

Mineral Industry Surveys

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VANADIUM IN MARCH 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 March 2023 was 6% less than the previous month and 22% more than March 2022 (table 1). In March 2023, the leading import sources for vanadium pentoxide (V_2O_5), were Brazil, Germany, and South Africa, in descending order of contained weight quantity. In March 2023, the leading import sources for ferrovanadium (FeV) were Canada, Austria, and Latvia, in descending order of contained weight quantity (table 2).

Largo Resources (Toronto, Ontario, Canada) reported annual V_2O_5 equivalent production of 10,436 t in 2022 compared with 10,319 t in 2021 at its Maracás Menchen Mine in Brazil. This included 1,801 t of V_2O_5 equivalent high purity products: 1,368 t of high purity V_2O_5 and 433 t of high purity vanadium trioxide (V_2O_3) in 2022. However, this production was 6% less than their revised production guidance, which the company attributed to the transition of mining contractors in the third quarter of 2022, causing a reduction in ore inventory. Largo also attributed the mining disruptions to record rainfall in December 2022. Largo expected to increase its vanadium production in 2023 by 10% compared with 2022, in part owing to the increase in demand of high purity vanadium oxides from the vanadium redox flow battery market (Largo Resources Ltd., 2023, p. 2–6).

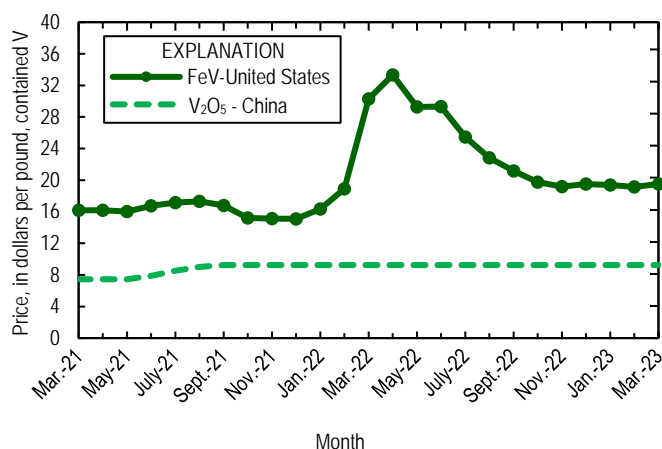


Figure 1. Average monthly prices for ferrovanadium (FeV) and vanadium pentoxide (V_2O_5) from March 2021 through March 2023 Source: CRU Group.

Prices

U.S. FeV prices ranged from \$19.000 to \$20.000 per pound of contained vanadium in March 2023 compared with \$18.750 to \$19.500 per pound in February 2023. In Europe, FeV prices ranged from \$39.856 to \$40.833 per kilogram of contained vanadium in March 2023 compared with \$38.625 to \$39.875 in February 2023. In China, V_2O_5 prices ranged from \$9.000 to \$9.500 per pound of contained vanadium in March 2023, unchanged since September 2021 (fig. 1).

Industry News

Reference Cited

Largo Resources Ltd., 2023, Largo reports fourth quarter and full year 2022 financial results; highlights recent strength in the vanadium market and progress on its two-pillar strategy as a tier 1 vanadium supplier and emerging clean energy battery producer: Toronto, Ontario, Canada, Largo Resources Ltd., March 9, 14 p. (Accessed May 16, 2023, at <https://www.largoinc.com/news/news-details/2023/Largo-Reports-Fourth-Quarter-and-Full-Year-2022-Financial-Results-Highlights-Recent-Strength-in-the-Vanadium-Market-and-Progress-on-its-Two-Pillar-Strategy-as-a-Tier-1-Vanadium-Supplier-and-Emerging-Clean-Energy-Battery-Producer/default.aspx>.)

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TABLE 1
U.S. IMPORTS FOR CONSUMPTION OF VANADIUM PRODUCTS¹

(Kilograms, unless otherwise specified)

Material	HTS ² code	2023								
		February			March			January–March		
		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	118,000	71,000 ³	\$545,000	59,000	35,400 ³	\$186,000	732,000	428,000 ³	\$2,740,000
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000	(4)	(4)	2,090,000	(4)	(4)	2,370,000	(4)	(4)	7,260,000
Chemical compounds:										
Vanadium pentoxide (anhydride)	2825.30.0010	65,000	37,600	1,840,000	149,000	129,000	4,080,000	381,000	269,000	9,710,000
Vanadium oxides and hydroxides, other	2825.30.0050	60,000	39,100	1,320,000	--	--	--	60,000	39,100	1,320,000
Vanadium chlorides	2827.39.1000	22,700	21,600	777,000	1,800	1,710	28,600	24,500	23,300	805,000
Vanadium chloride oxide and chloride hydroxide	2827.49.1000	67,100	41,900	56,000	67,100	41,900	56,000	157,000	97,700	149,000
Vanadium sulfates	2833.29.3000	--	--	--	--	--	--	--	--	--
Vanadates	2841.90.1000	--	--	--	120	80	5,450	220	147	9,690
Hydrides and nitrides of vanadium	2850.00.2000	10,300	8,270	89,300	27,400	21,800	149,000	60,300	48,600	451,000
Ferrovandium	7202.92.0000	326,000	226,000	9,680,000	326,000	257,000	10,000,000	938,000	711,000	29,000,000
Vanadium metal, including waste and scrap	8112.92.7000	54	49	4,390	320	144	104,000	18,700	18,400	919,000
Vanadium and articles thereof ⁵	8112.99.2000	36,600	23,900	1,690,000	36,800	23,900	1,850,000	116,000	75,500	5,440,000
Total		706,000	XX	18,100,000	667,000	XX	18,900,000	2,490,000	XX	57,800,000

XX Not applicable. -- Zero.

