

# Mineral Industry Surveys

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## VANADIUM IN NOVEMBER 2022

The amount of vanadium in U.S. imports of select vanadium products on a gross weight basis, excluding vanadium bearing ash and residues, in November 2022 was 59% more than the previous month and more than 3 times that in November 2021 (table 1). In November 2022, the leading import sources for vanadium pentoxide ( $V_2O_5$ ), were South Africa and Brazil, in descending order of contained weight quantity. In November 2022, the leading import sources for ferrovanadium (FeV) were Austria and Canada in descending order of contained weight quantity (table 2).

## Prices

According to CRU Group (2022), U.S. FeV prices ranged from \$18.800 to \$19.600 per pound of contained vanadium in November 2022 compared with \$19.394 to \$20.119 per pound in October 2022. In Europe, FeV prices ranged from \$33.000 to \$35.000 per kilogram of contained vanadium in November 2022, unchanged since September 2022. In China,  $V_2O_5$  prices ranged from \$9.000 to \$9.500 per pound of contained vanadium in November 2022, unchanged since September 2021 (fig. 1).

## Reference Cited

CRU Group, 2022, Noble alloys and minor metals prices: CRU Group, December 30. (Accessed January 18, 2023, via <http://www.crugroup.com/>.)

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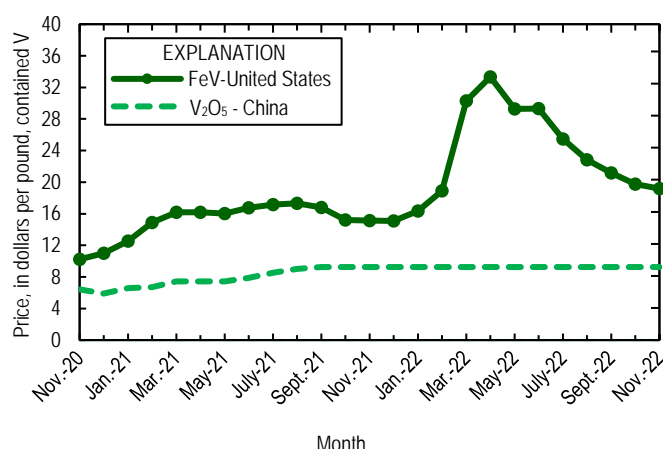


Figure 1. Average monthly prices for ferrovanadium (FeV) and vanadium pentoxide ( $V_2O_5$ ) from November 2020 through November 2022. Source: CRU Group.

TABLE 1  
U.S. IMPORTS FOR CONSUMPTION OF VANADIUM PRODUCTS<sup>1</sup>

(Kilograms, unless otherwise specified)

Material	HTS <sup>2</sup> code	2022								
		October			November			January–November		
		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	441,000	202,000 <sup>3</sup>	\$1,790,000	623,000	328,000 <sup>3</sup>	\$2,440,000	1,330,000	660,000 <sup>4</sup>	\$5,590,000
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000	143,000	61,000 <sup>3</sup>	1,960,000	--	--	2,480,000	944,000	200,000 <sup>4</sup>	10,400,000
Chemical compounds:										
Vanadium pentoxide (anhydride)	2825.30.0010	71,600	67,500	1,410,000	516,000	359,000	10,900,000	2,370,000	1,720,000	55,100,000
Vanadium oxides and hydroxides, other	2825.30.0050	100,000	64,900	2,150,000	101,000	67,000	2,960,000	317,000	209,000	8,660,000
Vanadium chlorides	2827.39.1000	8,420	8,020	270,000	18,500	18,500	340,000	49,100	48,500	1,170,000
Vanadium chloride oxides and chloride hydroxide	2827.49.1000	--	--	--	43,000	26,800	18,000	202,000	169,000	1,570,000
Vanadium sulfates	2833.29.3000	--	--	--	--	--	--	127,000	117,000	1,770,000
Vanadates	2841.90.1000	1,890	1,260	44,400	--	--	--	171,000	89,900	3,740,000
Hydrides and nitrides of vanadium	2850.00.2000	57,400	46,100	377,000	28,300	22,700	186,000	385,000	312,000	3,130,000
Ferrovandium	7202.92.0000	341,000	250,000	12,000,000	294,000	240,000	12,200,000	3,130,000	2,420,000	150,000,000
Vanadium metal, including waste and scrap	8112.92.7000	--	--	--	272	122	84,400	18,000	17,400	1,280,000
Vanadium and articles thereof <sup>5</sup>	8112.99.2000	18,200	11,800	807,000	30,000	19,500	1,320,000	106,000	77,000	5,000,000
Total		1,180,000	XX	20,800,000	1,650,000	XX	32,900,000	9,140,000	XX	247,000,000

