

Mineral Industry Surveys

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VANADIUM IN JANUARY 2014

Reported domestic consumption of vanadium in January 2014 was slightly less than that of the previous month and was slightly more than that of January 2013. Consumer stocks of vanadium, in all forms, were 165 metric tons at the end of January, essentially unchanged from yearend 2013 stocks.

According to Ryan's Notes, U.S. ferrovanadium (FeV) prices ranged from \$12.378 to \$12.906 per pound of vanadium content in January 2014, compared with \$12.239 to \$12.644 in December 2013. European FeV prices ranged from \$25.711 to \$26.189 per kilogram in January, compared with \$25.400 to \$25.900 in December. Vanadium pentoxide (V₂O₅) prices ranged from \$5.500 to \$6.000 per pound in both January 2014 and December 2013.

Atlantic Ltd. announced that it would begin exports of vanadium trioxide (V₂O₃) from its Windimurra project in Western Australia. The company expected to produce vanadium carbonitride (VCN) from V₂O₃ through specialized companies

located in China. The cost of converting V₂O₃ to VCN was estimated to be less than the cost of converting V₂O₃ to FeV. The production of V₂O₃ does not require the operation of the FeV furnace and related infrastructure and is therefore produced at a lower cost per unit of vanadium than FeV. The company planned to sell V₂O₃ into the premium priced markets such as the titanium alloy market, the vanadium chemical market, and the vanadium redox flow battery market (Atlantic Ltd., 2014).

Included in this Mineral Industry Surveys are U.S. imports and exports of vanadium for December 2013 and January 2014.

Reference Cited

Atlantic Ltd., 2014, Quarterly report & January production and sales report: Perth, Western Australia, Australia, Atlantic Ltd., January 31, 6 p. (Accessed April 30, 2014, at <http://atlanticltd.com.au/upload/documents/InvestorRelations/quarterly/140131QuarterlyActivitiesReportJanProductionSalesReport.pdf>.)

TABLE 1
U.S. CONSUMPTION AND CONSUMER STOCKS OF VANADIUM, BY FORM¹

(Kilograms, contained vanadium)

	2012		2013				2014	
	Consumption	Stocks, end of period	December		January–December		January	
			Consumption	Stocks, end of period	Consumption	Stocks, end of period	Consumption	Stocks, end of period
Ferrovandium ²	3,140,000	167,000	227,000 ^r	93,400 ^r	2,810,000	93,400	227,000	95,000
Vanadium-aluminum alloy and other forms ³	839,000	61,000	69,500	72,600	812,000	72,600	68,400	70,100
Total	3,980,000	228,000	296,000 ^r	166,000 ^r	3,620,000	166,000	295,000	165,000

^rRevised.

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

²Includes other vanadium-iron-carbon alloys as well as vanadium oxides added directly to steel.

³Includes vanadium-aluminum alloy, other vanadium alloys, vanadium metal, vanadium pentoxide, vanadates, chlorides, and other specialty chemicals.

TABLE 2
U.S. CONSUMPTION OF VANADIUM, BY END USE¹

(Kilograms, contained vanadium)

	2012	2013		2014 January
		December	January- December	
Steel:				
Carbon	759,000	38,700 ^r	518,000	41,700
Full alloy	1,510,000	119,000	1,430,000	122,000
High-strength low-alloy	W	W	W	W
Stainless and heat resisting	61,500	4,930	59,200	4,930
Tool	165,000	W	W	W
Total steel	2,500,000	162,000 ^r	2,010,000	168,000
Superalloys	9,050	204	1,990	140
Miscellaneous and unspecified ²	W	W	W	W
Total	3,980,000	296,000 ^r	3,620,000	295,000

^rRevised. W Withheld to avoid disclosing company proprietary data; included in "Total."

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

²Includes cast irons, alloys excluding steel and superalloys, chemical and ceramic uses, and other miscellaneous and unspecified uses.

