

# Mineral Industry Surveys

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## VANADIUM IN FEBRUARY 2020

Reported domestic vanadium consumption was 242 metric tons (t) of contained vanadium in February 2020, essentially unchanged compared with consumption in January 2020 and essentially unchanged compared with that in February 2019. Consumer stocks of all forms of vanadium were 157 t at the end of February, a decrease from both 192 t at yearend 2019 and 187 t from January 2020 (table 1).

**Prices**

According to CRU Group (2020), U.S. ferrovandium (FeV) prices ranged from \$13.169 to \$13.738 per pound of contained vanadium in February 2020, compared with \$10.694 to \$11.189 per pound in January 2020. In Europe, FeV prices ranged from \$27.500 to \$29.663 per kilogram of contained vanadium in February 2020, compared with \$24.594 to \$25.789 per kilogram in January 2020. In China, vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) prices ranged from \$7.200 to \$7.925 per pound of contained vanadium in February 2020, compared with \$9.222 to \$9.811 per pound in January 2020 (fig. 1).

**Reference Cited**

CRU Group, 2020, Noble alloys and minor metals prices: CRU Group, February 28. (Accessed April 16, 2020, via <http://www.crugroup.com/>.)

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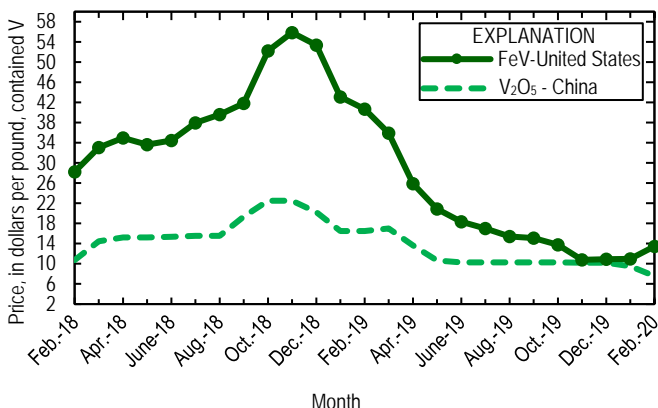


Figure 1. Average monthly prices for FeV and V<sub>2</sub>O<sub>5</sub> from February 2018 through February 2020. Source: CRU Group.

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

(Kilograms, contained vanadium)

	2020					
	January		February		January-February	
	Consumption	Stocks	Consumption	Stocks	Consumption	Stocks
Ferrovandium <sup>2</sup>	221,000	149,000 <sup>r</sup>	221,000	119,000	443,000	119,000
Vanadium-aluminum alloy and other forms <sup>3</sup>	21,000	38,000	21,000	38,000	42,000	38,000
Total	242,000	187,000 <sup>r</sup>	242,000	157,000	485,000	157,000

<sup>p</sup>Preliminary. <sup>r</sup>Revised.

<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)

	2020		
	January	February	January– February
Steel:			
Carbon	W	W	W
Full alloy	101,000	101,000	201,000
High-strength low-alloy	W	W	W
Stainless and heat resisting	4,930	4,930	9,860
Tool	W	W	W
Total steel	106,000	106,000	211,000
Superalloys	W	W	W
Miscellaneous and unspecified <sup>2</sup>	W	W	W
Total	242,000	242,000	485,000

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	2020								
		January			February			January-February		
		Gross weight	Contained weight	Value (thousands)	Gross weight	Contained weight	Value (thousands)	Gross weight	Contained weight	Value (thousands)
Vanadium ores and concentrates	2615.90.6090	1,180	684	\$90,800	314	155	\$41,800	1,490	839	\$133,000
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000	(3)	(3)	1,710,000	(3)	(3)	1,230,000	(3)	(3)	2,940,000
Chemical compounds:										
Vanadium pentoxide (anhydride)	2825.30.0010	445,000	291,000	6,930,000	160,000	112,000	2,290,000	604,000	403,000	9,220,000
Vanadium oxides and hydroxides, other	2825.30.0050	21,000	13,800	416,000	--	--	--	21,000	13,800	416,000
Vanadium sulfates	2833.29.3000	--	--	--	2,190	1,370	13,200	2,190	1,370	13,200
Vanadates	2841.90.1000	--	--	--	6,360	2,750	108,000	6,360	2,750	108,000
Ferrovandium	7202.92.0000	138,000	87,800	7,730,000	79,100	53,800	6,260,000	217,000	142,000	14,000,000
Vanadium metal, including waste and scrap	8112.92.7000	--	--	--	--	--	--	--	--	--
Vanadium and articles thereof <sup>4</sup>	8112.99.2000	37,800	24,600	1,270,000	395	394	68,000	38,200	25,000	1,340,000
Total		642,000	417,000	18,200,000	248,000	170,000	10,000,000	890,000	588,000	28,200,000

-- 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>Withheld to avoid disclosing company proprietary data; not included in "Total".

