

Mineral Industry Surveys

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MOLYBDENUM IN SEPTEMBER 2021

Domestic production of molybdenum in concentrate in September 2021 was 4% less compared with the output of the previous month and 26% less compared with that of September 2020. Domestic production of molybdenum in concentrate in January through September 2021 was 16% less than production during the same period in 2020 (fig. 1, table 1). One of the main reasons for the decrease in molybdenum in concentrate production continued to be the decrease in production at Rio Tinto Kennecott's Bingham Canyon Mine that began in April 2021. The company attributed the decrease to lower ore grades and mill throughput (Rio Tinto plc, 2021, p. 25).

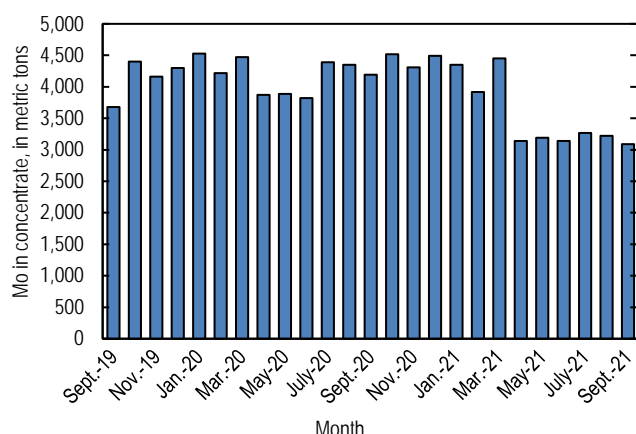


Figure 1. Monthly domestic production of molybdenum (Mo) in concentrate from September 2019 through September 2021 (may include revisions to previously published data).

According to CRU Group (2021), the September 2021 monthly average price range for U.S. ferromolybdenum (FeMo) was \$21.000 to \$21.967 per pound of molybdenum content compared with \$20.000 to \$20.900 per pound of molybdenum content in August 2021. U.S. monthly FeMo prices have not been this high since April 2010 when prices averaged \$21.667 per pound of molybdenum content.

FeMo monthly average prices in Europe ranged from \$46.489 to \$46.989 per kilogram (\$21.087 to \$21.314 per pound) of molybdenum content in September 2021 compared with \$45.489 to \$46.167 per kilogram (\$20.633 to \$20.941 per pound) in August 2021. U.S. molybdic oxide (MoO_3) prices ranged from \$19.333 to \$20.333 per pound of molybdenum content in September 2021 compared with \$18.833 to \$20.167 per pound of molybdenum content in August 2021 (fig. 2).

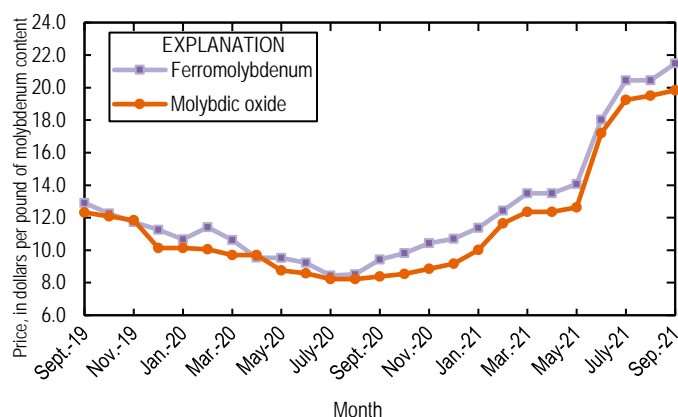


Figure 2. Average monthly prices for U.S. ferromolybdenum and molybdic oxide from September 2019 through September 2021. Source: CRU Group.

References Cited

- CRU Group, 2021, Molybdenum prices: London, United Kingdom, CRU Group, August 2. (Accessed November 17, 2021, via <http://www.crugroup.com/>.)
Rio Tinto plc, 2021, Rio Tinto releases third quarter production results: London, United Kingdom, Rio Tinto plc, October 15, 29 p. (Accessed November 18, 2021, at <https://www.riotinto.com/news/releases/2021/Rio-Tinto-releases-third-quarter-production-results>.)

