

# Mineral Industry Surveys

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## MOLYBDENUM IN NOVEMBER 2008

Domestic production of molybdenum (Mo) in concentrate in November 2008 was about 7% more than the output of the previous month and about 23% less than that of November 2007, according to the U.S. Geological Survey. Producer stocks of molybdenum in concentrate, oxide, and other product forms were about 5,770 metric tons (t) at the beginning of 2008 and about 6,240 t at the end of November.

According to Ryan's Notes (2008), the November monthly average price range for U.S. ferromolybdenum (FeMo) was from \$13.200 to \$14.179 per pound of molybdenum content, compared with \$29.389 to \$30.778 in October. European FeMo monthly averages ranged from \$25.786 to \$27.357 per kilogram (kg) of molybdenum content in November compared with \$57.667 to \$59.556 per kg in October. In November, worldwide molybdenum oxide (MoO<sub>3</sub>) prices ranged from \$10.371 to \$11.643 per pound compared with \$25.694 to \$27.667 per pound in October.

Freeport-McMoRan Copper and Gold Inc. (FCX; Phoenix, AZ), in response to the sharp decline in molybdenum prices, announced plans to reduce production from its Henderson molybdenum mine by 25% and defer restarting the Climax molybdenum mine, both in Colorado. While FCX remained positive on the long-term prospects for the future of the Climax Mine, construction activities were suspended in a controlled and

sequenced manner in order to maintain the integrity of the work completed to date, as well as to allow for a quick restart of the project pending improvement in market conditions. FCX was expected to also assess the potential to curtail molybdenum production at its byproduct mines (Freeport-McMoRan Copper and Gold Inc., 2008).

Included in this Mineral Industry Surveys are U.S. production and shipments of molybdenum concentrates and materials, U.S. consumption by end use, and consumer stocks of molybdenum material in October and November 2008. Export data for September and October 2008 and import data for October 2008 are also included.

### References Cited

- Freeport-McMoRan Copper and Gold Inc., 2008, Freeport-McMoRan Copper and Gold Inc. announces molybdenum production curtailment and plans to defer restart of Climax molybdenum mine: Phoenix, AZ, Freeport-McMoRan Copper and Gold Inc., November 10, 2p. (Accessed July 30, 2009, at <http://www.fcx.com/news/2008/111008.pdf>)  
Ryan's Notes, 2008, [untitled]: Ryan's Notes, v. 14, no. 48, December 1, p. 10.

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

(Metric tons, contained molybdenum)

	2007		2008		
	January- December	January- November	October	November	January- November
Production	57,000	52,600	3,710	3,960	51,800
Shipments: <sup>2</sup>					
Domestic	40,600	37,500	3,140	1,990	39,000
Export	16,400	15,200	785	905	11,900

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

<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)

	2007		2008		
	January- December	January- November	October	November	January- November
Gross production	72,800	67,300	6,310	5,410	67,500
Internal consumption <sup>2</sup>	41,700	38,700	3,680	2,910	37,100
Gross shipments	48,700	45,400	4,020	3,650	47,100

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

<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
2008, October:						
Steel:						
Carbon	32,300	W	--	--	W	32,300
High-strength low-alloy	45,400	7,840	--	--	11,300	64,600
Stainless and heat-resisting	155,000	62,200	--	W	6,510	224,000
Full alloy	249,000	335,000	--	--	1,510	586,000
Tool	W	W	--	--	--	W
Total	482,000	405,000	--	W	19,400	907,000
Cast irons (gray, malleable, and ductile iron)	W	20,700	--	--	763	21,500
Superalloys	58,900	W	--	W	82,800	142,000
Alloys: (other than steels, cast irons, and superalloys)						
Welding materials (structural and hard-facing)	--	W	--	--	6	6
Other alloys	W	4,330	--	--	--	4,330
Mill products made from metal powder <sup>3</sup>	--	--	--	--	187,000	187,000
Cemented carbides and related products <sup>4</sup>	--	--	--	--	W	W
Chemical and ceramic uses:						
Pigments	--	--	W	--	--	W
Catalysts	77,300	--	W	--	W	77,300
Other chemicals	--	--	--	--	642	642
Miscellaneous and unspecified uses:						
Lubricants	--	--	--	--	10,800	10,800
Other	66,900	28,500	73,700	114,000	16,800	300,000
Grand total	685,000	459,000	73,700	114,000	319,000	1,650,000
Stocks, October 31, 2008	305,000	326,000	2,150	7,100	858,000	1,500,000
2008, November:						
Steel:						
Carbon	35,400	W	--	--	W	35,400
High-strength low-alloy	39,100	7,840	--	--	11,300	58,300
Stainless and heat-resisting	157,000	62,900	--	W	6,510	227,000
Full alloy	245,000	257,000	--	--	1,510	503,000
Tool	W	W	--	--	--	W
Total	477,000	328,000	--	W	19,400	824,000
Cast irons (gray, malleable, and ductile iron)	W	20,700	--	--	763	21,500
Superalloys	58,900	W	--	W	83,000	142,000
Alloys: (other than steels, cast irons, and superalloys)						
Welding materials (structural and hard-facing)	--	W	--	--	6	6
Other alloys	W	647	--	--	--	647
Mill products made from metal powder <sup>3</sup>	13,300	--	--	--	186,000	199,000
Cemented carbides and related products <sup>4</sup>	--	--	--	--	W	W
Chemical and ceramic uses:						
Pigments	--	--	W	--	--	W
Catalysts	77,300	--	W	--	W	77,300
Other chemicals	--	--	--	--	345	345
Miscellaneous and unspecified uses:						
Lubricants	--	--	--	--	10,800	10,800
Other	66,900	28,900	72,600	114,000	16,800	299,000
Grand total	693,000	378,000	72,600	114,000	317,000	1,570,000
Stocks, November 30, 2008	312,000	325,000	2,150	7,860	858,000	1,510,000

