

# Mineral Industry Surveys

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## MOLYBDENUM IN FEBRUARY 2013

Domestic production of molybdenum (Mo) in concentrate in February 2013 was 9% less than the output of the previous month and 17% less than that of February 2012. Producer stocks of molybdenum in concentrate, oxide, and other product forms were about 8,400 metric tons (t) at the beginning of 2013 and about 10,500 t at the end of February.

According to Ryan's Notes, the February 2013 monthly average price range for U.S. ferromolybdenum (FeMo) was \$12.738 to \$12.944 per pound of molybdenum content, compared with \$12.725 to \$12.950 per pound in January 2013. European FeMo monthly averages ranged from \$27.594 to \$27.931 per kilogram of molybdenum content in February compared with \$28.750 to \$29.250 per kilogram in January. In February, worldwide molybdenum oxide (MoO<sub>3</sub>) prices ranged from \$11.300 to \$11.425 per pound compared with \$11.750 to \$11.875 per pound in January.

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 January and February 2012. U.S. production and

shipments of molybdenum products were excluded from this Mineral Industry Surveys to avoid disclosing company proprietary data. Export data for January and February 2012 and import data for February 2012 are also included.

Rio Tinto plc (London, United Kingdom) announced that its Molybdenum Autoclave Process (MAP) plant at Kennecott Utah Copper Corp.'s Bingham Canyon Mine (Utah) was expected to come onstream by the middle of 2014. It was expected to take 12 months to reach full capacity of 10,000 t of molybdenum per year. The MAP plant would process molybdenum concentrates more efficiently than conventional roasters and allow improved molybdenum recovery. The capital cost for the MAP plant was estimated at \$600 million. As of January 1, 2013, Rio Tinto announced that \$200 million remained to be spent on the plant (Ryan's Notes, 2013).

### Reference Cited

Ryan's Notes, 2013, Ferroalloy notes: Ryan's Notes, v. 19, no. 8, February 25, p. 1.

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

(Metric tons, contained molybdenum)

	2012 <sup>p</sup>		2013		
	January– December	January– February	January	February	January– February
Production	56,100	10,200	4,600	4,200	8,800
Shipments: <sup>2</sup>					
Domestic	17,900	3,100	1,320	1,390	2,710
Export	W	W	W	W	W

<sup>p</sup>Preliminary. <sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data.

<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 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
2013:						
January:						
Steel:						
Carbon	W	W	--	--	W	W
High-strength low-alloy	W	7,380	--	--	--	7,380
Stainless and heat-resisting	162,000	57,400	--	(3)	6,510	226,000
Full alloy	246,000	214,000	--	--	W	459,000
Tool	W	W	--	--	--	W
Total	407,000	278,000	--	--	6,510	692,000
Cast irons (gray, malleable, and ductile iron)	W	W	--	--	W	W
Superalloys	W	W	--	(3)	102,000	102,000
Alloys: (other than steels, cast irons, and superalloys)						
Welding materials (structural and hard-facing)	--	W	--	--	W	W
Other alloys	252	W	--	--	--	252
Mill products made from metal powder <sup>4</sup>	W	--	--	--	W	W
Cemented carbides and related products <sup>5</sup>	--	--	--	--	W	W
Chemical and ceramic uses:						
Pigments	--	--	(3)	--	--	--
Catalysts	77,300	--	(3)	--	W	77,300
Other chemicals	--	--	--	--	--	--
Miscellaneous and unspecified uses:						
Lubricants	--	--	--	--	10,800	10,800
Other	141,000	49,000 <sup>r</sup>	335 <sup>r</sup>	(3) <sup>r</sup>	355,000 <sup>r</sup>	546,000 <sup>r</sup>
Grand total	626,000	327,000 <sup>r</sup>	335 <sup>r</sup>	-- <sup>r</sup>	475,000 <sup>r</sup>	1,430,000 <sup>r</sup>
Stocks, January 31, 2013	425,000 <sup>r</sup>	288,000 <sup>r</sup>	2,440 <sup>r</sup>	(6)	(6)	1,610,000 <sup>r</sup>
February:						
Steel:						
Carbon	31,900	W	--	--	W	31,900
High-strength low-alloy	W	8,150	--	--	--	8,150
Stainless and heat-resisting	168,000	57,900	--	(3)	6,510	233,000
Full alloy	244,000	216,000	--	--	W	460,000
Tool	W	W	--	--	--	W
Total	444,000	282,000	--	--	6,510	733,000
Cast irons (gray, malleable, and ductile iron)	W	W	--	--	W	W
Superalloys	W	W	--	(3)	95,000	95,000
Alloys: (other than steels, cast irons, and superalloys)						
Welding materials (structural and hard-facing)	--	W	--	--	W	W
Other alloys	252	1,760	--	--	--	2,010
Mill products made from metal powder <sup>4</sup>	W	--	--	--	W	W
Cemented carbides and related products <sup>5</sup>	--	--	--	--	W	W
Chemical and ceramic uses:						
Pigments	--	--	(3)	--	--	--
Catalysts	77,300	--	(3)	--	W	77,300
Other chemicals	--	--	--	--	--	--
Miscellaneous and unspecified uses:						
Lubricants	--	--	--	--	10,800	10,800
Other	107,000	53,600	562	(3)	354,000	516,000
Grand total	629,000	337,000	562	--	467,000	1,430,000
Stocks, February 28, 2013	441,000	301,000	2,400	(6)	(6)	1,640,000

See footnotes at end of table.