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>Harmonized Tariff Schedule of the United States.

<sup>3</sup>Data are in kilograms of vanadium pentoxide.

<sup>4</sup>U.S. Census Bureau has suppressed quantity data for some months; not included in "Total."

<sup>5</sup>Aluminum-vanadium master alloy consisting of 35% aluminum and 64.5% vanadium.

Source: U.S. Census Bureau.

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

(Kilograms, unless otherwise specified)

Country or locality		HTS <sup>3</sup> code	2022					
			October		November		January–November	
			Gross weight	Contained weight	Gross weight	Contained weight	Gross weight	Contained weight
Imports for consumption:								
Vanadium ores and concentrates		2615.90.6090						
Canada			441,000	202,000 <sup>4</sup>	623,000	328,000 <sup>4</sup>	1,320,000	657,000 <sup>4</sup>
Other [3 countries and (or) localities]			--	--	--	--	5,790	3,800 <sup>4</sup>
Total			441,000	202,000 <sup>4</sup>	623,000	328,000 <sup>4</sup>	1,330,000	660,000 <sup>4</sup>
Vanadium pentoxide (anhydride) <sup>5</sup>		2825.30.0010						
Brazil			60,600	60,300	159,000	158,000	851,000	768,000
Germany			--	--	5,000	4,000	72,100	49,900
South Africa			11,000	7,120	352,000	197,000	1,270,000	746,000
Other [2 countries and (or) localities]			--	--	--	--	176,000	157,000
Total			71,600	67,500	516,000	359,000	2,370,000	1,720,000
Other oxides and hydroxides of vanadium:		2825.30.0050						
Brazil			100,000	64,900	1,000	649	136,000	88,400
South Africa			--	--	100,000	66,400	180,000	120,000
Other [4 countries and (or) localities]			--	--	--	--	1,540	1,000
Total			100,000	64,900	101,000	67,000	317,000	209,000
Ferrovandium		7202.92.0000						
Austria			123,000	99,000	145,000	117,000	1,330,000	1,070,000
Canada			164,000	118,000	138,000	115,000	1,440,000	1,140,000
India			20,000	15,900	10,000	7,980	30,000	23,900
South Africa			--	--	1,000	810	1,000	810
Other [6 countries and (or) localities]			34,800 <sup>r</sup>	16,700 <sup>r</sup>	--	--	329,000	190,000
Total			341,000	250,000	294,000	240,000	3,130,000	2,420,000
Exports:								
Vanadium ores and concentrates		2615.90.6090						
Mexico			23,400	NA	20,000	NA	283,000	NA
Other [5 countries and (or) localities]			1,830 <sup>r</sup>	NA	--	--	47,900	NA
Total			25,200	XX	20,000	XX	331,000	XX
Vanadium pentoxide (anhydride) <sup>5</sup>		2825.30.0010						
India			--	--	NA	14,000	NA	57,500
Other [7 countries and (or) localities]			--	--	--	--	NA	85,500
Total			--	--	XX	14,000	XX	143,000
Other oxides and hydroxides of vanadium		2825.30.0050						
Germany			--	--	NA	4,400	NA	10,700
Korea, Republic of			--	--	NA	45,200	NA	90,400
Other [7 countries and (or) localities]			NA	61 <sup>r</sup>	--	--	NA	208,000
Total			XX	61	XX	49,600	XX	309,000
Ferrovandium		7202.92.0000						
Canada			2,550	1,310	11,900	8,900	34,000	21,900
Mexico			68	51	150	113	51,200	33,300
Netherlands			14,000	10,500	14,000	10,500	137,000	98,000
Other [4 countries and (or) localities]			200 <sup>r</sup>	150 <sup>r</sup>	--	--	15,000	9,960
Total			16,800	12,000	26,000	19,500	2,380,000	163,000

<sup>1</sup>Revised. NA Not available. XX Not applicable. -- Zero.

