

# Mineral Industry Surveys

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## MOLYBDENUM IN JULY 2004

Domestic production of molybdenum in concentrate in July 2004 was about 5% less than that of the previous month and was about 70% more than that of July 2003, according to the U.S. Geological Survey. Year-to-date production of molybdenum in concentrate from January through July was 23% more than during the same period in 2003. Producer stocks of molybdenum in concentrate, oxide, and other product forms were about 4,730 metric tons (t) at the beginning of 2004, and 4,670 t at the end of July.

According to Ryan's Notes (2004b), the July monthly average prices for U.S. ferromolybdenum (FeMo) ranged from \$16.289 to \$17.556 per pound of molybdenum content, compared with \$17.111 to \$18.056 in June. European FeMo monthly averages ranged from \$37.111 to \$38.667 per kilogram of molybdenum content in July as compared with \$43.778 to \$45.778 in June. In July, worldwide molybdenum oxide prices ranged from \$14.567 to \$15.411 per pound versus \$15.456 to \$15.961 in June.

The molybdenum market continued to react strongly to new developments, with prices slipping early in the month and recovering slightly to under June levels by the end of July. European demand for FeMo was unusually strong for July owing to stainless steel manufacturers minimizing their summer shutdown period. In a separate development, the Ferro-Moly Ltd. FeMo conversion facility at Glossop, United Kingdom, closed since April 2004, was to be sold. The company's creditors decided to liquidate the company, which had an

estimated annual production capacity of 3,000 t of FeMo (Metal Bulletin Research, 2004)

European converters were working to produce more FeMo. Treibacher Industrie AG said its production would be double its usual summer output. Phelps Dodge Corp. closed its Climax Molybdenum facility in Stowmarket, United Kingdom, for 3 weeks, starting the last week in July, to install production upgrades to increase FeMo capacity by 20%. The Stowmarket facility was believed to produce about 1,000 t per month of FeMo. Belgian molybdenum processor Sadaci, a subsidiary of Chile's Molymet, maintained normal production levels at its FeMo unit and its roaster rather than taking its usual summer shutdown. These actions reportedly were an effort to stave off a European Commission review of the antidumping duty on Chinese FeMo (Ryan's Notes, 2004a).

Included in this Mineral Industry Surveys are U.S. production and shipments of molybdenum concentrates and materials, U.S. consumption, by end use, stocks of molybdenum material in June and July 2004, and trade data for May and June 2004.

### References Cited

- Metal Bulletin Research, 2004, Molybdenum highlights, prices gain further momentum in July: Metal Bulletin Research, Ferro-alloys Monthly, no. 143, July 27, p. 14.  
Ryan's Notes, 2004a, FeMo slips in Europe; oxide steady: Ryan's Notes, v. 10, no. 29, July 19, p. 1.  
Ryan's Notes, 2004b, [untitled]: Ryan's Notes, v. 10, no. 31, August 2, p. 4.

TABLE 1  
U.S. SALIENT MOLYBDENUM CONCENTRATE STATISTICS<sup>1</sup>

(Metric tons, contained molybdenum)

|                         | 2003                              | 2004              |       |                 |
|-------------------------|-----------------------------------|-------------------|-------|-----------------|
|                         | January-<br>December <sup>p</sup> | June <sup>r</sup> | July  | Year to<br>date |
| Production              | 34,400                            | 3,440             | 3,270 | 22,400          |
| Shipments: <sup>2</sup> |                                   |                   |       |                 |
| Domestic                | 26,800                            | 2,790             | 2,540 | 17,200          |
| Export                  | 7,750                             | 856               | 747   | 5,640           |

<sup>p</sup>Preliminary. <sup>r</sup>Revised.

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>As reported by producers.

TABLE 2  
U.S. REPORTED PRODUCTION AND SHIPMENTS OF MOLYBDENUM  
PRODUCTS<sup>1</sup>

(Metric tons, contained molybdenum)

|                                   | 2003                              | 2004              |       |                 |
|-----------------------------------|-----------------------------------|-------------------|-------|-----------------|
|                                   | January-<br>December <sup>p</sup> | June <sup>r</sup> | July  | Year to<br>date |
| Gross production                  | 41,400                            | 5,410             | 3,960 | 34,800          |
| Internal consumption <sup>2</sup> | 29,600                            | 3,650             | 2,370 | 21,800          |
| Gross shipments                   | 30,100                            | 3,350             | 2,980 | 21,400          |

<sup>p</sup>Preliminary. <sup>r</sup>Revised.

