

# Mineral Industry Surveys

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## MOLYBDENUM IN DECEMBER 2005

Domestic production of molybdenum in concentrate in December 2005 was about 7% more than that of the previous month, but was about 12% more than that of December 2004, according to the U.S. Geological Survey. Year-to-date production of molybdenum in concentrate from January through December was 40% more than during the same period in 2004. Producer stocks of molybdenum in concentrate, oxide, and other product forms were about 5,930 metric tons (t) at the beginning of 2005, and about 7,700 t at the end of December.

According to Ryan's Notes (2005c), the December monthly average prices for U.S. ferromolybdenum (FeMo) ranged from \$28.722 to \$30.056 per pound of molybdenum content, compared with \$34.188 to \$35.188 in November. European FeMo monthly averages ranged from \$60.556 to \$62.222 per kilogram (kg) of molybdenum content in December as compared with \$69.250 to \$71.250 per kg in November. In December, worldwide molybdenum oxide (MoO<sub>3</sub>) prices ranged from \$26.667 to \$27.556 per pound versus \$30.281 to \$31.156 per pound in November.

Chinese producers stopped importing Western molybdenum concentrates. It was unclear if that action was due to falling molybdenum oxide prices, increased consumption of domestic concentrates, or the gradual drawdown of FeMo stocks produced previously from imported concentrates. Molybdenum mines in the Huludao area of Liaoning Province were expected to remain closed until June 2006 as the Central Government worked to consolidate many small mines into larger operations that would be easier to regulate. Liaoning accounted for about

20% of China's molybdenum production in the past and Huludao mines accounted for about 80% of that production. Even if Chinese producers do not resume importing Western concentrates, the ongoing bottleneck in Western roasting capacity would continue to restrict supplies of roasted molybdenum concentrates finding their way to market (Ryan's Notes, 2005b).

Treibacher Industrie AG announced that it would continue to produce FeMo at full capacity, contrary to rumors that Treibacher intended to discontinue production. Treibacher intended to cease production of a specialty grade of FeMo called Molyquik as it found the product difficult to market. Treibacher began producing Molyquik in 2001 and was producing only 2,500 metric tons per year (t/yr) but had a capacity of 6,500 t/yr (Ryan's Notes, 2005a).

Included in this Mineral Industry Surveys are U.S. production and shipments of molybdenum concentrates and materials, U.S. consumption by end use, and stocks of molybdenum material in November and December 2005; also included are trade data for October and November 2005.

### References Cited

- Ryan's Notes, 2005a, Ferroalloy notes: Ryan's Notes, v. 11, no. 49, December 6, p. 6.  
Ryan's Notes, 2005b, Moly slide gains momentum: Ryan's Notes, v. 11, no. 52, December 26, p. 1.  
Ryan's Notes, 2005c, [untitled]: Ryan's Notes, v. 12, no. 1, January 2, p. 10.

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

(Metric tons, contained molybdenum)

	2004	2005		
	January- December	November	December	January- December
Production	41,500	4,830 <sup>r</sup>	5,150	58,200
Shipments: <sup>2</sup>				
Domestic	30,700	2,800 <sup>r</sup>	3,520	38,600
Export	11,200	1,790	2,000	19,300

<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)

	2004	2005		
	January- December	November <sup>r</sup>	December	January- December
Gross production	66,300	6,380	6,330	79,400
Internal consumption <sup>2</sup>	42,000	3,910	3,480	49,400
Gross shipments	39,300	3,840	3,700	47,000

<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 oxides	Ferro molyb- denum <sup>2</sup>	Ammonium and sodium molybdate	Molyb- denum scrap	Other	Total
2005, November:						
Steel:						
Carbon	15,600	W	--	--	W	15,600
High-strength low-alloy	38,200 <sup>r</sup>	8,620 <sup>r</sup>	--	--	11,300	58,200 <sup>r</sup>
Stainless and heat-resisting	148,000	66,900	--	W	6,510	222,000
Full alloy	161,000	187,000	--	--	1,510	349,000
Tool	46,400 <sup>r</sup>	W	--	--	--	46,400 <sup>r</sup>
Total	409,000 <sup>r</sup>	262,000	--	W	19,400	691,000 <sup>r</sup>
Cast irons (gray, malleable, and ductile iron)	W	8,590	--	--	763	9,350
Superalloys	97,500	W	--	(3)	138,000	235,000
Alloys: (other than steels, cast irons, and superalloys)						
Welding materials (structural and hard-facing)	--	W	--	--	6	6
Other alloys	155 <sup>r</sup>	2,040	--	--	--	2,190 <sup>r</sup>
Mill products made from metal powder <sup>4</sup>	--	--	--	--	115,000 <sup>r</sup>	115,000 <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	--	--	--	--	740	740
Miscellaneous and unspecified uses:						
Lubricants	--	--	--	--	11,000	11,000
Other	1,090	31,300	73,200 <sup>r</sup>	1,840	16,800	124,000
Grand total	585,000 <sup>r</sup>	304,000	73,200 <sup>r</sup>	1,840	302,000 <sup>r</sup>	1,270,000 <sup>r</sup>
Stocks, November 30, 2005	426,000 <sup>r</sup>	223,000 <sup>r</sup>	2,990 <sup>r</sup>	22,800	847,000	1,520,000
2005, December:						
Steel:						
Carbon	12,400	W	--	--	W	12,400
High-strength low-alloy	38,700	8,440	--	--	11,300	58,400
Stainless and heat-resisting	174,000	69,200	--	W	6,510	249,000
Full alloy	163,000	153,000	--	--	1,510	318,000
Tool	46,900	W	--	--	--	46,900
Total	435,000	231,000	--	W	19,400	685,000
Cast irons (gray, malleable, and ductile iron)	W	7,650	--	--	763	8,410
Superalloys	84,000	W	--	(3)	133,000	217,000
Alloys: (other than steels, cast irons, and superalloys)						
Welding materials (structural and hard-facing)	--	W	--	--	6	6
Other alloys	171	5,780	--	--	--	5,950
Mill products made from metal powder <sup>4</sup>	--	--	--	--	77,000	77,000
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	--	--	--	--	740	740
Miscellaneous and unspecified uses:						
Lubricants	--	--	--	--	10,900	10,900
Other	1,090	30,400	73,200	1,840	16,800	123,000
Grand total	597,000	275,000	73,200	1,840	259,000	1,210,000
Stocks, December 31, 2005	465,000	197,000	2,990	30,700	847,000	1,540,000

