

# Mineral Industry Surveys

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## VANADIUM IN APRIL 2019

Reported domestic consumption of vanadium in April 2019 was slightly more than that of the previous month and 3% more than that of April 2018. Consumer stocks of all forms of vanadium were 195 metric tons (t) at the end of April, an increase from 185 t at yearend 2018 (table 1).

According to CRU Group (2019), U.S. ferrovanadium (FeV) prices ranged from \$24.778 to \$27.000 per pound of contained vanadium in April 2019, compared with \$35.025 to \$36.750 per pound in March 2019. European FeV prices ranged from \$48.533 to \$50.278 per kilogram of contained vanadium in April 2019, compared with \$65.625 to \$67.819 per kilogram in March 2019. CRU Group discontinued publishing U.S. vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) prices from July 2017 onward. The Chinese V<sub>2</sub>O<sub>5</sub> prices ranged from \$13.167 to \$14.167 per pound of contained vanadium in April 2019, compared with \$16.500 to \$17.500 per pound in March 2019 (fig. 1).

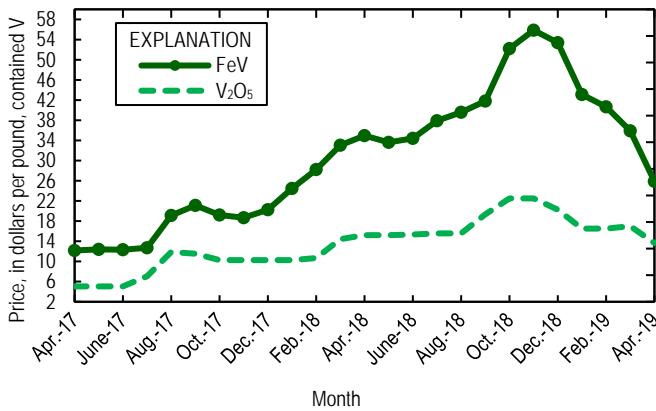


Figure 1. Average monthly prices for FeV and V<sub>2</sub>O<sub>5</sub> from April 2017 through April 2019. Prices for FeV are United States prices, and prices for V<sub>2</sub>O<sub>5</sub> are United States prices from April 2017 through June 2017 and Chinese prices from July 2017 through April 2019. Source: CRU Group.

**Reference Cited**

CRU Group, 2019, Noble alloys and minor metals prices: CRU Group, May 31. (Accessed June 14, 2019, via <http://www.crugroup.com/>.)

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

(Kilograms, contained vanadium)

	2019					
	March		April		January–April	
	Consumption	Stocks	Consumption	Stocks	Consumption	Stocks
Ferrovandium <sup>2</sup>	224,000	153,000	229,000	158,000	893,000	158,000
Vanadium-aluminum alloy and other forms <sup>3</sup>	21,100	37,800	21,100	37,800	84,200	37,800
Total	246,000	191,000	250,000	195,000	978,000	195,000

<sup>p</sup>Preliminary.

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

<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)

	2019		
	March	April	January– April
Steel:			
Carbon	W	W	W
Full alloy	101,000	101,000	403,000
High-strength low-alloy	W	W	W
Stainless and heat resisting	4,950	4,950	19,800
Tool	W	W	W
Total steel	106,000	106,000	423,000
Superalloys	W	W	W
Miscellaneous and unspecified <sup>2</sup>	W	W	W
Total	246,000	250,000	978,000

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. Includes estimates.

<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 FOR CONSUMPTION OF VANADIUM PRODUCTS<sup>1</sup>

(Kilograms, unless otherwise specified)

Material	HTS <sup>2</sup> code	2019								
		March			April			January–April		
		Gross weight	Contained weight	Value (thousands)	Gross weight	Contained weight	Value (thousands)	Gross weight	Contained weight	Value (thousands)
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000	1,830,000	182,000	\$8,960,000	1,890,000	176,000	\$8,270,000	7,580,000	735,000	\$33,000,000
Chemical compounds:										
Vanadium pentoxide (anhydride)	2825.30.0010	333,000	323,000	12,800,000	291,000	287,000	9,220,000	1,310,000	1,290,000	53,100,000
Vanadium oxides and hydroxides, other	2825.30.0050	48,800	33,100	1,770,000	20,000	13,100	938,000	88,800	59,400	4,180,000
Vanadium sulfates	2833.29.3000	--	--	--	--	--	--	--	--	--
Vanadates	2841.90.1000	10,100	5,110	392,000	2,410	1,050	91,500	78,300	47,300	2,330,000
Ferrovandium	7202.92.0000	357,000	245,000	25,400,000	336,000	229,000	20,200,000	1,350,000	918,000	89,400,000
Vanadium metal, including waste and scrap	8112.92.7000	3,340	3,280	390,000	11,200	7,690	735,000	31,500	23,000	2,510,000
Vanadium and articles thereof <sup>3</sup>	8112.99.2000	3,480	3,240	592,000	18,500	11,900	1,170,000	74,900	51,600	5,080,000
Total		2,590,000	794,000	50,300,000	2,570,000	725,000	40,600,000	10,500,000	3,120,000	190,000,000

-- Zero.

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

<sup>2</sup>Harmonized Tariff Schedule of the United States.

<sup>3</sup>Aluminum-vanadium master alloy consisting of 35% aluminum and 64.5% vanadium.

Source: U.S. Census Bureau.

