

# Mineral Industry Surveys

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## VANADIUM IN NOVEMBER 2023

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 2023, was 15% more than those in the previous month and 28% less than those in November 2022 (table 1). In November 2023, the import sources for vanadium pentoxide ( $V_2O_5$ ), were South Africa and Brazil, in descending order of gross weight quantity. In November 2023, the leading import sources for ferrovanadium (FeV) were Austria, Canada, and Latvia in descending order of gross weight quantity (table 2).

According to CRU Group, U.S. FeV prices ranged from \$14.211 to \$14.694 per pound of contained vanadium in November 2023 compared with \$14.856 to \$15.200 per pound in October 2023. In Europe, FeV prices ranged from \$26.500 to \$27.000 per kilogram of contained vanadium in November 2023 compared with \$27.056 to \$27.622 in October 2023. In China,  $V_2O_5$  prices ranged from \$9.000 to \$9.500 per pound of contained vanadium in November 2023, unchanged since September 2021 (fig. 1).

## Industry News

Pangang Group Vanadium Titanium & Resources Co., Ltd., (Panzhihua, Sichuan, China) produced 24,200 metric tons (t) of  $V_2O_5$  equivalent during the first half of 2023, a 3% increase from the previous year. It announced production guidance of 44,000 t of  $V_2O_5$  equivalent in 2023 and 44,100 t of  $V_2O_5$  equivalent in 2024 (Argus Metals International, 2023).

## Reference Cited

Argus Metals International, 2023, China's Pangang resumes vanadium guide prices: Argus Media group—Argus Metals International, October 11. (Accessed January 11, 2024, via [www.argusmedia.com/](http://www.argusmedia.com/).)

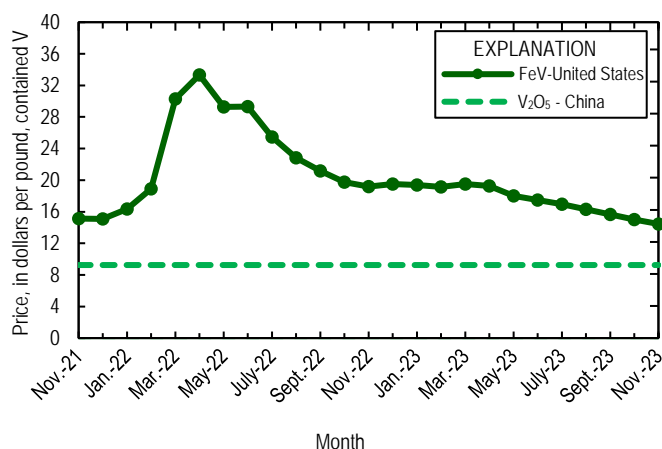


Figure 1. Average monthly prices for ferrovanadium (FeV) and vanadium pentoxide ( $V_2O_5$ ) from November 2021 through November 2023. Source: CRU Group.

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## Prices

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

(Kilograms, unless otherwise specified)

Material	HTS <sup>2</sup> codes	2023								
		October			November			January–November		
		Gross weight	Vanadium content	Value (thousands)	Gross weight	Vanadium content	Value (thousands)	Gross weight	Vanadium content	Value (thousands)
Vanadium ores and concentrates	2615.90.6090	73,600	25,900 <sup>3</sup>	\$355,000	517,000	285,000 <sup>3</sup>	\$2,300,000	1,780,000	1,010,000 <sup>3</sup>	\$8,020,000
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000	(4)	(4)	2,710,000	(4)	(4)	1,610,000	(4)	(4)	25,400,000
Chemical compounds:										
Vanadium pentoxide (anhydride)	2825.30.0010	533,000	410,000	10,600,000	340,000	226,000	6,150,000	2,760,000	2,080,000 <sup>5</sup>	63,200,000
Vanadium oxides and hydroxides, other	2825.30.0050	30,000	19,800	697,000	--	--	--	210,000	138,000	4,890,000
Vanadium chlorides	2827.39.1000	18,500	17,600	298,000	21,800	21,700	1,430,000	143,000	136,000	5,450,000
Vanadium chloride oxide and chloride hydroxide	2827.49.1000	--	--	--	--	--	--	582,000	363,000	504,000
Vanadium sulfates	2833.29.3000	--	--	--	200	124	10,400	2,650	1,690	27,500
Vanadates	2841.90.1000	20,000	15,900	351,000	--	--	--	39,800	28,900	783,000
Hydrides and nitrides of vanadium	2850.00.2000	49,500	39,200	232,000	31,200	25,000	190,000	284,000	228,000	1,910,000
Ferrovandium	7202.92.0000	288,000	232,000	7,730,000	280,000	217,000	10,200,000	2,800,000	2,140,000	91,300,000
Vanadium metal, including waste and scrap	8112.92.7000	--	--	--	344	157	105,000	20,800	20,000	1,220,000
Vanadium and articles thereof <sup>6</sup>	8112.99.2000	20,000	15,600	511,000	2	2	6,740	336,000	221,000	15,700,000
Total		1,030,000	XX	23,500,000	1,190,000	XX	22,000,000	8,960,000	XX	218,000,000

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>Includes U.S. Geological Survey estimates.

