

Mineral Industry Surveys

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VANADIUM IN APRIL 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 April 2023 was 31% more than those in the previous month and 41% more than those in April 2022 (table 1). In April 2023, the leading import sources for vanadium pentoxide (V_2O_5), were South Africa, Taiwan, and Germany, in descending order of contained weight quantity. In April 2023, the leading import sources for ferrovanadium (FeV) were Canada, Austria, and Japan, in descending order of contained weight quantity (table 2).

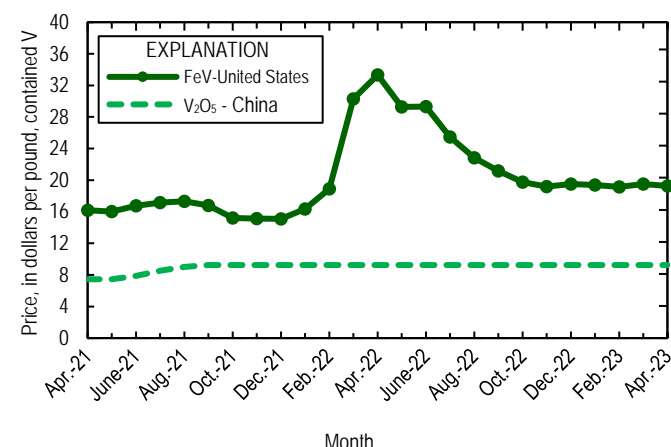


Figure 1. Average monthly prices for ferrovanadium (FeV) and vanadium pentoxide (V_2O_5) from April 2021 through April 2023 Source: CRU Group.

Prices

U.S. FeV prices ranged from \$18.781 to \$19.781 per pound of contained vanadium in April 2023 compared with \$19.000 to \$20.000 per pound in March 2023. In Europe, FeV prices ranged from \$38.100 to \$39.000 per kilogram of contained vanadium in April 2023 compared with \$39.856 to \$40.833 in March 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

Elcora Advanced Materials Corp. (Halifax, Nova Scotia, Canada) expected to begin test work and process design with Lab 4 Inc. (Dartmouth, Nova Scotia, Canada), a process-development laboratory and engineering company, for its Ermazon vanadium project in Morocco. Elcora expected to have three stages for their project, beginning with initial characterization of the mineral deposit to prove the processing of the source material. The second stage was hydrometallurgy, to demonstrate the capability of making ultra-pure V_2O_5 for vanadium redox flow batteries from the source material. The final stage was the design and construction of a pilot plant at Elcora's facility in Bedford, Nova Scotia, Canada, which was expected to start in the first quarter of 2024. The pilot plant would confirm the design as well as provide product samples for potential off-take clients (Elcora Advanced Materials Corp., 2023).

Reference Cited

Elcora Advanced Materials Corp., 2023, Elcora engages Lab 4 to design and build its vanadium pilot plant: Halifax, Nova Scotia, Canada, Elcora Advanced Materials Corp., April 4. (Accessed June 6, 2023, at <https://www.elcoracorp.com/elcora-engages-lab-4-to-design-and-build-its-vanadium-pilot-plant/>.)

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

(Kilograms, unless otherwise specified)

Material	HTS ² code	2023								
		March			April			January–April		
		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	59,000	35,400 ³	\$186,000	63,200	37,900 ³	\$527,000	795,000	466,000 ³	\$3,270,000
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000	(4)	(4)	2,370,000	(4)	(4)	3,610,000	(4)	(4)	10,900,000
Chemical compounds:										
Vanadium pentoxide (anhydride)	2825.30.0010	149,000	129,000	4,080,000	384,000	229,000	10,400,000	765,000	498,000	20,100,000
Vanadium oxides and hydroxides, other	2825.30.0050	--	--	--	20,000	13,100	582,000	80,000	52,300	1,900,000
Vanadium chlorides	2827.39.1000	1,800	1,710	28,600	13,900	12,500	1,700,000	38,300	35,800	2,510,000
Vanadium chloride oxide and chloride hydroxide	2827.49.1000	67,100	41,900	56,000	22,400	14,000	18,700	179,000	112,000	168,000
Vanadium sulfates	2833.29.3000	--	--	--	100	NA	3,000	100	NA	3,000
Vanadates	2841.90.1000	120	80	5,450	--	--	--	220	147	9,690
Hydrides and nitrides of vanadium	2850.00.2000	27,400	21,800	149,000	5,320	4,190	77,800	65,600	52,800	529,000
Ferrovandium	7202.92.0000	326,000	257,000	10,000,000	312,000	232,000	9,160,000	1,250,000	943,000	38,200,000
Vanadium metal, including waste and scrap	8112.92.7000	320	144	104,000	1,350	1,140	90,200	20,000	19,600	1,010,000
Vanadium and articles thereof ⁵	8112.99.2000	36,800	23,900	1,850,000	54,500	35,600	2,830,000	171,000	111,000	8,280,000
Total		667,000	XX	18,900,000	877,000	XX	29,000,000	3,360,000	XX	86,800,000