TABLE 4  
U.S. IMPORTS AND EXPORTS OF FERROVANADIUM, OTHER OXIDES AND HYDROXIDES OF VANADIUM,  
AND VANADIUM PENTOXIDE (ANHYDRIDE)<sup>1,2</sup>

(Kilograms, gross and contained weight)

Country or locality	HTS <sup>3</sup> code	2019					
		March		April		January–April	
		Gross weight	Contained weight	Gross weight	Contained weight	Gross weight	Contained weight
<b>Imports for consumption:</b>							
Vanadium pentoxide (anhydride) <sup>4</sup>	2825.30.0010						
Brazil		201,000	200,000	162,000	161,000	843,000	838,000
China		--	--	1	1	3,280	1,890
Germany		12,400	11,700	35,000	31,800	66,400	62,500
South Africa		108,000	104,000	94,000	93,600	339,000	334,000
Other [4 countries and (or) localities]		11,900 <sup>r</sup>	7,410 <sup>r</sup>	--	--	54,900	49,700
Total		333,000	323,000	291,000	287,000	1,310,000	1,290,000
Other oxides and hydroxides of vanadium, South Africa	2825.30.0050	48,800	33,100	20,000	13,100	88,800	59,400
Ferrovanadium	7202.92.0000						
Austria		62,600	48,600	69,200	50,000	217,000	160,000
Canada		164,000	131,000	127,000	104,000	640,000	505,000
Japan		60,000	30,600	40,000	20,500	160,000	81,700
Latvia		--	--	40,000	17,600	79,500	35,600
Ukraine		70,200	34,400	40,000	20,200	210,000	105,000
Other [3 countries and (or) localities]		--	--	20,000	16,000	41,400	30,000
Total		357,000	245,000	336,000	229,000	1,350,000	918,000
<b>Exports:</b>							
Vanadium pentoxide (anhydride) <sup>4</sup>	2825.30.0010						
Trinidad and Tobago		--	--	21,100	NA	21,100	NA
Other [3 countries and (or) localities]		40,500 <sup>r</sup>	NA	--	--	70,000	NA
Total		40,500	XX	21,100	XX	91,100	XX
Other oxides and hydroxides of vanadium	2825.30.0050						
Australia		--	--	510	NA	510	NA
Other [2 countries and (or) localities]		--	--	--	--	76,400	NA
Total		--	--	510	XX	76,900	XX
Ferrovanadium	7202.92.0000						
Chile		--	--	2,040	1,000	2,040	1,000
Colombia		--	--	916	687	1,800	1,350
Mexico		22,500	16,900	52,400	23,000	189,000	126,000
Other [2 countries and (or) localities]		--	--	--	--	56,100	42,100
Total		22,500	16,900	55,400	24,700	249,000	170,000

<sup>r</sup>Revised. 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>Presentation of monthly data is based on the quantities (gross weight or contained weight) of the five leading countries and (or) localities in April.

<sup>3</sup>Harmonized Tariff Schedule of the United States.

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

Source: U.S. Census Bureau.

TABLE 5  
U.S. IMPORTS AND EXPORTS OF ALUMINUM VANADIUM MASTER ALLOY, VANADIUM BEARING ASH AND RESIDUES,  
VANADIUM SULFATES, VANADATES, VANADIUM METAL, AND U.S. IMPORTS OF SLAG<sup>1,2</sup>

(Kilograms, gross and contained weight)

Country or locality	HTS <sup>3</sup> code	2019					
		March		April		January–April	
		Gross weight	Contained weight	Gross weight	Contained weight	Gross weight	Contained weight
<b>Imports for consumption:</b>							
Slag, from the manufacture of iron and steel	2619.00.9000						
Canada		125,000	NA	44,500	NA	20,900,000	NA
Mexico		56,000	NA	56,000	NA	206,000	NA
Other [2 countries and (or) localities]		20,700 <sup>r</sup>	NA	--	--	95,600	NA
Total		202,000	XX	100,000	XX	21,200,000	XX
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000						
Canada		1,780,000	174,000	1,640,000	160,000	7,260,000	711,000
Curacao		56,600	7,950	84,200	8,630	141,000	16,600
Kuwait		--	--	172,000	7,950	172,000	7,950
Total		1,830,000	182,000	1,890,000	176,000	7,580,000	735,000
Vanadates	2841.90.1000						
Germany		5,700	2,190	2,400	1,040	13,800	5,440
India		--	--	14	10	14	10
Other [3 countries and (or) localities]		4,410 <sup>r</sup>	2,930 <sup>r</sup>	--	--	64,500	41,800
Total		10,100	5,110	2,410	1,050	78,300	47,300
Vanadium metal, including waste and scrap, and Aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
China		1,000	800	76	74	7,890	6,140
Germany		59	31	11,000	7,510	21,100	14,100
Latvia		589	530	200	190	989	918
Russia		2,420	2,410	18,400	11,800	57,400	37,600
Other [4 countries and (or) localities]		2,750 <sup>r</sup>	2,750 <sup>r</sup>	--	--	19,100	15,800
Total		6,820	6,520	29,700	19,600	106,000	74,500
<b>Exports:</b>							
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000						
France		84,100	NA	146,000	NA	230,000	NA
Germany		--	--	15,100	NA	33,600	NA
Other [1 country and (or) locality]		--	--	--	--	12,800	NA
Total		84,100	XX	161,000	XX	277,000	XX
Vanadium metal, including waste and scrap, and Aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
Chile		--	--	66	NA	66	NA
France		5,040	NA	1,420	NA	6,970	NA
United Kingdom		11	NA	290	NA	1,460	NA
Other [4 countries and (or) localities]		4,230	--	--	--	15,100	NA
Total		9,280	XX	1,780	XX	23,600	XX

<sup>r</sup>Revised. 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>Presentation of monthly data is based on the quantities (gross weight or contained weight) of the five leading countries and (or) localities in April.

<sup>3</sup>Harmonized Tariff Schedule of the United States.

Source: U.S. Census Bureau.