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>Includes molybdic oxides, metal powder, ammonium molybdate, sodium molybdate, and other.

TABLE 3  
U.S. REPORTED CONSUMPTION, BY END USES, AND CONSUMER STOCKS OF MOLYBDENUM MATERIALS<sup>1</sup>

(Kilograms, contained molybdenum)

| End use  | Molybdc<br>oxides    | Ferro-<br>molyb-<br>denum <sup>2</sup> | Ammonium<br>and sodium<br>molybdate | Molyb-<br>denum<br>scrap | Other                | Total                  |
|--|----------------------|--|-------------------------------------|--------------------------|----------------------|------------------------|
| 2004, June:  |                      |  |                                     |                          |                      |                        |
| Steel:   |                      |  |                                     |                          |                      |                        |
| Carbon   | 26,600 <sup>r</sup>  | W                                      | --                                  | --                       | W                    | 26,600 <sup>r</sup>    |
| High-strength low-alloy                                  | 28,700               | 8,540                                  | --                                  | --                       | 11,300               | 48,600                 |
| Stainless and heat-resisting                             | 216,000 <sup>r</sup> | 65,700 <sup>r</sup>                    | --                                  | W                        | 6,780                | 288,000 <sup>r</sup>   |
| Full alloy   | 120,000 <sup>r</sup> | 206,000                                | --                                  | --                       | 1,510                | 327,000 <sup>r</sup>   |
| Tool   | 54,400               | W                                      | --                                  | --                       | --                   | 54,400                 |
| Total  | 446,000 <sup>r</sup> | 280,000                                | --                                  | W                        | 19,600               | 745,000 <sup>r</sup>   |
| Cast irons (gray, malleable, and ductile iron)           | W                    | 9,040 <sup>r</sup>                     | --                                  | --                       | 763                  | 9,800 <sup>r</sup>     |
| Superalloys  | 61,000               | W                                      | --                                  | (3)                      | 123,000              | 184,000                |
| Alloys: (other than steels, cast irons, and superalloys) |                      |  |                                     |                          |                      |                        |
| Welding materials (structural and hard-facing)           | --                   | W                                      | --                                  | --                       | 6                    | 6                      |
| Other alloys   | 330                  | 498                                    | --                                  | --                       | 20                   | 847                    |
| Mill products made from metal powder <sup>4</sup>        | --                   | --                                     | --                                  | --                       | 108,000 <sup>r</sup> | 108,000 <sup>r</sup>   |
| Cemented carbides and related products <sup>5</sup>      | --                   | --                                     | --                                  | --                       | W                    | W                      |
| Chemical and ceramic uses:                               |                      |  |                                     |                          |                      |                        |
| Pigments   | --                   | --                                     | W                                   | --                       | --                   | W                      |
| Catalysts  | 77,300               | --                                     | W                                   | --                       | W                    | 77,300                 |
| Other chemicals  | --                   | --                                     | --                                  | --                       | 1,440                | 1,440                  |
| Miscellaneous and unspecified uses:                      |                      |  |                                     |                          |                      |                        |
| Lubricants   | --                   | --                                     | --                                  | --                       | 12,700               | 12,700                 |
| Other  | 1,090                | 36,200                                 | 81,500 <sup>r</sup>                 | 16                       | 16,800               | 136,000 <sup>r</sup>   |
| Grand total  | 585,000 <sup>r</sup> | 326,000 <sup>r</sup>                   | 81,500 <sup>r</sup>                 | 16                       | 282,000 <sup>r</sup> | 1,270,000 <sup>r</sup> |
| Stocks, June 30, 2004                                    | 383,000 <sup>r</sup> | 185,000 <sup>r</sup>                   | 3,820 <sup>r</sup>                  | 21,500                   | 846,000              | 1,440,000 <sup>r</sup> |
| 2004, July:  |                      |  |                                     |                          |                      |                        |
| Steel:   |                      |  |                                     |                          |                      |                        |
| Carbon   | 21,700               | W                                      | --                                  | --                       | W                    | 21,700                 |
| High-strength low-alloy                                  | 36,400               | 9,150                                  | --                                  | --                       | 11,300               | 56,900                 |
| Stainless and heat-resisting                             | 221,000              | 66,300                                 | --                                  | W                        | 6,780                | 295,000                |
| Full alloy   | 134,000              | 204,000                                | --                                  | --                       | 1,510                | 339,000                |
| Tool   | 51,200               | W                                      | --                                  | --                       | --                   | 51,200                 |
| Total  | 464,000              | 279,000                                | --                                  | W                        | 19,600               | 763,000                |
| Cast irons (gray, malleable, and ductile iron)           | W                    | 10,100                                 | --                                  | --                       | 763                  | 10,800                 |
| Superalloys  | 75,300               | W                                      | --                                  | (3)                      | 99,600               | 175,000                |
| Alloys: (other than steels, cast irons, and superalloys) |                      |  |                                     |                          |                      |                        |
| Welding materials (structural and hard-facing)           | --                   | W                                      | --                                  | --                       | 6                    | 6                      |
| Other alloys   | 237                  | 2,150                                  | --                                  | --                       | 20                   | 2,410                  |
| Mill products made from metal powder <sup>4</sup>        | --                   | --                                     | --                                  | --                       | 125,000              | 125,000                |
| Cemented carbides and related products <sup>5</sup>      | --                   | --                                     | --                                  | --                       | W                    | W                      |
| Chemical and ceramic uses:                               |                      |  |                                     |                          |                      |                        |
| Pigments   | --                   | --                                     | W                                   | --                       | --                   | W                      |
| Catalysts  | 77,300               | --                                     | W                                   | --                       | W                    | 77,300                 |
| Other chemicals  | --                   | --                                     | --                                  | --                       | 2,320                | 2,320                  |
| Miscellaneous and unspecified uses:                      |                      |  |                                     |                          |                      |                        |
| Lubricants   | --                   | --                                     | --                                  | --                       | 12,600               | 12,600                 |
| Other  | 1,090                | 36,200                                 | 75,900                              | 16                       | 16,800               | 130,000                |
| Grand total  | 618,000              | 327,000                                | 75,900                              | 16                       | 277,000              | 1,300,000              |
| Stocks, July 31, 2004                                    | 421,000              | 223,000                                | 5,460                               | 24,700                   | 851,000              | 1,520,000              |