<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	2004		2005		
	January- December	January- November	October	November	January- November <sup>2</sup>
Australia	30,500	30,500	--	--	110,000
Austria	1,310,000	1,310,000	--	--	3,230
Belgium	6,470,000	6,390,000	640,000	1,150,000	8,640,000
Brazil	31,000	29,200	--	--	66,700
Canada	1,370,000	1,240,000	369,000	306,000	3,650,000
Chile	1,380,000	1,380,000	--	--	111,000
China	36,000	36,000	266,000	24,900	4,310,000
Costa Rica	26,700	26,700	--	--	3,810
India	430	430	630	--	39,600
Italy	--	--	--	--	35,100
Japan	5,730,000	5,660,000	155,000	126,000	1,870,000
Korea, Republic of	95,200	93,200	--	--	11,400
Mexico	3,910,000	3,510,000	223,000	394,000	2,650,000
Netherlands	14,100,000	13,100,000	429,000	425,000	14,300,000
Sweden	38,200	--	--	--	4,630
Taiwan	19,200	18,600	--	--	--
United Kingdom	8,910,000	8,190,000	539,000	670,000	6,640,000
Other	2,770,000	2,770,000	726	--	753,000
Total	46,200,000	43,800,000	2,620,000	3,090,000	43,200,000

-- Zero.

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

<sup>2</sup>May have been revised.

Source: U.S. Census Bureau.

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

(Kilograms, contained molybdenum)

Country	2004		2005		
	January- December	January- November	October	November	January- November
Australia	1,090	1,090	--	--	--
Austria	--	--	11,400	--	11,400
Brazil	--	--	326	--	17,200
Canada	870,000	811,000	228,000	191,000	1,830,000
France	10,100	10,100	--	--	--
Indonesia	381	381	--	--	5,930
Mexico	33,700	33,700	47,300	6,900	88,700
Netherlands	--	--	--	--	33,300
Sweden	9,150	--	--	--	--
United Kingdom	491	491	--	--	--
Total	925,000	857,000	287,000	198,000	1,980,000

-- 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 2004			November 2005			January-November 2005		
	Gross weight	Contained molybdenum	Value <sup>2</sup> (thousands)	Gross weight	Contained molybdenum	Value <sup>2</sup> (thousands)	Gross weight	Contained molybdenum	Value <sup>2</sup> (thousands)
Ore and concentrates roasted	7,580,000	4,710,000	\$133,000	662,000	410,000	\$11,300	7,780,000	4,880,000	\$292,000
Ore and concentrates other	9,330,000	4,070,000	135,000	1,380,000	697,000	46,400	12,700,000	5,910,000	409,000
Molybdenum chemicals:									
Oxides and hydroxides	822,000	NA	15,800	108,000	NA	4,090	1,180,000	NA	39,800
Molydates of ammonium	1,940,000	1,330,000	18,400	456,000	268,000	8,070	3,800,000	2,470,000	50,000
Molydates (all others)	254,000	116,000	1,430	22,100	3,550	219	101,000	24,800	1,250
Molybdenum orange	1,030,000	NA	4,760	62,500	NA	367	920,000	NA	4,470
Ferromolybdenum	8,310,000	5,310,000	158,000	464,000	297,000	20,600	5,690,000	3,630,000	254,000
Molybdenum powders	139,000	95,200	4,930	12,100	11,800	624	86,700	73,200	7,090
Molybdenum unwrought	151,000	151,000	3,520	27,500	27,500	1,580	93,200	93,000	5,410
Molybdenum waste and scrap	454,000	415,000	10,200	26,400	25,700	1,480	457,000	434,000	32,400
Molybdenum wire	20,500	NA	2,010	1,710	NA	232	20,600	NA	3,010
Molybdenum other	132,000	NA	13,700	6,620	NA	1,010	152,000	NA	19,400
Total	30,200,000	16,200,000	501,000	3,230,000	1,740,000	95,900	32,900,000	17,500,000	1,120,000

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>Customs value.

Source: U.S. Census Bureau.