

# Mineral Industry Surveys

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## VANADIUM IN OCTOBER 2014

Reported domestic consumption of vanadium in October 2014 was 6% more than that of the previous month and 7% more than that of October 2013. Consumer stocks of vanadium, in all forms, were 166 metric tons (t) at yearend 2013 and 180 t at the end of October.

According to Ryan's Notes, U.S. ferrovanadium (FeV) prices ranged from \$12.589 to \$13.300 per pound of vanadium content in October, compared with \$12.606 to \$13.144 in September. European FeV prices ranged from \$24.711 to \$25.211 per kilogram in October, compared with \$25.406 to \$25.900 in September. Vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) prices ranged from \$5.300 to \$5.400 per pound in both September and October.

Largo Resources Ltd. (Toronto, Ontario, Canada) announced that its Maracas vanadium project had stable production rates between 8 and 12 metric tons per day of V<sub>2</sub>O<sub>5</sub>. The company announced that it expected to continue to increase production with a goal of reaching the project's Phase 1 capacity of 9,600

metric tons per year of V<sub>2</sub>O<sub>5</sub> by or before the 12th month of operation. The Maracas property is located 813 km northeast of Brasilia (Largo Resources Ltd., 2014).

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### Reference Cited

Largo Resources Ltd., 2014, Largo provides operational update: Toronto, Ontario, Canada, Largo Resources Ltd., October 7. (Accessed December 16, 2014, at <http://www.largoresources.com/English/investors/news/news-release-details/2014/Largo-Provides-Operational-Update-1072014/default.aspx>.)

TABLE 1  
U.S. CONSUMPTION AND CONSUMER STOCKS OF VANADIUM, BY FORM<sup>1</sup>

(Kilograms, contained vanadium)

	2013		2014					
	January–December		September		October		January–October	
	Consumption	Stocks	Consumption	Stocks	Consumption	Stocks	Consumption	Stocks
Ferrovandium <sup>2</sup>	2,810,000	93,300	230,000 <sup>r</sup>	91,100 <sup>r</sup>	247,000	110,000	2,370,000	110,000
Vanadium-aluminum alloy and other forms <sup>3</sup>	812,000	72,600	65,900	70,100	65,900	70,100	669,000	70,100
Total	3,620,000	166,000	296,000 <sup>r</sup>	161,000 <sup>r</sup>	313,000	181,000	3,040,000	181,000

<sup>r</sup>Revised.

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

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

<sup>3</sup>Includes 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 USE<sup>1</sup>

(Kilograms, contained vanadium)

	2013		2014	
	January–December	September	October	January–October
Steel:				
Carbon	W	51,200	44,400	441,000
Full alloy	1,430,000	102,000 <sup>r</sup>	133,000	1,210,000
High-strength low-alloy	W	W	W	W
Stainless and heat resisting	59,200	4,950	4,930	49,300
Tool	W	W	W	W
Total steel	1,490,000	158,000 <sup>r</sup>	183,000	1,700,000
Superalloys	2,540	W	W	1,340
Miscellaneous and unspecified <sup>2</sup>	W	W	W	W
Total	3,620,000	296,000 <sup>r</sup>	313,000	3,040,000

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

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

<sup>2</sup>Includes 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 SCRAP<sup>1</sup>

(Kilograms, gross weight)

	Aluminum-vanadium master alloy <sup>2</sup>		Vanadium metal, including waste and scrap <sup>3</sup>	
	Quantity	Value	Quantity	Value
<b>Imports for consumption:</b>				
2013	169,000	\$4,660,000	35,300	\$1,310,000
2014:				
September	20,000	462,000	38,500	858,000
October:				
Belgium	1,000	30,700	--	--
China	--	--	14,500	378,000
Germany	1,050	21,000	4,450	136,000
Russia	17,800	404,000	--	--
Total	19,800	456,000	19,000	513,000
January–October	412,000	9,400,000	147,000	3,500,000
<b>Exports:</b>				
2013	347,000	9,800,000	57,500	1,700,000
2014:				
September	1,000	76,400	5,100	246,000
October:				
Russia	52,800	1,290,000	--	--
United Kingdom	197	16,100	--	--
Total	53,000	1,300,000	--	--
January–October	365,000	10,400,000	11,900	643,000

-- Zero.