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TABLE 1
U.S. SALIENT MOLYBDENUM CONCENTRATE
STATISTICS^{1,2}

(Metric tons, contained molybdenum)

| Period | Production | Shipments ^{3,4} |
|-------------------|--------------------|--------------------------|
| 2020: | | |
| January | 4,530 | 4,500 |
| February | 4,220 | 4,240 |
| March | 4,470 | 4,470 |
| April | 3,870 | 3,870 |
| May | 3,890 | 3,900 |
| June | 3,820 | 3,820 |
| July | 4,390 | 4,390 |
| August | 4,350 | 4,330 |
| September | 4,190 | 4,210 |
| October | 4,520 | 4,500 |
| November | 4,310 | 4,330 |
| December | 4,490 | 4,500 |
| January–December | 51,100 | 51,100 |
| 2021: | | |
| January | 4,350 | 4,320 |
| February | 3,920 | 3,910 |
| March | 4,450 | 4,470 |
| April | 3,140 | 3,150 |
| May | 3,190 | 3,110 |
| June | 3,140 | 3,170 |
| July | 3,270 ^r | 3,210 ^r |
| August | 3,220 ^r | 3,310 ^r |
| September | 3,090 | 3,110 |
| January–September | 31,800 | 31,800 |

^rRevised.

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

²Includes data from Freeport-McMoRan Inc., 2020–2021. Adjusted by USGS to reflect estimated monthly data.

³As reported by producers.

⁴Shipments include sales to domestic customers, sales for export, and transfers to other company plants.

TABLE 2
U.S. CONSUMPTION, BY END USES, AND CONSUMER STOCKS OF MOLYBDENUM MATERIALS¹

(Kilograms, contained molybdenum)

| End use | Molybdc oxides | Ferro molyb- denum ² | Ammonium and sodium molybdate | Molyb- denum scrap | Other | Total |
|--|-------------------|---------------------------------------|-------------------------------------|--------------------------|---------|-----------|
| 2021: | | | | | | |
| August: | | | | | | |
| Steel: | | | | | | |
| Carbon | W | W | -- | -- | -- | -- |
| High-strength low-alloy | W | 9,540 | -- | -- | -- | 9,540 |
| Stainless and heat-resisting | 154,000 | 47,700 | -- | (3) | W | 201,000 |
| Full alloy | 246,000 | 76,600 | -- | -- | W | 322,000 |
| Tool | W | W | -- | -- | -- | W |
| Total | 399,000 | 134,000 | -- | (3) | W | 533,000 |
| Cast irons (gray, malleable, and ductile iron) | -- | W | -- | -- | -- | W |
| Superalloys | -- | -- | -- | (3) | 63,300 | 63,300 |
| Alloys: (other than steels, cast irons, and superalloys) | | | | | | |
| Other alloys | W | W | -- | -- | -- | W |
| Mill products made from metal powder ⁴ | -- | -- | -- | -- | W | W |
| Cemented carbides and related products ⁵ | -- | -- | -- | -- | W | W |
| Chemical and ceramic uses: | | | | | | |
| Pigments | -- | -- | (3) | -- | -- | (3) |
| Catalysts | W | -- | (3) | -- | W | W |
| Miscellaneous and unspecified uses: | | | | | | |
| Lubricants | -- | -- | -- | -- | 9,440 | 9,440 |
| Other | 167,000 | 89,300 | W | (3) | 325,000 | 582,000 |
| Grand total | 566,000 | 223,000 | W | (3) | 398,000 | 1,190,000 |
| Stocks, August 31, 2021 | 484,000 | 388,000 | 2,780 | (6) | (6) | 1,760,000 |
| September: | | | | | | |
| Steel: | | | | | | |
| Carbon | W | W | -- | -- | -- | -- |
| High-strength low-alloy | W | 9,540 | -- | -- | -- | 9,540 |
| Stainless and heat-resisting | 154,000 | 47,700 | -- | (3) | W | 201,000 |
| Full alloy | 246,000 | 76,600 | -- | -- | W | 322,000 |
| Tool | W | W | -- | -- | -- | W |
| Total | 399,000 | 134,000 | -- | (3) | W | 533,000 |
| Cast irons (gray, malleable, and ductile iron) | -- | W | -- | -- | -- | W |
| Superalloys | -- | -- | -- | (3) | 62,200 | 62,200 |
| Alloys: (other than steels, cast irons, and superalloys) | | | | | | |
| Other alloys | W | W | -- | -- | -- | W |
| Mill products made from metal powder ⁴ | -- | -- | -- | -- | W | W |
| Cemented carbides and related products ⁵ | -- | -- | -- | -- | W | W |
| Chemical and ceramic uses: | | | | | | |
| Pigments | -- | -- | (3) | -- | -- | (3) |
| Catalysts | W | -- | (3) | -- | W | W |
| Miscellaneous and unspecified uses: | | | | | | |
| Lubricants | -- | -- | -- | -- | 9,440 | 9,440 |
| Other | 152,000 | 89,300 | W | (3) | 325,000 | 566,000 |
| Grand total | 551,000 | 223,000 | W | (3) | 397,000 | 1,170,000 |
| Stocks, September 30, 2021 | 496,000 | 388,000 | 2,770 | (6) | (6) | 1,760,000 |