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>Includes ingot, wire, rod, and sheet.

<sup>4</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	2007			2008		
	January- December	October	January- October	September	October	January- October
Argentina	--	--	--	19,000	19,000	172,000
Belgium	6,730,000	464,000	5,440,000	611,000	666,000	6,200,000
Brazil	119,000	9,970	110,000	--	8,410	9,700
Canada	2,580,000	204,000	2,190,000	165,000	173,000	1,940,000
Chile	1,270,000	--	1,270,000	24,100	42,900	316,000
China	71,500	--	71,400	--	--	242,000
Finland	38,000	--	--	--	--	--
India	119,000	--	117,000	--	10,500	32,700
Italy	19,000	--	--	--	--	12,000
Japan	2,230,000	252,000	1,850,000	146,000	197,000	1,740,000
Korea, Republic of	232,000	38,000	95,000	62,300	30,300	609,000
Mexico	4,760,000	273,000	4,020,000	575,000	274,000	3,730,000
Netherlands	9,660,000	1,080,000	8,280,000	462,000	1,470,000	8,380,000
Niger	--	--	--	--	17,400	17,400
Pakistan	75,600	--	75,600	--	--	--
Switzerland	1,630	--	1,630	--	--	--
Taiwan	17,900	--	17,900	--	--	--
Thailand	9,620	--	9,620	--	--	--
United Kingdom	5,800,000	620,000	4,930,000	247,000	695,000	4,110,000
Vietnam	4,990	--	4,130	2,940	284,000	325,000
Other	80,800	204	49,300	536	116	34,400
Total	33,800,000	2,940,000	28,500,000	2,310,000	3,890,000	27,900,000

-- 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	2007			2008		
	January- December	October	January- October	September	October	January- October
Australia	25,000	--	25,000	--	174	174
Canada	838,000	47,900	658,000	87,100	93,500	900,000
Colombia	--	--	--	186	--	186
Denmark	394	--	394	--	--	454
India	1,090	--	953	--	302	1,150
Korea, Republic of	--	--	--	--	--	14,000
Mexico	23,700	--	20,500	--	3,980	41,800
Netherlands	145,000	--	145,000	14,000	--	210,000
Philippines	735	735	735	--	--	700
Saudi Arabia	149,000	--	93,400	--	--	--
South Africa	13,500	--	13,500	--	--	68
United Kingdom	24,900	--	24,900	--	--	--
Total	1,220,000	48,600	982,000	101,000	97,900	1,170,000

-- 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 2007			October 2008			January-October 2008		
	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	8,680,000	5,430,000	\$181,000	984,000	600,000	\$22,900	8,790,000	5,360,000	\$232,000
Ore and concentrates other	15,000,000	6,960,000	372,000	779,000	338,000	22,700	8,230,000	3,770,000	242,000
Molybdenum chemicals:									
Oxides and hydroxides	211,000	NA	8,020	18,000	NA	753	223,000	NA	8,900
Molybdates of ammonium	915,000	515,000	30,400	50,000	28,200	2,060	319,000	180,000	12,400
Molybdates (all others)	179,000	51,400	2,190	3,180	501	37	87,900	29,500	977
Molybdenum orange	600,000	NA	4,040	31,700	NA	329	331,000	NA	2,790
Ferromolybdenum	6,360,000	4,100,000	270,000	262,000	174,000	12,700	3,170,000	2,120,000	155,000
Molybdenum powders	72,900	60,800	4,990	1,400	1,400	178	60,800	51,500	5,450
Molybdenum unwrought	117,000	117,000	7,460	2,000	2,000	125	211,000	210,000	13,800
Molybdenum waste and scrap	574,000	554,000	34,800	23,900	21,500	1,230	551,000	509,000	27,900
Molybdenum wire	17,900	NA	2,740	1,510	NA	230	16,300	NA	2,670
Molybdenum other	164,000	NA	20,900	51,500	NA	5,630	403,000	NA	41,500
Total	32,900,000	XX	938,000	2,210,000	XX	68,900	22,400,000	XX	745,000

NA Not available. XX Not applicable.

<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.