<sup>6</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, gross and contained weight)

Country or locality		2023					
		October		November		January–November	
		Gross weight	Vanadium content	Gross weight	Vanadium content	Gross weight	Vanadium content
Imports for consumption:	HTS <sup>3</sup> codes						
Vanadium ores and concentrates	2615.90.6090						
Canada		72,700	25,400 <sup>4</sup>	517,000	285,000 <sup>4</sup>	1,020,000	551,000 <sup>4</sup>
Mexico		856	513 <sup>4</sup>	639	383 <sup>4</sup>	765,000	459,000 <sup>4</sup>
Other [1 country and (or) locality]		--	--	--	--	9	3 <sup>4</sup>
Total		73,600	25,900 <sup>4</sup>	517,000	285,000 <sup>4</sup>	1,780,000	1,010,000 <sup>4</sup>
Vanadium pentoxide (anhydride)	2825.30.0010						
Brazil		320,000	251,000	160,000	125,000	1,320,000	1,140,000
South Africa		193,000	139,000	180,000	101,000	1,270,000	791,000
Other [5 countries and (or) localities]		19,800 <sup>r</sup>	19,800 <sup>r</sup>	--	--	169,000	147,000 <sup>5</sup>
Total		533,000	410,000	340,000	226,000	2,760,000	2,080,000 <sup>5</sup>
Other oxides and hydroxides of vanadium:	2825.30.0050						
Brazil		10,000	6,490	--	--	110,000	71,400
South Africa		20,000	13,300	--	--	100,000	66,100
Total		30,000	19,800	--	--	210,000	138,000
Ferrovanadium	7202.92.0000						
Austria		170,000	136,000	140,000	109,000	1,110,000	884,000
Canada		117,000	94,600	125,000	101,000	1,340,000	1,070,000
Latvia		--	--	15,000	6,100	122,000	65,700
South Africa		1,000	814	454	364	1,450	1,180
Other [1 country and (or) locality]		--	--	--	--	231,000	118,000
Total		288,000	232,000	280,000	217,000	2,800,000	2,140,000
Exports:	Schedule B <sup>3</sup> codes						
Vanadium ores and concentrates	2615.90.6090						
Latvia		--	--	3,500	NA	3,500	NA
Other [3 countries and (or) localities]		130,000 <sup>r</sup>	NA	--	--	143,000	NA
Total		130,000	XX	3,500	XX	147,000	XX
Vanadium pentoxide (anhydride) <sup>6</sup>	2825.30.0010						
Austria		--	--	NA	906	NA	906
India		--	--	NA	3,680	NA	3,680
Russia		--	--	NA	38	NA	38
Vietnam		--	--	NA	1,770	NA	1,770
Other [2 countries and (or) localities]		NA	8,000 <sup>r</sup>	--	--	NA	11,700
Total		XX	8,000	XX	6,400	XX	18,100
Other oxides and hydroxides of vanadium:	2825.30.0050						
Belize		--	--	NA	434	NA	434
Canada		NA	19,800	NA	1,360	NA	21,200
Other [5 countries and (or) localities]		NA	284 <sup>r</sup>	--	--	NA	113,000
Total		XX	20,100	XX	1,800	XX	135,000
Ferrovanadium	7202.92.0000						
Argentina		198	149	--	--	198	149
Colombia		108	81	--	--	301	226
Other [5 countries and (or) localities]		--	--	--	--	224,000	151,000
Total		306	230	--	--	224,000	151,000

<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 leading countries and (or) localities 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 kilograms of vanadium pentoxide.

<sup>5</sup>Includes U.S. Geological Survey estimates.

<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, gross and contained weight)

Country or locality		2023					
		October		November		January–November	
		Gross weight	Vanadium content	Gross weight	Vanadium content	Gross weight	Vanadium content
Imports for consumption:	HTS <sup>3</sup> codes						
Slag, from the manufacture of iron and steel	2619.00.9000						
Canada		4,180,000	NA	1,880,000	NA	17,600,000	NA
Mexico		32,800	NA	90,900	NA	713,000	NA
Turkey		292,000	NA	513,000	NA	2,220,000	NA
Other [3 countries and (or) localities]		11,400 <sup>r</sup>	NA	--	--	22,700	NA
Total		4,510,000	XX	2,480,000	XX	20,600,000	XX
Sulfates; China	2833.29.3000	--	--	200	124	2,650	1,690
Vanadates	2841.90.1000						
China		15,000	12,000	--	--	30,000	22,000
South Africa		5,000	3,850	--	--	5,000	3,850
Other [4 countries and (or) localities]		--	--	--	--	4,800	3,060
Total		20,000	15,900	--	--	39,800	28,900
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
Germany		--	--	340	153	19,200	18,700
Japan		--	--	4	4	1,760	1,410
United Kingdom		--	--	2	2	10	10
Other [7 countries and (or) localities]		20,000 <sup>r</sup>	15,600 <sup>r</sup>	--	--	336,000	221,000
Total		20,000	15,600	346	159	357,000	241,000
Exports:	Schedule B <sup>3</sup> codes						
Vanadium bearing ash and residues	2620.50.0000, 2620.99.1000						
France		--	--	94,700	NA	725,000	NA
Germany		--	--	33,800	NA	76,700	NA
Mexico		--	--	13,300	NA	65,800	NA
Other [5 countries and (or) localities]		35,000 <sup>r</sup>	NA	--	--	445,000	NA
Total		35,000	XX	142,000	XX	1,310,000	XX
Hydrides and nitrides of vanadium	2850.00.2000						
Germany		46,200	36,600	18,400	14,900	164,000	132,000
South Africa		3,030	2,390	12,800	10,100	95,200	75,200
Other [7 countries and (or) localities]		225 <sup>r</sup>	178 <sup>r</sup>	--	--	24,700	19,900
Total		49,500	39,200	31,200	25,000	284,000	228,000
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
France		245	NA	268	NA	6,010	NA
Germany		170	NA	458	NA	698	NA
Japan		--	--	11,600	NA	82,600	NA
Other [6 countries and (or) localities]		783 <sup>r</sup>	NA	--	--	26,100	NA
Total		1,200	XX	12,300	XX	115,000	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 leading countries and (or) localities in November.

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

Source: U.S. Census Bureau.