<sup>4</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	2020					
		January		February		January–February	
		Gross weight	Contained weight	Gross weight	Contained weight	Gross weight	Contained weight
<b>Imports for consumption:</b>							
Vanadium ores and concentrates	2615.90.6090						
Mexico		900	517	314	155	1,210	672
Other, Canada		278 <sup>r</sup>	167 <sup>r</sup>	--	--	278	167
Total		1,180	684	314	155	1,490	839
Vanadium pentoxide (anhydride) <sup>3</sup>	2825.30.0010						
Brazil		260,000	145,000	80,000	44,700	340,000	190,000
China		5,060	5,030	2	1	5,060	5,040
Germany		6,880	3,930	18,000	14,600	24,900	18,500
South Africa		163,000	127,000	20,000	11,200	183,000	138,000
Taiwan		10,000	9,940	41,500	41,500	51,500	51,500
Total		445,000	291,000	160,000	112,000	604,000	403,000
Other oxides and hydroxides of vanadium	2825.30.0050						
Morocco		983	627	--	--	983	627
South Africa		20,000	13,100	--	--	20,000	13,100
Total		21,000	13,800	--	--	21,000	13,800
Ferrovandium	7202.92.0000						
Austria		80,700	47,100	30,000	14,500	111,000	61,600
Canada		39,600	31,600	49,100	39,300	88,700	70,800
Other [2 countries and (or) localities]		17,300 <sup>r</sup>	9,120 <sup>r</sup>	--	--	17,300	9,120
Total		138,000	87,800	79,100	53,800	217,000	142,000
<b>Exports:</b>							
Vanadium ores and concentrates	2615.90.6090						
Cambodia		7,120	NA	827	NA	7,950	NA
Taiwan		4,080	NA	--	--	4,080	NA
Total		11,200	XX	827	XX	12,000	XX
Vanadium pentoxide (anhydride) <sup>4</sup>	2825.30.0010						
Australia		--	--	NA	30	NA	30
Total		--	--	XX	30	XX	30
Other oxides and hydroxides of vanadium	2825.30.0050						
Germany		--	--	NA	502	NA	502
Netherlands		--	--	NA	22,700	NA	22,700
Other, Canada		NA	234 <sup>r</sup>	--	--	NA	234
Total		XX	234	XX	23,200	XX	23,400
Ferrovandium	7202.92.0000						
Mexico		670	503	18,100	13,600	18,800	14,100
Other [4 countries and (or) localities]		3,970 <sup>r</sup>	2,980 <sup>r</sup>	--	--	3,970	2,980
Total		4,640	3,480	18,100	13,600	22,800	17,100

<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 or localities in February.

<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	2020					
		January		February		January-February	
		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		86,400	NA	65,200	NA	152,000	NA
Mexico		--	--	50,400	NA	50,400	NA
Total		86,400	XX	116,000	XX	202,000	XX
Vanadium sulfates	2833.29.3000						
China		--	--	2,190	1,370	2,190	1,370
Total		--	--	2,190	1,370	2,190	1,370
Vanadates	2841.90.1000						
China		--	--	614	500	614	500
Germany		--	--	5,740	2,250	5,740	2,250
Russia		--	--	5	2	5	2
Total		--	--	6,360	2,750	6,360	2,750
Vanadium metal, including waste and scrap and Aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
Germany		1	1	194	194	195	195
Sweden		--	--	201	200	201	200
Other [3 countries and (or) localities]		37,800 <sup>f</sup>	23,600 <sup>f</sup>	--	--	37,800	24,600
Total		37,800	24,600	395	394	38,200	25,000
<b>Exports:</b>							
Vanadium bearing ash and residues	2620.50.0000, 2620.99.1000						
Italy		19,500	NA	30,700	NA	50,200	NA
Netherlands		--	--	90,700	NA	90,700	NA
Total		19,500	XX	121,000	XX	141,000	XX
Vanadium metal, including waste and scrap and Aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
Netherlands		--	--	724	NA	724	NA
United Kingdom		--	--	259	NA	259	NA
Other [3 countries and (or) localities]		720 <sup>f</sup>	NA	--	--	720	NA
Total		720	XX	983	XX	1,700	XX

<sup>f</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 in February.

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

Source: U.S. Census Bureau.