

# Mineral Industry Surveys

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## VANADIUM IN MARCH 2016

Reported domestic consumption of vanadium in March 2016 was about the same as that of the previous month and was slightly less than that of March 2015. Consumer stocks of all forms of vanadium were 156 metric tons (t) at the end of March, a decrease from 164 t at yearend 2015.

According to CRU Group, U.S. ferrovanadium (FeV) prices ranged from \$6.870 to \$7.235 per pound of vanadium content in March, compared with \$6.550 to \$6.863 in February. European FeV prices ranged from \$14.515 to \$14.885 per kilogram in March, compared with \$14.531 to \$14.900 in February. Vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) prices ranged from \$2.780 to \$2.970 per pound in March, compared with \$2.900 to \$3.300 per pound in February (fig. 1).

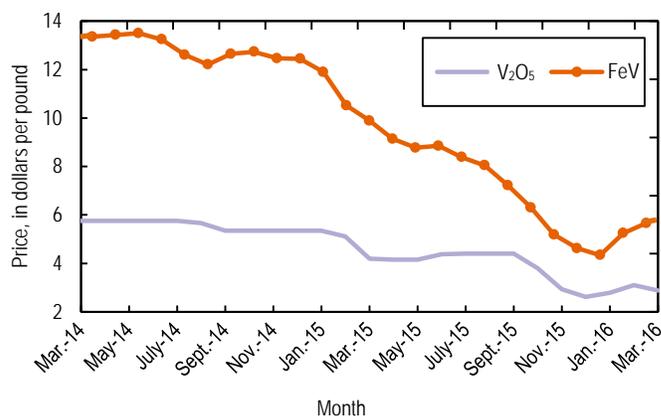


Figure 1. Average monthly prices for U.S. ferrovanadium and vanadium pentoxide from March 2014 through March 2016. Source: CRU Group.

### Reference Cited

CRU Group, 2016, Noble alloys and minor metals prices: CRU Group, May 1. (Accessed May 23, 2016, via <http://www.crugroup.com/>.)

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TABLE 1  
U.S. CONSUMPTION AND CONSUMER STOCKS OF VANADIUM, BY FORM<sup>1</sup>  
(Kilograms, contained vanadium)

	2015		2016					
	Consumption	Stocks	February		March		January-March	
			Consumption	Stocks	Consumption	Stocks	Consumption	Stocks
Ferrovandium <sup>2</sup>	2,770,000 <sup>r</sup>	94,200 <sup>r</sup>	222,000	99,200	222,000	85,800	666,000	85,800
Vanadium-aluminum alloy and other forms <sup>3</sup>	803,000	70,100	66,400	70,100	66,400	70,100	199,000	70,100
Total	3,570,000 <sup>r</sup>	164,000 <sup>r</sup>	288,000	169,000	288,000	156,000	866,000	156,000

<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)

	2015	2016		
	January-December	February	March	January-March
Steel:				
Carbon	W	43,000	43,000	130,000
Full alloy	1,430,000	118,000	118,000	354,000
High-strength low-alloy	W	W	W	W
Stainless and heat resisting	59,200	4,930	4,930	14,800
Tool	W	W	W	W
Total steel	3,260,000	166,000	166,000	498,000
Superalloys	2,800 <sup>†</sup>	W	W	W
Miscellaneous and unspecified <sup>2</sup>	W	W	W	W
Total	3,570,000 <sup>†</sup>	288,000	288,000	866,000

<sup>†</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
Imports for consumption:				
2015	204,000	\$4,520,000	182,000	\$3,450,000
2016:				
February	117,000	267,000	1,400	14,400
March:				
Germany	4,420	125,000	--	--
Netherlands	1,000	24,900	--	--
Total	5,420	150,000	--	--
January-March	40,100	635,000	1,400	14,400
Exports:				
2015	229,000	6,440,000	5,200	354,000
2016:				
February	73	2,520	159	6,130
March	--	--	--	--
January-March	23,500	576,000	274	27,100

-- 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 <sup>2</sup>		Vanadium pentoxide (anhydride) <sup>3,4</sup>		Other oxides and hydroxides of vanadium <sup>5</sup>	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Imports for consumption:</b>						
2015	2,030,000	\$64,700,000	2,870,000	\$32,800,000	93,700	\$1,840,000
2016:						
February	155,000	2,540,000	163,000	1,420,000	52,100	726,000
March:						
Austria	98,700	713,000	--	--	48,400	740,000
Canada	38,300	418,000	--	--	--	--
China	--	--	18,100	200,000	--	--
Czech Republic	--	1,350,000	--	--	--	--
Germany	226	6,530	200	6,400	--	--
Russia	20,000	203,000	--	--	--	--
South Africa	--	--	89,800	922,000	--	--
Taiwan	--	--	21,000	283,000	--	--
Total	157,000	2,690,000	129,000	1,410,000	48,400	740,000
January–March	257,000	4,450,000	421,000	3,580,000	52,100	726,000
<b>Exports:</b>						
2015	163,000	3,190,000	356,000	3,430,000	99,800	841,000
2016:						
February	104,000	1,060,000	1,000	18,600	40,200	270,000
March:						
Canada	9,670	117,000	--	--	1,740	18,700
India	20,000	143,000	--	--	--	--
Mexico	20,000	241,000	--	--	1,160	10,300
Total	49,700	500,000	--	--	2,890	29,000
January–March	289,000	3,060,000	1,910	55,300	89,200	438,000

-- Zero.

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

<sup>2</sup>Includes HTS code 7202.92.0000.

<sup>3</sup>Includes HTS code 2825.30.0010.

<sup>4</sup>May include catalysts containing vanadium pentoxide.

<sup>5</sup>Includes HTS code 2825.30.0050.

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
	2015	9,440,000	\$36,700,000	87,600,000
2016:				
February	383,000	514,000	42,300	29,600
March:				
Canada	435,000	664,000	19,400	10,500
Mexico	--	--	34,800	13,500
Total	435,000	664,000	54,200	24,000
January–March	1,290,000	1,850,000	163,000	118,000

-- Zero.

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

<sup>2</sup>Includes HTS 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 <sup>2</sup>		Vanadates <sup>3</sup>	
	Quantity	Value	Quantity	Value
2015	12,600	\$142,000	173,000	\$2,330,000
2016:				
February	700	5,440	9,920	204,000
March:				
Austria	--	--	25,500	335,000
China	62	4,200	6,620	138,000
India	--	--	99	2,920
Taiwan	--	--	12,300	116,000
Total	62	4,200	44,600	591,000
January–March	1,460	14,800	77,400	1,060,000

-- Zero.

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

<sup>2</sup>Sulfates (HTS code 2833.29.3000).

<sup>3</sup>Vanadates (HTS code 2841.90.1000).

Source: U.S. Census Bureau.