<sup>1</sup>Revised. W Withheld to avoid disclosing company proprietary data; included in "Other" of the "Miscellaneous and unspecified uses" category. -- Zero.

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

<sup>3</sup>Includes calcium molybdate.

<sup>4</sup>Included in "Other" of the "Superalloys" category.

<sup>5</sup>Includes ingot, wire, rod, and sheet.

<sup>6</sup>Includes construction, mining, oil and gas, metalworking machinery.

TABLE 4  
U.S. EXPORTS OF MOLYBDENUM ORES AND CONCENTRATES  
(including roasted concentrate), BY COUNTRY<sup>1</sup>

(Kilograms, contained molybdenum)

| Country            | 2003                 | 2004      |           |                 |
|--------------------|----------------------|-----------|-----------|-----------------|
|                    | January-<br>December | May       | June      | Year to<br>date |
| Australia          | 102,000              | 1,770     | 7,930     | 19,000          |
| Austria            | --                   | 145,000   | 152,000   | 421,000         |
| Belgium            | 3,190,000            | 1,290,000 | 358,000   | 2,640,000       |
| Brazil             | 42,600               | 295       | --        | 11,300          |
| Canada             | 910,000              | 231,000   | 147,000   | 607,000         |
| Chile              | 368,000              | --        | 138,000   | 1,060,000       |
| China              | 82,600               | --        | --        | --              |
| Costa Rica         | 22,500               | --        | 7,480     | 21,300          |
| India              | 44,300               | --        | --        | --              |
| Italy              | 20,300               | --        | --        | --              |
| Japan              | 2,000,000            | 120,000   | 945,000   | 1,680,000       |
| Korea, Republic of | 61,400               | 25,500    | 649       | 51,200          |
| Mexico             | 3,730,000            | 252,000   | 466,000   | 988,000         |
| Netherlands        | 10,900,000           | 1,080,000 | 2,730,000 | 5,680,000       |
| Sweden             | 25,700               | --        | --        | --              |
| Taiwan             | 9,590                | --        | 2,270     | 11,100          |
| United Kingdom     | 7,880,000            | 925,000   | 1,110,000 | 4,200,000       |
| Other              | 137,000              | 509,000   | 136,000   | 941,000         |
| Total              | 29,500,000           | 4,580,000 | 6,190,000 | 18,300,000      |