W Withheld to avoid disclosing company proprietary data; included in "Miscellaneous and unspecified uses: Other" category. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown. Includes U.S. Geological Survey estimates.

²Includes calcium molybdate.

³Withheld to avoid disclosing company proprietary data; included in "Other, Miscellaneous and unspecified uses: Other" category.

⁴Includes ingot, wire, rod, and sheet.

⁵Includes construction, mining, oil and gas, and metalworking machinery.

⁶Withheld to avoid disclosing company proprietary data; included in "Total."

TABLE 3
U.S. EXPORTS OF MOLYBDENUM ORES AND CONCENTRATES
(including roasted concentrate), BY COUNTRY OR LOCALITY¹

(Kilograms, contained molybdenum)

| Country or locality | 2020 | | | 2021 | | |
|---------------------|----------------------|------------------------|-------------------------|-----------|-----------|-----------------------|
| | January– December | September | January– September | August | September | January– September |
| Belgium | 8,880,000 | 904,000 ^r | 7,060,000 ^r | 174,000 | 119,000 | 5,020,000 |
| Brazil | 19,400 | 2,230 | 8,210 ^r | 10,800 | 7,460 | 121,000 |
| Cambodia | 1,440 | -- | 1,440 | -- | -- | 21,000 |
| Canada | 1,130,000 | 108,000 | 875,000 ^r | 55,600 | 47,200 | 655,000 |
| Chile | 1,810,000 | 130,000 ^r | 703,000 ^r | 87,200 | -- | 1,010,000 |
| China | 3,680,000 | 441,000 ^r | 2,220,000 ^r | 57,600 | -- | 1,510,000 |
| Estonia | 305,000 | -- | 305,000 | -- | -- | -- |
| Germany | 285 | -- | 285 | -- | -- | -- |
| India | 900,000 | 194,000 | 506,000 ^r | 40,600 | 11,400 | 716,000 |
| Japan | 2,980,000 | 241,000 | 2,450,000 ^r | 274,000 | 405,000 | 3,170,000 |
| Korea, Republic of | 4,600,000 | 413,000 ^r | 3,510,000 ^r | 84,100 | 148,000 | 1,290,000 |
| Lithuania | -- | -- | -- | -- | -- | 1,900 |
| Mexico | 4,220,000 | 484,000 | 3,090,000 ^r | 108,000 | 62,900 | 2,940,000 |
| Netherlands | 24,500,000 | 1,960,000 ^r | 18,800,000 | 2,390,000 | 2,090,000 | 21,500,000 |
| South Africa | 300 | -- | -- | 450 | -- | 3,810 |
| Thailand | 722,000 | -- | 722,000 ^r | -- | -- | -- |
| Turkey | 1,400 | -- | 986 | -- | -- | -- |
| United Kingdom | 5,100,000 | 469,000 | 3,660,000 | 762,000 | 925,000 | 6,830,000 |
| Vietnam | 381,000 | 34,900 | 273,000 | 4,830 | 7,360 | 168,000 |
| Total | 59,300,000 | 5,380,000 ^r | 44,100,000 ^r | 4,050,000 | 3,830,000 | 45,000,000 |

^rRevised. -- Zero.