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Presentation of monthly data is based on the quantities (gross weight or contained weight) of the five leading countries or localities in November.

<sup>4</sup>Harmonized Tariff Schedule of the United States are imports and Schedule B of the United States are exports.

<sup>5</sup>Data are in kilograms of vanadium pentoxide.

<sup>6</sup>May include catalysts containing vanadium pentoxide.

Source: U.S. Census Bureau.

TABLE 3  
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, unless otherwise specified)

		2022					
		October		November		January–November	
Country or locality	HTS <sup>3</sup> code	Gross weight	Contained weight	Gross weight	Contained weight	Gross weight	Contained weight
Imports for consumption:							
Slag, from the manufacture of iron and steel	2619.00.9000						
Canada		1,620,000	NA	1,780,000	NA	14,300,000	NA
Mexico		142,000	NA	34,600	NA	865,000	NA
United Kingdom		--	--	--	--	6,070	NA
Total		1,760,000	XX	1,810,000	XX	15,100,000	XX
Vanadium bearing ash and residues, Russia	2620.40.0030, 2620.99.1000						
Curacao		143,000	61,000 <sup>4</sup>	--	--	169,000	74,700 <sup>4</sup>
Russia		--	--	--	--	774,000	126,000 <sup>4</sup>
Total		143,000	61,000 <sup>4</sup>	--	--	944,000	200,000 <sup>4</sup>
Vanadium sulfates	2833.29.3000						
Canada		--	--	--	--	1,870	1,170
China		--	--	--	--	2,650	1,760
Finland		--	--	--	--	122,000	114,000
Total		--	--	--	--	127,000	117,000
Vanadates	2841.90.1000						
Japan		80	53	--	--	2,540	1,650
United Kingdom		1,810	1,210	--	--	10,400	6,950
Other [2 countries and (or) localities]		--	--	--	--	158,000	81,300
Total		1,890	1,260	--	--	171,000	89,900
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
China		18,000	11,600	29,900	19,400	77,600	56,200
Germany		10	10	272	122	17,600	17,000
Mexico		198	198	104	104	3,370	3,370
Other [5 countries and (or) localities]		--	--	--	--	25,200	17,800
Total		18,200	11,800	30,300	19,600	124,000	94,400
Exports:							
Vanadium bearing ash and residues	2620.50.0000, 2620.99.1000						
Belgium		--	--	17,100	NA	325,000	NA
Germany		--	--	6,650	NA	93,200	NA
Guadeloupe		--	--	19,100	NA	19,100	NA
Mexico		--	--	1,320	NA	69,700	NA
Other [7 countries and (or) localities]		176,000 <sup>r</sup>	NA	--	--	1,350,000	NA
Total		176,000	XX	44,100	XX	1,860,000	XX
Hydrides and nitrides of vanadium	2850.00.2000						
Germany		47,400	38,100	22,000	17,600	287,000	233,000
Ireland		--	--	2	1	17	14
South Africa		9,660	7,630	6,080	4,800	57,700	45,600
Sweden		320	320	280	280	4,080	3,700
United Kingdom		--	--	7	7	7	7
Other [4 countries and (or) localities]		--	--	--	--	36,800	29,200
Total		57,400	46,100	28,300	22,700	385,000	312,000
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
China		170	NA	170	NA	1,270	NA
Other [12 countries and (or) localities]		788 <sup>r</sup>	NA	--	--	55,000	NA
Total		958	XX	170	XX	56,300	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 in November.

<sup>3</sup>Harmonized Tariff Schedule of the United States are imports and Schedule B of the United States are exports.

<sup>4</sup>Data are in kilograms of vanadium pentoxide.