

# Mineral Industry Surveys

## For information, contact:

Désirée E. Polyak, Vanadium Commodity Specialist  
National Minerals Information Center  
Telephone: (703) 648-4909  
Email: dpolyak@usgs.gov

Darlene V. Thompson (Data)  
Telephone: (703) 648-7797  
Email: dvthompson@usgs.gov

**Internet:** <https://www.usgs.gov/centers/national-minerals-information-center/mineral-industry-surveys>

## VANADIUM IN JANUARY 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 January 2023 was 20% less than the previous month and more than 2 times that in January 2022 (table 1). In January 2023, the leading import sources for vanadium pentoxide ( $V_2O_5$ ), were South Africa and Brazil, in descending order of contained weight quantity. In January 2023, the leading import sources for ferrovanadium (FeV) were Austria and Canada in descending order of contained weight quantity (table 2).

vanadium in January 2023, unchanged since September 2022. In China,  $V_2O_5$  prices ranged from \$9.000 to \$9.500 per pound of contained vanadium in January 2023, unchanged since September 2021 (fig. 1).

## Industry News

AMG Advanced Metallurgical Group N.V. announced that it received approval to build a vanadium electrolyte plant at its subsidiary, AMG Titanium Alloys & Coatings LLC, in Nuremberg, Germany. The facility was expected to have 6,000 cubic meters of vanadium electrolyte capacity and production was expected to commence at the end of 2023 (AMG Advanced Metallurgical Group N.V., 2023).

## Reference Cited

AMG Advanced Metallurgical Group N.V., 2023, AMG Advanced Metallurgical Group N.V. announces approval for vanadium electrolyte plant at AMG Titanium: Amsterdam, Netherlands, AMG Advanced Metallurgical Group N.V. press release, January 9. (Accessed January 16, 2023, at <https://amg-nv.com/feed-posts/amg-advanced-metallurgical-group-n-v-announces-approval-for-vanadium-electrolyte-plant-at-amg-titanium/>.)

*List services and web feed subscribers are the first to receive notification of USGS minerals information publications and data releases. For information on how to subscribe, go to [https://www.usgs.gov/centers/national-minerals-information-](https://www.usgs.gov/centers/national-minerals-information-center/minerals-information-)*

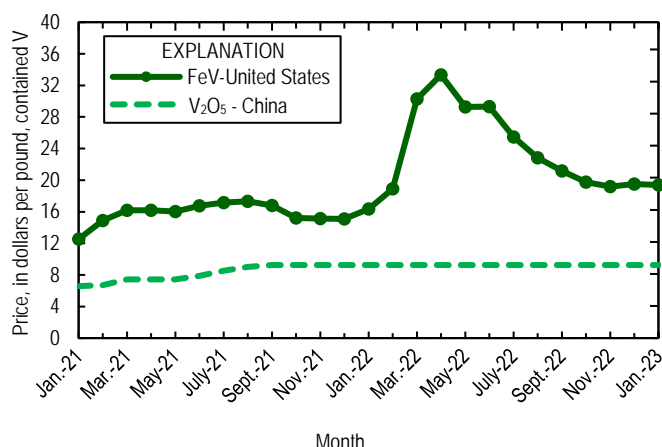


Figure 1. Average monthly prices for ferrovanadium (FeV) and vanadium pentoxide ( $V_2O_5$ ) from January 2021 through January 2023 Source: CRU Group.