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

Source: U.S. Census Bureau.

TABLE 4
U.S. EXPORTS OF FERROMOLYBDENUM, BY COUNTRY OR LOCALITY¹

(Kilograms, contained molybdenum)

| Country or locality | 2020 | | | 2021 | | |
|---------------------|----------------------|-----------|-----------------------|--------|-----------|-----------------------|
| | January– December | September | January– September | August | September | January– September |
| Australia | 1,070 | -- | 697 | 697 | -- | 2,010 |
| Canada | 381,000 | 41,200 | 281,000 | 7,550 | 31,500 | 171,000 |
| Denmark | 948 | -- | 948 | -- | -- | 914 |
| Mexico | 170,000 | 19,300 | 150,000 | 44,100 | 40,000 | 282,000 |
| Total | 554,000 | 60,500 | 433,000 | 52,300 | 71,500 | 456,000 |

-- Zero.

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

Source: U.S. Census Bureau.

TABLE 5
U.S. IMPORTS FOR CONSUMPTION OF MOLYBDENUM PRODUCTS¹

(Kilograms, unless otherwise specified)

| Material | January–December 2020 | | | 2021 | | | | | |
|-------------------------------|-----------------------|----------------------|--------------------------------|--------------|----------------------|--------------------------------|-------------------|----------------------|--------------------------------|
| | Gross weight | Contained molybdenum | Value ² (thousands) | September | | | January–September | | |
| | | | | Gross weight | Contained molybdenum | Value ² (thousands) | Gross weight | Contained molybdenum | Value ² (thousands) |
| Ore and concentrates, roasted | 7,310,000 | 4,490,000 | \$81,900 | 380,000 | 233,000 | \$7,790 | 4,260,000 | 2,660,000 | \$68,700 |
| Ore and concentrates, other | 22,300,000 | 10,600,000 | 210,000 | 1,900,000 | 877,000 | 31,700 | 17,300,000 | 8,470,000 | 211,000 |
| Molybdenum chemicals: | | | | | | | | | |
| Oxides and hydroxides | 3,450,000 | NA | 54,100 | 220,000 | NA | 6,690 | 2,760,000 | NA | 58,000 |
| Molybdates of ammonium | 947,000 | 533,000 | 12,900 | 203,000 | 115,000 | 5,270 | 1,280,000 | 723,000 | 24,000 |
| Molybdates (all others) | 109,000 | 44,500 | 1,120 | 61,000 | 24,100 | 965 | 125,000 | 49,500 | 1,760 |
| Molybdenum orange | 138,000 | NA | 1,270 | 14,300 | NA | 109 | 89,700 | NA | 718 |
| Ferromolybdenum | 6,820,000 | 4,630,000 | 99,400 | 1,100,000 | 740,000 | 31,700 | 8,820,000 | 6,020,000 | 179,000 |
| Molybdenum powders | 211,000 | 191,000 | 7,160 | 18,600 | 17,800 | 980 | 158,000 | 145,000 | 6,610 |
| Molybdenum unwrought | 415,000 | 413,000 | 11,900 | 10,000 | 9,980 | 445 | 338,000 | 337,000 | 10,500 |
| Molybdenum waste and scrap | 1,130,000 | 1,100,000 | 31,000 | 139,000 | 137,000 | 4,900 | 1,330,000 | 1,270,000 | 39,000 |
| Molybdenum wire | 16,400 | NA | 1,610 | 321 | NA | 56 | 11,400 | NA | 1,350 |
| Molybdenum other | 174,000 | NA | 14,800 | 21,100 | NA | 1,980 | 144,000 | NA | 13,700 |
| Total | 43,100,000 | XX | 527,000 | 4,070,000 | XX | 92,600 | 36,600,000 | XX | 615,000 |

NA Not available. XX Not applicable.

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

²Customs value.

Source: U.S. Census Bureau.