TABLE 2—Continued  
U.S. REPORTED CONSUMPTION, BY END USES, AND CONSUMER STOCKS OF MOLYBDENUM MATERIALS<sup>1</sup>

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

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

<sup>5</sup>Includes construction, mining, oil and gas, metalworking machinery.

<sup>6</sup>Withheld to avoid disclosing company proprietary data; included in "Total."

TABLE 3  
U.S. EXPORTS OF MOLYBDENUM ORES AND CONCENTRATES  
(including roasted concentrate), BY COUNTRY<sup>1</sup>

(Kilograms, contained molybdenum)

Country	2012			2013		
	January– December	February	January– February	January	February	January– February
Austria	166,000	11,200	22,400	11,200	8,630	19,800
Belgium	6,190,000	669,000	1,170,000	--	34,800	34,800
Brazil	378,000	6,760	6,760	--	12,000	12,000
Canada	2,220,000	188,000	329,000	153,000	128,000	282,000
China	2,130,000	218,000	529,000	111,000	133,000	244,000
Colombia	7,190	--	--	--	--	--
Germany	71,900	12,100	12,200	12,100	37,200	49,300
Hungary	997	--	--	--	--	--
India	660,000	70,300	96,100	233,000	69,200	302,000
Japan	3,780,000	184,000	381,000	272,000	292,000	564,000
Korea, Republic of	420,000	47,800	74,000	43,000	70,300	113,000
Mexico	7,590,000	764,000	1,450,000	921,000	674,000	1,600,000
Netherlands	13,000,000	887,000	1,660,000	1,360,000	1,310,000	2,680,000
Peru	8,110	362	543	18,000	--	18,000
Philippines	8,170	--	--	--	--	--
South Africa	382,000	--	--	37,000	20,000	57,000
Taiwan	6,040	--	1,000	--	--	--
Thailand	30,000	15,400	15,400	--	--	--
United Kingdom	6,450,000	287,000 <sup>†</sup>	697,000	470,000	301,000	771,000
Vietnam	18,300	887	1,900	7,050	7,820	14,900
Total	43,500,000	3,360,000 <sup>†</sup>	6,440,000	3,650,000	3,100,000	6,750,000

<sup>†</sup>Revised. -- 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 4  
U.S. EXPORTS OF FERROMOLYBDENUM, BY COUNTRY<sup>1</sup>

(Kilograms, contained molybdenum)

Country	2012			2013		
	January– December	February	January– February	January	February	January– February
Argentina	26,200	--	--	--	--	--
Australia	223	--	223	--	--	--
Brazil	528	--	--	--	--	--
Canada	677,000	68,200	125,000	86,800	31,200	118,000
Colombia	224	--	--	--	--	--
Denmark	495	--	--	--	--	--
Mexico	188,000	13,200	13,500	--	7,220	7,220
Netherlands	76,600	--	12,000	13,300	--	13,300
Peru	--	--	--	6,000	--	6,000
Saudi Arabia	26,400	--	--	--	--	--
Total	996,000	81,400	151,000	106,000	38,400	145,000

-- 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. IMPORTS FOR CONSUMPTION OF MOLYBDENUM PRODUCTS<sup>1</sup>

(Kilograms, unless otherwise specified)

Material	January–December 2012			February 2013			January–February 2013		
	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	10,100,000	6,170,000	\$100,000	487,000	296,000	\$4,400	675,000	412,000	\$6,630
Ore and concentrates other	11,900,000	5,810,000	199,000	738,000	367,000	12,900	2,090,000	1,070,000	35,600
Molybdenum chemicals:									
Oxides and hydroxides	532,000	NA	10,600	60,000	NA	1,180	120,000	NA	2,310
Molybdates of ammonium	813,000	460,000	14,900	120,000	69,800	1,970	180,000	103,000	2,900
Molybdates (all others)	41,800	16,300	748	--	--	--	1,000	396	21
Molybdenum orange	355,000	NA	2,910	35,900	NA	282	55,800	NA	494
Ferromolybdenum	6,450,000	4,320,000	138,000	446,000	301,000	8,580	922,000	621,000	17,700
Molybdenum powders	408,000	362,000	16,700	24,000	23,200	942	59,600	57,700	2,300
Molybdenum unwrought	744,000	726,000	21,800	72,300	72,100	2,380	131,000	131,000	4,320
Molybdenum waste and scrap	971,000	925,000	31,400	67,400	64,800	2,490	94,400	91,600	3,320
Molybdenum wire	19,600	NA	2,760	1,290	NA	206	3,160	NA	501
Molybdenum other	507,000	NA	31,700	13,300	NA	1,170	34,300	NA	2,590
Total	32,900,000	XX	570,000	2,060,000	XX	36,500	4,370,000	XX	78,700

NA Not available. XX Not applicable. --Zero.

<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.