## Prices

U.S. FeV prices ranged from \$18.967 to \$19.811 per pound of contained vanadium in January 2023 compared with \$19.100 to \$19.900 per pound in December 2022. In Europe, FeV prices ranged from \$33.000 to \$35.000 per kilogram of contained

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

(Kilograms, unless otherwise specified)

Material	HTS <sup>2</sup> code	January–December 2022			January 2023		
		Gross weight	Contained weight	Value (thousands)	Gross weight	Contained weight	Value (thousands)
Vanadium ores and concentrates	2615.90.6090	1,690,000	879,000 <sup>3</sup>	\$7,190,000	554,000	322,000 <sup>3</sup>	\$2,010,000
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000	944,000	200,000 <sup>3</sup>	11,300,000	(4)	(4)	2,800,000
Chemical compounds:							
Vanadium pentoxide (anhydride)	2825.30.0010	2,830,000	1,980,000	64,400,000	167,000	103,000	3,790,000
Vanadium oxides and hydroxides, other	2825.30.0050	337,000	222,000	9,100,000	--	--	--
Vanadium chlorides	2827.39.1000	68,500	67,800	1,540,000	--	--	--
Vanadium chloride oxide and chloride hydroxide	2827.49.1000	291,000	224,000	1,660,000	22,400	14,000	37,300
Vanadium sulfates	2833.29.3000	127,000	117,000	1,770,000	--	--	--
Vanadates	2841.90.1000	174,000	92,400	3,820,000	100	67	4,240
Hydrides and nitrides of vanadium	2850.00.2000	436,000	352,000	3,630,000	22,600	18,600	213,000
Ferrovandium	7202.92.0000	3,480,000	2,670,000	166,000,000	286,000	228,000	9,280,000
Vanadium metal, including waste and scrap	8112.92.7000	18,900	18,300	1,280,000	18,300	18,300	811,000
Vanadium and articles thereof <sup>5</sup>	8112.99.2000	146,000	103,000	6,750,000	42,900	27,800	1,900,000
Total		10,500,000	XX	278,000,000	1,110,000	XX	20,900,000

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, gross and contained weight)

Country or locality	HTS <sup>3</sup> code	January–December 2022		December 2022		January 2023	
		Gross weight	Contained weight	Gross weight	Contained weight	Gross weight	Contained weight
Imports for consumption:							
Vanadium ores and concentrates	2615.90.6090						
Canada		1,680,000	875,000 <sup>4</sup>	364,000	218,000 <sup>4</sup>	160,000	85,400 <sup>4</sup>
Mexico		4,190	2,510 <sup>4</sup>	--	--	394,000	237,000 <sup>4</sup>
Other [2 countries and (or) localities]		1,610 <sup>r</sup>	1,280 <sup>r, 4</sup>	4 <sup>r</sup>	2 <sup>r, 4</sup>	--	--
Total		1,690,000	879,000 <sup>4</sup>	364,000	218,000	554,000	322,000
Vanadium pentoxide (anhydride) <sup>5</sup>	2825.30.0010						
Brazil		1,010,000	859,000	160,000	91,400	20,000	19,900
China		18,900	10,900	10,100	5,780	2,410	1,400
Germany		72,100	49,900	--	--	4,860	3,890
South Africa		1,560,000	912,000	287,000	166,000	140,000	78,100
Other [1 country and (or) locality]		167,000 <sup>r</sup>	152,000 <sup>r</sup>	--	--	--	--
Total		2,830,000	1,980,000	457,000	264,000	167,000	103,000
Other oxides and hydroxides of vanadium:	2825.30.0050						
South Africa		200,000	133,000	20,000	13,300	--	--
Other [5 countries and (or) localities]		137,000	89,400	--	--	--	--
Total		337,000	222,000	20,000	13,300	--	--
Ferrovanadium	7202.92.0000						
Austria		1,430,000	1,150,000	100,000	80,600	131,000	105,000
Canada		1,560,000	1,240,000	117,000	94,000	123,000	103,000
Japan		150,000	79,800	100,000	51,000	20,000	10,200
Latvia		152,000	87,300	28,000	15,000	12,000	9,620
South Africa		2,300	1,630	1,300	818	--	--
Other [5 countries and (or) localities]		185,000	113,000	--	--	--	--
Total		3,480,000	2,670,000	347,000	241,000	286,000	228,000
Exports:							
Vanadium ores and concentrates	2615.90.6090						
Canada		13,100	NA	--	--	1,980	NA
Other [5 countries and (or) localities]		318,000 <sup>r</sup>	NA	--	--	--	--
Total		331,000	XX	--	--	1,980	XX
Vanadium pentoxide (anhydride) <sup>5</sup>	2825.30.0010						
India		NA	57,500	--	--	--	--
Other [4 countries and (or) localities]		NA	85,500	--	--	--	--
Total		XX	143,000	--	--	--	--
Other oxides and hydroxides of vanadium	2825.30.0050						
Germany		NA	10,700	--	--	--	--
Korea, Republic of		NA	90,400	--	--	--	--
Other [7 countries and (or) localities]		NA	208,000	--	--	--	--
Total		XX	309,000	--	--	--	--
Ferrovanadium	7202.92.0000						
Canada		34,000	21,900	--	--	186	140
Columbia		1,540	1,150	85	64	--	--
Netherlands		148,000	106,000	10,700	8,000	14,000	10,500
Other [4 countries and (or) localities]		64,700 <sup>r</sup>	42,100 <sup>r</sup>	--	--	--	--
Total		248,000	171,000	10,700	8,060	14,200	10,600