TABLE 3
U.S. IMPORTS AND EXPORTS OF ALUMINUM-VANADIUM MASTER ALLOYS AND VANADIUM
METAL, INCLUDING WASTE AND SCRAP¹

(Kilograms, gross weight)

	Aluminum-vanadium master alloy ²		Vanadium metal, including waste and scrap	
	Quantity	Value	Quantity	Value
Imports for consumption:				
2013	169,000	\$4,660,000	35,300	\$1,310,000
2014:				
January:				
Germany	--	--	998	194,000
China	9,990	287,000	--	--
United Kingdom	2	3,550	--	--
Total	9,990	291,000	998	194,000
Exports:				
2013	347,000	9,800,000	57,500	1,700,000
2014:				
January:				
Finland	--	--	106	4,100
Japan	--	--	4,000	279,000
Kazakhstan	12	576	--	--
Netherlands	(3)	6	--	--
United Kingdom	(3)	20	--	--
Total	12	602	4,110	284,000

-- Zero.

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

²Aluminum-vanadium master alloy consisting of 35% aluminum and 64.5% vanadium. Includes Harmonized. Tariff Schedule code 8112.99.2000.

³Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 4
U.S. IMPORTS AND EXPORTS OF FERROVANADIUM, VANADIUM PENTOXIDE (ANHYDRIDE) AND
OTHER OXIDES AND HYDROXIDES OF VANADIUM¹

(Kilograms, contained vanadium)

	Ferrovanadium		Vanadium pentoxide (anhydride) ²		Other oxides and hydroxides of vanadium	
	Quantity	Value	Quantity	Value	Quantity	Value
Imports for consumption:						
2013	3,710,000	\$89,800,000	2,040,000	\$29,900,000	205,000	\$2,560,000
2014:						
January:						
Austria	69,900	1,650,000	--	--	16,700	395,000
Canada	86,200	2,330,000	--	--	--	--
China	--	--	41,300	997,000	--	--
Czech Republic	161,000	3,320,000	--	--	--	--
Japan	8,960	208,000	--	--	--	--
Russia	16,100	400,000	--	--	--	--
South Africa	--	--	70,400	1,220,000	--	--
Total	342,000	7,920,000	112,000	2,220,000	16,700	395,000
Exports:						
2013	395,000	8,790,000	89,600	1,340,000	448,000	4,850,000
2014:						
January:						
Canada	26,900	269,000	--	--	234	2,960
Germany	--	--	--	--	2,350	20,900
Italy	--	--	14,400	258,000	--	--
Korea, Republic of	2,150	85,700	--	--	--	--
Mexico	27,000	358,000	--	--	--	--
Saudi Arabia	--	--	10,600	210,000	--	--
Total	56,100	712,000	25,000	467,000	2,580	23,800

-- Zero.

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

²May include catalysts containing vanadium pentoxide.

Source: U.S. Census Bureau.

TABLE 5
U.S. IMPORTS FOR CONSUMPTION OF VANADIUM-BEARING ASH, SLAG¹

(Kilograms, contained vanadium pentoxide, unless otherwise specified)

	Ash and residues		Ash and residues (not from the manufacture of iron and steel)		Slag, from the manufacture of iron and steel	
	Quantity	Value	Quantity	Value	Quantity	
					(gross weight)	Value
2013	4,180,000	\$22,500,000	5,560	\$11,500	66,100,000	\$8,480,000
2014:						
January:						
Canada	333,000	1,950,000	--	--	27,300,000	592,000
Mexico	36,100	40,800	--	--	22,000	6,940
Russia	93,100	427,000	--	--	--	--
Total	462,000	2,420,000	--	--	27,400,000	599,000

-- Zero.

¹Data 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 MISCELLANEOUS VANADIUM CHEMICALS¹

(Kilograms, contained vanadium)

	Sulfates		Vanadates	
	Quantity	Value	Quantity	Value
2013	29,500	\$306,000	276,000	\$5,700,000
2014:				
January:				
South Africa	--	--	1,160	183,000
Spain	--	--	134	28,100
Total	--	--	1,300	211,000

-- Zero.

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

Source: U.S. Census Bureau.