

# Mineral Industry Surveys

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## MOLYBDENUM IN DECEMBER 2006

Domestic production of molybdenum in concentrate in December 2006 was about 3% more than the output of the previous month and about 5% less than that of December 2005, according to the U.S. Geological Survey. Producer stocks of molybdenum in concentrate, oxide, and other product forms were about 7,390 metric tons (t) at the beginning of 2006 and about 5,330 t at the end of December.

According to Ryan's Notes (2006b), the December monthly average price range for U.S. ferromolybdenum (FeMo) was from \$26.444 to \$26.972 per pound of molybdenum content, compared with \$27.500 to \$28.000 in November. European FeMo monthly averages ranged from \$59.344 to \$60.000 per kilogram (kg) of molybdenum content in December compared with \$61.429 to \$62.357 per kg in November. In December, worldwide molybdenum oxide (MoO<sub>3</sub>) prices ranged from \$24.667 to \$25.067 per pound versus \$25.300 to \$25.757 per pound in November.

Molybdenum production by Corporacion Nacional del Cobre (Codelco) in Chile was expected to decrease to about 31,000 t (68 million pounds) in 2006 as compared with about 37,000 t (81 million pounds) in 2005. Production was reduced owing to

a combination of lower ore grades and a broken conveyor belt at the Chuquicamata Mine. In addition, a mill at the Collahuasi Mine that broke down in 2006, and was repaired temporarily, was to be shut down for 3 months starting January 2007 for permanent repairs. Mill production would be reduced by about 450 t (1 million pounds) in 2007 owing to the shutdown. The Collahuasi Mine produced about 5,400 t of molybdenum (12 million pounds) in 2006 (Ryan's Notes, 2006a).

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 2006. Export data for October and November 2006 and import data for November 2006 are also included.

### References Cited

- Ryan's Notes, 2006a, Moly supply enigma: Ryan's Notes, v. 12, no. 49, December 11, p. 4.  
Ryan's Notes, 2006b, [untitled]: Ryan's Notes, v. 13, no. 1, January 1, p. 10.

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

(Metric tons, contained molybdenum)

	2005		2006 <sup>p</sup>		
	January- December	January- December	November	December	January- December
Production	58,000	57,900	4,760	4,880	60,600
Shipments: <sup>2</sup>					
Domestic	38,600	38,200	3,060	1,320	37,800
Export	19,300	19,400	1,810	1,460	21,000

<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)

	2005	2006 <sup>p</sup>		
	January- December	November	December	January- December
Gross production	78,500	6,350	6,160	78,000
Internal consumption <sup>2</sup>	48,700	3,240	3,530	47,400
Gross shipments	46,700	5,030	4,300	51,000

<sup>p</sup>Preliminary.

<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	Molybdic oxides	Ferro molyb- denum <sup>2</sup>	Ammonium and sodium molybdate	Molyb- denum scrap	Other	Total
2006, November:						
Steel:						
Carbon	12,200	W	--	--	W	12,200
High-strength low-alloy	35,200 <sup>r</sup>	12,300	--	--	11,300	58,800
Stainless and heat-resisting	157,000	63,000	--	W	6,510 <sup>r</sup>	227,000
Full alloy	155,000	244,000	--	--	1,510	400,000
Tool	57,300	W	--	--	--	57,300
Total	417,000 <sup>r</sup>	319,000	--	W	19,400 <sup>r</sup>	755,000 <sup>r</sup>
Cast irons (gray, malleable, and ductile iron)	W	7,430 <sup>r</sup>	--	--	763	8,190
Superalloys	50,600 <sup>r</sup>	W	--	(3)	114,000 <sup>r</sup>	165,000 <sup>r</sup>
Alloys: (other than steels, cast irons, and superalloys)						
Welding materials (structural and hard-facing)	--	W	--	--	6	6
Other alloys	148	6,490	--	--	--	6,640 <sup>r</sup>
Mill products made from metal powder <sup>4</sup>	--	--	--	--	194,000	194,000
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	--	--	--	--	1,000	1,000
Miscellaneous and unspecified uses:						
Lubricants	--	--	--	--	11,000	11,000
Other	--	1,450 <sup>r</sup>	73,000	--	-- <sup>r</sup>	74,400 <sup>r</sup>
Grand total	545,000 <sup>r</sup>	335,000 <sup>r</sup>	73,000	--	340,000 <sup>r</sup>	1,290,000 <sup>r</sup>
Stocks, November 30, 2006	525,000 <sup>r</sup>	191,000	3,070	25,000	857,000	1,600,000 <sup>r</sup>
2006, December:						
Steel:						
Carbon	12,200	W	--	--	W	12,200
High-strength low-alloy	39,700	10,500	--	--	11,300	61,500
Stainless and heat-resisting	156,000	63,700	--	W	6,510	226,000
Full alloy	154,000	216,000	--	--	1,510	372,000
Tool	60,300	W	--	--	--	60,300
Total	422,000	291,000	--	W	19,400	732,000
Cast irons (gray, malleable, and ductile iron)	W	7,340	--	--	763	8,100
Superalloys	50,200	W	--	(3)	130,000	180,000
Alloys: (other than steels, cast irons, and superalloys)						
Welding materials (structural and hard-facing)	--	W	--	--	6	6
Other alloys	68	W	--	--	W	68
Mill products made from metal powder <sup>4</sup>	--	--	--	--	184,000	184,000
Cemented carbides and related products <sup>5</sup>	--	--	--	--	6	6
Chemical and ceramic uses:						
Pigments	--	--	W	--	--	W
Catalysts	77,300	--	W	--	W	77,300
Other chemicals	--	--	--	--	889	889
Miscellaneous and unspecified uses:						
Lubricants	--	--	--	--	11,100	11,100
Other	1,090	42,400	73,500	1,840	26,700	146,000
Grand total	551,000	340,000	73,500	1,840	373,000	1,340,000
Stocks, December 31, 2006	485,000	173,000	3,840	19,800	859,000	1,540,000