NA Not available. 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					
			March		April		January–April	
			Gross weight	Contained weight	Gross weight	Contained weight	Gross weight	Contained weight
Imports for consumption:								
Vanadium ores and concentrates		2615.90.6090						
China			--	--	9	3 ⁴	9	3 ⁴
Mexico			59,000	35,400 ⁴	63,200	37,900 ⁴	635,000	381,000
Other [1 country and (or) locality]			--	--	--	--	160,000	85,400 ⁴
Total			59,000	35,400 ⁴	63,200	37,900 ⁴	795,000	466,000 ⁴
Vanadium pentoxide (anhydride) ⁵		2825.30.0010						
Brazil			109,000	104,000	10,000	4,860	139,000	129,000
Germany			19,400	13,300	15,000	NA	44,300	NA
South Africa			20,000	11,200	340,000	190,000	560,000	313,000
Taiwan			--	--	18,900	NA	18,900	NA
Other [1 country and (or) locality]			--	--	--	--	2,410	1,410
Total			149,000	129,000	384,000	195,000	765,000	443,000
Other oxides and hydroxides of vanadium:		2825.30.0050						
South Africa			--	--	20,000	13,100	40,000	26,300
Other [1 country and (or) locality]			--	--	--	--	40,000	26,000
Total			--	--	20,000	13,100	80,000	52,300
Ferrovandium		7202.92.0000						
Austria			80,000	63,900	120,000	96,400	381,000	305,000
Canada			226,000	182,000	132,000	105,000	637,000	515,000
Japan			--	--	60,000	30,700	180,000	91,900
Other [1 country and (or) locality]			20,000 ^r	10,800 ^r	--	--	52,000	31,100
Total			326,000	257,000	312,000	232,000	1,250,000	943,000
Exports:								
Vanadium ores and concentrates		2615.90.6090						
Canada			--	--	1,830	NA	4,460	NA
Other [1 country and (or) locality]			--	--	--	--	519	NA
Total			--	--	1,830	XX	4,980	XX
Vanadium pentoxide (anhydride) ⁵ , Japan		2825.30.0010	NA	1,640	--	--	NA	1,640
Other oxides and hydroxides of vanadium:		2825.30.0050						
Austria			--	--	NA	43,700	NA	43,700
Other [1 country and (or) locality]			--	--	--	--	NA	52
Total			--	--	XX	43,700	XX	43,700
Ferrovandium		7202.92.0000						
Mexico			10,900	6,660	68	51	11,000	6,710
Netherlands			34,000	25,500	20,000	15,000	82,000	61,500
Other [2 country and (or) locality]			21,100 ^r	15,800 ^r	--	--	21,300	16,000
Total			66,000	48,000	20,100	15,100	114,000	84,200

^fRevised. 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 April.

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					
		March		April		January–April	
		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		1,040,000	NA	1,150,000	NA	4,450,000	NA
France		--	--	9,260	NA	9,320	NA
Mexico		54,600	NA	42,600	NA	288,000	NA
Other [1 country and (or) locality]		2,000 ^r	NA	--	--	2,000	NA
Total		1,100,000	XX	1,200,000	XX	4,750,000	XX
Vanadium sulfates, China	2833.29.3000	--	--	100	NA	100	NA
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						
Canada		--	--	37	37	37	37
China		36,000	23,100	55,300	36,200	170,000	110,000
Germany		318	143	10	10	18,600	18,400
Russia		700	698	500	499	1,200	1,200
United Kingdom		--	--	1	1	3	3
Other [4 countries and (or) localities]		106 ^r	105 ^r	--	--	862	736
Total		37,100	24,000	55,900	36,800	191,000	131,000
Exports:							
Vanadium bearing ash and residues	2620.50.0000, 2620.99.1000						
France		--	--	99,100	NA	99,100	NA
Netherlands		--	--	167,000	NA	167,000	NA
Other [4 countries and (or) localities]		69,000 ^r	NA	--	--	69,000	NA
Total		69,000	XX	266,000	XX	335,000	XX
Hydrides and nitrides of vanadium	2850.00.2000						
Austria		--	--	398	297	398	297
China		--	--	10	10	17	17
Germany		15,400	12,200	4,890	3,870	30,100	24,600
South Africa		11,500	9,100	22	19	22,100	17,400
Other [3 countries and (or) localities]		524 ^r	523 ^r	--	--	13,000	10,500
Total		27,400	21,800	5,320	4,190	65,600	52,800
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
France		1,810	NA	1,660	NA	3,560	NA
Other [4 countries and (or) localities]		37,400 ^r	NA	--	--	39,900	NA
Total		39,200	XX	1,660	XX	43,400	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 April.

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

Source: U.S. Census Bureau.