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

²Harmonized Tariff Schedule of the United States.

³Data are in kilograms of vanadium pentoxide.

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

⁵Aluminum-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)^{1, 2}

(Kilograms, gross and contained weight)

Country or locality	HTS ³ code	2023					
		February		March		January–March	
		Gross weight	Contained weight	Gross weight	Contained weight	Gross weight	Contained weight
Imports for consumption:							
Vanadium ores and concentrates	2615.90.6090						
Mexico		118,000	71,000 ⁴	59,000	35,400 ⁴	572,000	343,000
Other [1 country and (or) locality]		--	--	--	--	160,000	85,400 ⁴
Total		118,000	71,000 ⁴	59,000	35,400 ⁴	732,000	428,000 ⁴
Vanadium pentoxide (anhydride) ⁵	2825.30.0010						
Brazil		--	--	109,000	104,000	129,000	124,000
Germany		5,000	4,000	19,400	13,300	29,300	21,200
South Africa		60,000	33,600	20,000	11,200	220,000	123,000
Other [1 country and (or) locality]		1 ^r	1 ^r	--	--	2,410	1,410
Total		65,000	37,600	149,000	129,000	381,000	269,000
Other oxides and hydroxides of vanadium:	2825.30.0050						
Brazil		40,000	26,000	--	--	40,000	26,000
South Africa		20,000	13,100	--	--	20,000	13,100
Total		60,000	39,100	--	--	60,000	39,100
Ferrovandium	7202.92.0000						
Austria		50,000	40,300	80,000	63,900	261,000	209,000
Canada		156,000	124,000	226,000	182,000	505,000	410,000
Latvia		20,000	10,700	20,000	10,800	52,000	31,100
Other [1 country and (or) locality]		100,000	51,000	--	--	120,000	61,200
Total		326,000	226,000	326,000	257,000	938,000	711,000
Exports:							
Vanadium ores and concentrates	2615.90.6090						
Canada		653	NA	--	--	2,630	NA
France		519	NA	--	--	519	NA
Total		1,170	XX	--	--	3,150	XX
Vanadium pentoxide (anhydride) ⁵ , Japan	2825.30.0010	--	--	NA	1,640	NA	1,640
Other oxides and hydroxides of vanadium, Canada	2825.30.0050	52	NA	--	--	52	NA
Ferrovandium	7202.92.0000						
Canada		--	--	21,000	15,800	21,200	15,900
Colombia		--	--	85	64	85	64
Mexico		--	--	10,900	6,660	10,900	6,660
Netherlands		14,000	10,500	34,000	25,500	62,000	46,500
Total		14,000	10,500	66,000	48,000	94,200	69,100

^rRevised. NA Not available. XX Not applicable. -- Zero.

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

²Presentation of monthly data is based on the quantities (gross weight or contained weight) of the leading countries and (or) localities in March.

³Harmonized Tariff Schedule of the United States are imports and Schedule B of the United States are exports.

⁴Data are kilograms of vanadium pentoxide.

⁵May 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^{1,2}

(Kilograms, gross and contained weight)

Country or locality	HTS ³ code	2023					
		February		March		January–March	
		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		786,000	NA	1,040,000	NA	3,300,000	NA
Japan		--	--	2,000	NA	2,000	NA
Mexico		137,000	NA	54,600	NA	245,000	NA
Other [1 country and (or) locality]		--	--	--	--	65	NA
Total		923,000	XX	1,100,000	XX	3,550,000	XX
Vanadates, Japan	2841.90.1000	--	--	120	80	220	147
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
Belgium		--	--	2	1	2	1
China		36,000	23,400	36,000	23,100	115,000	74,100
Germany		--	--	318	143	18,600	18,400
Mexico		--	--	104	104	206	206
Russia		--	--	700	698	700	698
Other [3 countries and (or) localities]		654 ^r	529 ^r	--	--	656	531
Total		36,700	23,900	37,100	24,000	135,000	93,900
Exports:							
Vanadium bearing ash and residues	2620.50.0000, 2620.99.1000						
Austria		--	--	19,700	NA	19,700	NA
Belgium		--	--	20,600	NA	20,600	NA
Germany		--	--	13,600	NA	13,600	NA
Mexico		--	--	15,000	NA	15,000	NA
Total		--	--	69,000	XX	69,000	XX
Hydrides and nitrides of vanadium	2850.00.2000						
Germany		6,060	4,860	15,400	12,200	25,200	20,700
Israel		--	--	4	3	4	3
South Africa		3,980	3,150	11,500	9,100	22,000	17,400
Sweden		255	255	520	520	1,060	996
Other [2 countries and (or) localities]		--	--	--	--	12,000	9,480
Total		10,300	8,270	27,400	21,800	60,300	48,600
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
France		93	NA	1,810	NA	1,900	NA
Japan		--	--	18,400	NA	18,400	NA
United Kingdom		--	--	19,000	NA	21,400	NA
Other [2 countries and (or) localities]		4 ^r	NA	--	--	74	NA
Total		97	XX	39,200	XX	41,800	XX

^rRevised. NA Not available. XX Not applicable. -- Zero.

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

²Presentation of monthly data is based on the quantities (gross weight or contained weight) of the leading countries and (or) localities in March.

³Harmonized Tariff Schedule of the United States are imports and Schedule B of the United States are exports.

Source: U.S. Census Bureau.