- | -- | (7) | 3 | 5 | 189 |
| Zambia | 5 | 162 | -- | -- | -- | -- | 5 | 63 |
| Other | -- | -- | -- | -- | 2 | 18 | (7) | 8 |
| Total | 750 | 26,800 | 75 | 1,780 | 491 | 4,630 | 952 | 9,490 |
| January–December | 7,670 | 293,000 | 1,390 | 36,100 | 2,740 | 27,500 | 9,490 | XX |

XX Not applicable. -- Zero.

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

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

³Includes cobalt acetates, cobalt carbonates, cobalt chlorides, and cobalt sulfates.

⁴Estimated from gross weights.

⁵May include revisions to previously published data.

⁶Customs value.

⁷Less 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: | | | | | | |
| December | 39 | \$1,970 | 88 | \$1,930 | 36 | \$4,780 |
| 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 | 23 | 1,270 | 207 | 2,850 | 28 | 3,980 |
| November | 17 | 861 | 228 | 3,750 | 55 | 4,350 |
| December: | | | | | | |
| Belgium | 2 | 105 | 13 | 628 | -- | -- |
| Canada | -- | -- | 36 | 270 | 2 | 983 |
| China | -- | -- | 5 | 103 | (3) | 133 |
| France | -- | -- | 3 | 45 | 1 | 128 |
| Germany | -- | -- | 5 | 110 | 5 | 587 |
| Ireland | (3) | 3 | 52 | 247 | (3) | 34 |
| Italy | -- | -- | -- | -- | 6 | 55 |
| Japan | -- | -- | 2 | 24 | (3) | 35 |
| Mexico | -- | -- | 2 | 11 | -- | -- |
| Netherlands | -- | -- | 26 | 78 | -- | -- |
| Tunisia | -- | -- | 6 | 56 | -- | -- |
| United Kingdom | 15 | 733 | 50 | 1,300 | 18 | 1,930 |
| Other | 1 | 83 | 1 | 37 | 1 | 141 |
| Total | 18 | 924 | 201 | 2,910 | 34 | 4,020 |
| January–December | 306 | 15,800 | 1,890 | 27,900 | 445 | 54,100 |

-- 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: | | | | | | | | |
| December | 460 | \$13,600 | 1 | \$31 | -- | -- | 460 | 5,360 |
| 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 |
| November | 331 | 11,200 | 26 | 715 | -- | -- | 350 | 4,750 |
| December | 345 | 12,700 | 2 | 91 | -- | -- | 347 | 5,090 |
| January–December | 5,030 | 165,000 | 84 | 2,230 | 2 | 24 | 5,090 | XX |

XX Not applicable. -- Zero.

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

²May include other intermediate products of cobalt metallurgy and unwrought cobalt alloys.

³Cobalt acetates and cobalt chlorides.

⁴Estimated from gross weights.

⁵May include revisions to previously published data.

⁶Free alongside ship (f.a.s.) value.

⁷Less 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: | | | | |
| December | 182 | \$21,000 | -- | -- |
| 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 | -- | -- |
| November | 140 | 18,000 | -- | -- |
| December | 137 | 18,500 | -- | -- |
| January–December | 1,610 | 224,000 | 3 | 94 |

-- 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.