<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 January.

<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.

<sup>5</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	HTS <sup>3</sup> code	January–December 2022		December 2022		January 2023	
		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		15,200,000	NA	943,000	NA	1,470,000	NA
France		--	--	--	--	65	NA
Mexico		1,060,000	NA	194,000	NA	53,500	NA
Other [1 country and (or) locality]		6,070	NA	--	--	--	--
Total		16,300,000	XX	1,140,000	XX	1,520,000	XX
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000						
Curacao		169,000	74,700 <sup>4</sup>	(5)	(5)	(5)	(5)
Russia		774,000	126,000 <sup>4</sup>	(5)	(5)	(5)	(5)
Total		944,000	200,000 <sup>4</sup>	(5)	(5)	(5)	(5)
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		2,540	1,650	--	--	100	67
Other [3 countries and (or) localities]		172,000 <sup>r</sup>	90,700 <sup>r</sup>	3,650 <sup>r</sup>	2,440 <sup>r</sup>	--	--
Total		174,000	92,400	3,650	2,440	100	67
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
China		118,000	82,200	40,500	26,000	42,800	27,700
Germany		17,600	17,000	--	--	18,300	18,300
Mexico		3,370	3,370	--	--	102	102
United Kingdom		10	9	--	--	2	2
Other [5 countries and (or) localities]		26,100 <sup>r</sup>	18,600 <sup>r</sup>	858 <sup>r</sup>	858 <sup>r</sup>	--	--
Total		165,000	121,000	41,400	26,900	61,100	46,000
Exports:							
Vanadium bearing ash and residues	2620.50.0000, 2620.99.1000						
Belgium		345,000	NA	19,600	NA	--	--
France		147,000	NA	47,100	NA	--	--
Netherlands		699,000	NA	36,200	NA	--	--
Other [8 countries and (or) localities]		767,000	NA	--	--	--	--
Total		1,960,000	XX	103,000	XX	--	--
Hydrides and nitrides of vanadium	2850.00.2000						
China		18,800	15,000	--	--	7	7
Germany		334,000	271,000	47,400	38,000	3,750	3,710
Netherlands		--	--	--	--	12,000	9,470
South Africa		60,700	48,000	2,980	2,350	6,550	5,170
Sweden		4,400	3,960	320	253	280	221
Other [5 countries and (or) localities]		18,000 <sup>r</sup>	14,200 <sup>r</sup>	--	--	--	--
Total		436,000	352,000	50,700	40,600	22,600	18,600
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
Germany		6,650	NA	210	NA	70	NA
United Kingdom		2,230	NA	--	--	2,390	NA
Other [11 countries and (or) localities]		49,400 <sup>r</sup>	NA	1,760 <sup>r</sup>	NA	--	--
Total		58,200	XX	1,970	XX	2,460	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 January.

<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.

<sup>5</sup>U.S. Census Bureau has suppressed quantity data for some months; not included in "Total."

Source: U.S. Census Bureau.