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

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

<sup>2</sup>Includes calcium molybdate.

<sup>3</sup>Included in "Other" of the "Superalloys" category.

<sup>4</sup>Includes ingot, wire, rod, and sheet.

<sup>5</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	2005		2006		
	January- December	January- November	October	November	January- November
Armenia	63,900	63,900	--	--	--
Australia	110,000	110,000	--	--	88,800
Belgium	9,430,000	8,640,000	815,000	90,400	7,490,000
Brazil	66,700	66,700	19,000	--	113,000
Canada	3,840,000	3,650,000	201,000	198,000	2,680,000
Chile	177,000	111,000	19,000	80,700	259,000
China	4,390,000	4,310,000	7,140	--	405,000
Finland	11,900	--	--	--	--
Georgia	489,000	489,000	--	--	--
Germany	136,000	136,000	--	1,450	1,450
India	41,100	39,600	--	24,000	82,800
Italy	35,100	35,100	--	--	--
Japan	2,050,000	1,870,000	219,000	162,000	2,260,000
Korea, Republic of	11,700	11,400	--	--	45,000
Mexico	3,130,000	2,650,000	473,000	297,000	6,070,000
Netherlands	15,000,000	14,300,000	876,000	1,120,000	10,300,000
Russia	48,700	48,700	--	--	--
Sweden	--	--	--	20,000	20,000
Switzerland	--	--	--	--	25,200
Taiwan	3,600	3,600	--	23,800	53,400
United Kingdom	7,310,000	6,640,000	793,000	678,000	7,280,000
Vietnam	--	--	284	--	14,100
Other	24,300	23,500	--	726	17,700
Total	46,400,000	43,200,000	3,420,000	2,700,000	37,200,000

-- 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	2005		2006		
	January- December	January- November	October	November	January- November
Argentina	--	--	--	--	14,500
Australia	--	--	--	349	24,500
Austria	11,400	11,400	--	--	--
Brazil	17,200	17,200	--	--	37,700
Canada	1,930,000	1,830,000	62,500	21,000	1,760,000
Denmark	--	--	--	--	57
India	--	--	--	300	667
Indonesia	5,930	5,930	--	--	--
Japan	--	--	--	--	60
Mexico	88,700	88,700	1,400	603	143,000
Netherlands	33,300	33,300	14,000	--	14,000
Singapore	--	--	--	--	1,630
Switzerland	--	--	--	--	12,000
Total	2,090,000	1,980,000	77,900	22,200	2,010,000

-- 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 2005			November 2006			January-November 2006		
	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	8,570,000	5,380,000	\$306,000	512,000	321,000	\$14,000	8,990,000	5,530,000	\$157,000
Ore and concentrates other	13,800,000	6,480,000	440,000	652,000	316,000	11,500	9,150,000	4,210,000	192,000
Molybdenum chemicals:									
Oxides and hydroxides	1,240,000	NA	42,500	945	NA	10	590,000	NA	22,700
Molybdates of ammonium	4,220,000	2,730,000	53,600	60,000	33,800	1,530	1,330,000	785,000	31,000
Molybdates (all others)	101,000	24,800	1,250	23,500	9,340	300	181,000	49,800	2,050
Molybdenum orange	983,000	NA	4,780	65,400	NA	406	782,000	NA	4,900
Ferromolybdenum	6,340,000	4,040,000	278,000	308,000	188,000	10,700	4,540,000	2,880,000	155,000
Molybdenum powders	92,900	78,500	7,740	12,100	12,100	909	333,000	237,000	15,300
Molybdenum unwrought	99,000	98,800	5,750	13,000	13,000	747	166,000	165,000	9,280
Molybdenum waste and scrap	503,000	480,000	35,600	43,100	42,400	2,490	428,000	421,000	26,400
Molybdenum wire	21,300	NA	3,160	721	NA	128	16,500	NA	2,280
Molybdenum other	163,000	NA	20,700	7,080	NA	1,050	122,000	NA	15,400
Total	36,200,000	19,300,000	1,200,000	1,700,000	935,000	43,800	26,600,000	14,300,000	633,000

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.