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

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

<sup>3</sup>Vanadium metal, including waste and scrap (HTS 8112.92.7000).

Source: U.S. Census Bureau.

TABLE 4  
U.S. IMPORTS AND EXPORTS OF FERROVANADIUM, VANADIUM PENTOXIDE (ANHYDRIDE) AND  
OTHER OXIDES AND HYDROXIDES OF VANADIUM<sup>1</sup>

(Kilograms, contained vanadium)

	Ferrovanadium		Vanadium pentoxide (anhydride) <sup>2</sup>		Other oxides and hydroxides of vanadium	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Imports for consumption:</b>						
2013	3,710,000	\$89,800,000	2,040,000	\$29,900,000	205,000	\$2,560,000
2014:						
September	179,000	7,800,000	193,000	2,490,000	--	--
October:						
Austria	18,400	468,000	--	--	8,350	181,000
Canada	108,000	2,890,000	--	--	--	--
China	--	--	20,100	470,000	--	--
Czech Republic	--	3,840,000	--	--	--	--
Germany	--	--	18,000	238,000	--	--
Japan	9,270	220,000	--	--	--	--
Korea, Republic of	34,100	843,000	--	--	--	--
Russia	4,050	102,000	132,000	1,210,000	--	--
Singapore	2,000	45,000	--	--	--	--
South Africa	--	--	161,000	2,680,000	--	--
Taiwan	--	--	10,100	214,000	--	--
Total	176,000	8,410,000	341,000	4,810,000	8,350	181,000
January–October	2,870,000	80,000,000	2,770,000	37,900,000	90,900	1,640,000
<b>Exports:</b>						
2013	395,000	8,790,000	89,600	1,340,000	448,000	4,850,000
2014:						
September	35,600	668,000	39,500	553,000	35,500	380,000
October:						
Canada	43,100	845,000	--	--	234	2,650
Estonia	--	--	20,000	252,000	--	--
Germany	--	--	--	--	5,000	88,200
Japan	--	--	5,000	64,500	1,550	13,800
Korea, Republic of	1,900	72,000	--	--	--	--
Netherlands	--	--	--	--	19,400	299,000
South Africa	--	--	--	--	3,080	30,500
Thailand	--	--	100	3,450	--	--
United Kingdom	--	--	438	4,160	--	--
Total	45,000	917,000	25,500	324,000	29,300	434,000
January–October	312,000	6,570,000	170,000	2,490,000	292,000	3,920,000

-- Zero.

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

<sup>2</sup>May include catalysts containing vanadium pentoxide.

Source: U.S. Census Bureau.

TABLE 5  
U.S. IMPORTS FOR CONSUMPTION OF VANADIUM-BEARING ASH, SLAG<sup>1</sup>

(Kilograms, contained vanadium pentoxide, unless otherwise specified)

	Ash and residues <sup>2</sup>		Slag, from the manufacture of iron and steel	
	Quantity	Value	Quantity (gross weight)	Value
2013	4,190,000	\$22,500,000	66,100,000	\$8,480,000
2014:				
September	680,000	4,510,000	24,600,000	853,000
October:				
Canada	499,000	2,280,000	16,700,000	407,000
Mexico	--	--	16,500	6,720
Russia	138,000	1,650,000	--	--
Total	637,000	3,930,000	16,700,000	414,000
January–October	5,240,000	32,600,000	126,000,000	8,350,000

-- Zero.

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

<sup>2</sup>Includes Harmonized Tariff Schedule code 2620.40.0030 and 2620.99.1000.

Source: U.S. Census Bureau.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF MISCELLANEOUS VANADIUM CHEMICALS<sup>1</sup>

(Kilograms, contained vanadium)

	Sulfates		Vanadates	
	Quantity	Value	Quantity	Value
2013	29,500	\$306,000	276,000	\$5,700,000
2014:				
September	181	13,400	134	28,100
October:				
China	1	5,300	--	--
Japan	--	--	254	29,400
Total	1	5,300	254	29,400
January–October	18,600	221,000	166,000	3,530,000

-- 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.