-- Zero.

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

Source: U.S. Census Bureau.

TABLE 5  
U.S. EXPORTS OF FERROMOLYBDENUM, BY COUNTRY<sup>1</sup>

(Kilograms, contained molybdenum)

| Country        | 2003                 | 2004    |        |                 |
|----------------|----------------------|---------|--------|-----------------|
|                | January-<br>December | May     | June   | Year to<br>date |
| Australia      | 873                  | --      | 273    | 1,090           |
| Canada         | 547,000              | 119,000 | 92,100 | 520,000         |
| Denmark        | 241                  | --      | --     | --              |
| Japan          | 61                   | --      | --     | --              |
| Mexico         | 43,100               | 1,960   | 5,170  | 19,300          |
| Netherlands    | 25,500               | --      | --     | --              |
| United Kingdom | --                   | 491     | --     | 491             |
| Total          | 617,000              | 121,000 | 97,500 | 540,000         |

-- Zero.

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

Source: U.S. Census Bureau.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF MOLYBDENUM PRODUCTS<sup>1</sup>

(Kilograms, unless otherwise specified)

| Material                     | January-December 2003 |                      |   | June 2004    |                      |   |
|------------------------------|-----------------------|----------------------|---|--------------|----------------------|---|
|                              | Gross weight          | Contained molybdenum | Value (c.i.f.) <sup>2</sup> (thousands) | Gross weight | Contained molybdenum | Value (c.i.f.) <sup>2</sup> (thousands) |
| Ore and concentrates roasted | 6,310,000             | 3,960,000            | \$41,900                                | 1,050,000    | 655,000              | \$12,600                                |
| Ore and concentrates other   | 2,870,000             | 1,230,000            | 9,580                                   | 159,000      | 83,000               | 2,640                                   |
| Molybdenum chemicals:        |                       |                      |   |              |                      |   |
| Oxides and hydroxides        | 1,300,000             | NA                   | 9,780                                   | 187,000      | NA                   | 2,940                                   |
| Molydates of ammonium        | 1,620,000             | 937,000              | 11,600                                  | 103,000      | 117,000              | 1,310                                   |
| Molydates (all others)       | 324,000               | 145,000              | 1,200                                   | 11,900       | 4,830                | 24                                      |
| Molybdenum orange            | 987,000               | NA                   | 4,440                                   | 109,000      | NA                   | 578                                     |
| Ferromolybdenum              | 5,740,000             | 3,690,000            | 38,200                                  | 381,000      | 245,000              | 7,010                                   |
| Molybdenum powders           | 57,000                | 43,100               | 2,000                                   | 66,500       | 35,400               | 1,280                                   |
| Molybdenum unwrought         | 139,000               | 136,000              | 1,700                                   | 5,010        | 5,010                | 119                                     |
| Molybdenum waste and scrap   | 425,000               | 388,000              | 5,000                                   | 39,400       | 32,400               | 997                                     |
| Molybdenum wire              | 10,600                | NA                   | 776                                     | 1,590        | NA                   | 158                                     |
| Molybdenum other             | 79,900                | NA                   | 6,420                                   | 17,200       | NA                   | 1,200                                   |
| Total                        | 19,900,000            | 10,500,000           | 133,000                                 | 2,130,000    | 1,180,000            | 30,800                                  |

NA Not available.

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

<sup>2</sup>Cost, insurance, and freight at U.S. ports.

Source: U.S. Census Bureau.