

Mineral Industry Surveys

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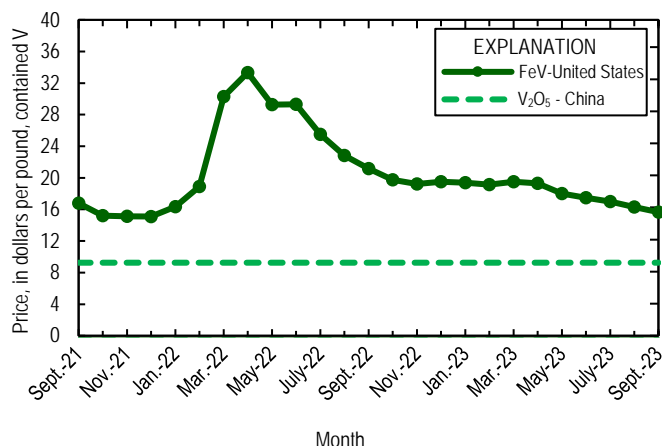
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VANADIUM IN SEPTEMBER 2023

The amount of vanadium in U.S. imports of select vanadium products on a gross weight basis, excluding vanadium bearing ash and residues, in September 2023 was 8% less than those of the previous month and 20% more than those in September 2022 (table 1). In September 2023, the leading import sources for vanadium pentoxide (V_2O_5), were South Africa, Brazil, and Taiwan, in descending order of gross weight quantity. In September 2023, the leading import sources for ferrovanadium (FeV) were Canada, Austria, and Japan, in descending order of gross weight quantity (table 2).

Prices

U.S. FeV prices ranged from \$15.406 to \$15.906 per pound of contained vanadium in September 2023 compared with \$15.975 to \$16.625 per pound in August 2023. In Europe, FeV prices ranged from \$30.400 to \$31.113 per kilogram of contained vanadium in September 2023 compared with \$32.500 to \$33.500 in August 2023. In China, V_2O_5 prices ranged from \$9.000 to \$9.500 per pound of contained vanadium in September 2023, unchanged since September 2021 (fig. 1).



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Figure 1. Average monthly prices for ferrovanadium (FeV) in the United States and vanadium pentoxide (V_2O_5) in China from September 2021 through September 2023. Source: CRU Group.

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

(Kilograms, unless otherwise specified)

Material	HTS ² codes	2023								
		August			September			January–September		
		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	231,000	133,000 ³	\$1,460,000	125,000	74,700 ³	\$390,000	1,190,000	699,000 ³	\$5,360,000
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000	(4)	(4)	2,600,000	(4)	(4)	2,250,000	(4)	(4)	21,100,000
Chemical compounds:										
Vanadium pentoxide (anhydride)	2825.30.0010	180,000	128,000	3,620,000	114,000	94,600	2,370,000	1,880,000	1,450,000 ⁵	46,500,000
Vanadium oxides and hydroxides, other	2825.30.0050	--	--	--	80,000	32,300	1,720,000	180,000	118,000	4,190,000
Vanadium chlorides	2827.39.1000	--	--	--	4,380	4,180	148,000	102,000	96,900	3,720,000
Vanadium chloride oxide and chloride hydroxide	2827.49.1000	67,100	41,900	56,000	--	--	--	582,000	363,000	504,000
Vanadium sulfates	2833.29.3000	--	--	--	--	--	--	2,450	1,570	17,100
Vanadates	2841.90.1000	600	260	14,600	18,000	12,000	383,000	19,800	13,100	432,000
Hydrides and nitrides of vanadium	2850.00.2000	22,500	18,100	105,000	34,200	27,900	335,000	203,000	163,000	1,490,000
Ferrovandium	7202.92.0000	164,000	128,000	4,430,000	235,000	176,000	6,430,000	2,230,000	1,690,000	73,300,000
Vanadium metal, including waste and scrap	8112.92.7000	--	--	--	--	--	--	20,400	19,800	1,110,000
Vanadium and articles thereof ⁶	8112.99.2000	19,300	12,600	852,000	18,100	11,700	784,000	316,000	205,000	15,200,000
Total		684,000	XX	13,100,000	629,000	XX	14,800,000	6,740,000	XX	173,000,000

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."

⁵Includes U.S. Geological Survey estimates.

⁶Aluminum-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		2023					
		August		September		January–September	
		Gross weight	Vanadium content	Gross weight	Vanadium content	Gross weight	Vanadium content
Imports for consumption:	HTS ³ codes						
Vanadium ores and concentrates	2615.90.6090						
Mexico		3,240	1,950 ⁴	125,000	74,700 ⁴	764,000	458,000 ⁴
Other [2 countries and (or) localities]		228,000 ^r	131,000 ^{r, 4}	--	--	428,000	240,000 ⁴
Total		231,000	133,000 ⁴	125,000	74,700 ⁴	1,190,000	699,000 ⁴
Vanadium pentoxide (anhydride) ⁵	2825.30.0010						
Brazil		140,000	97,000	40,000	39,800	839,000	767,000
Canada		--	--	3,430	1,660	3,430	1,660
South Africa		20,000	11,200	51,000	33,300	896,000	551,000
Taiwan		19,800	19,800	19,800	19,800	58,500	58,500
Other [3 countries and (or) localities]		--	--	--	--	87,100	67,500 ⁵
Total		180,000	128,000	114,000	94,600	1,880,000	1,450,000 ⁵
Other oxides and hydroxides of vanadium:	2825.30.0050						
Brazil		--	--	60,000	39,000	100,000	64,900
South Africa		--	--	20,000	13,300	80,000	52,800
Total		--	--	80,000	52,300	180,000	118,000
Ferrovandium	7202.92.0000						
Austria		120,000	96,700	49,000	39,200	797,000	638,000
Canada		43,500	31,500	150,000	118,000	1,100,000	878,000
Japan		--	--	21,000	10,600	231,000	118,000
Latvia		--	--	14,900	7,730	107,000	59,600
Total		164,000	128,000	235,000	176,000	2,230,000	1,690,000
Exports:	Schedule B ³ codes						
Vanadium ores and concentrates	2615.90.6090						
Canada		2,190	NA	1,830	NA	12,100	NA
Other [1 country and (or) locality]		--	--	--	--	519	NA
Total		2,190	XX	1,830	XX	12,700	XX
Vanadium pentoxide (anhydride) ⁶	2825.30.0010						
Japan		--	--	NA	1,930	NA	3,570
Other [1 country and (or) locality]		NA	75 ^r	--	--	NA	96
Total		XX	75	XX	1,930	XX	3,660
Other oxides and hydroxides of vanadium:	2825.30.0050						
Austria		--	--	--	--	NA	43,700
Belgium		--	--	--	--	NA	23,700
Canada		--	--	--	--	NA	52
Germany		--	--	--	--	NA	433
Korea, South		--	--	--	--	NA	45,200
Total		--	--	--	--	XX	113,000
Ferrovandium	7202.92.0000						
Mexico		--	--	68	51	11,500	7,020
Netherlands		40,200	21,600	20,200	10,900	175,000	115,000
Other [4 countries and (or) localities]		1,310 ^r	980 ^r	--	--	37,700	28,300
Total		41,500	22,600	20,300	11,000	224,000	151,000

¹Revised. NA Not available. XX Not applicable. -- Zero.

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

³Presentation of monthly data is based on the quantities (gross weight or contained weight) of the leading countries and (or) localities in September.

⁴Harmonized Tariff Schedule of the United States are imports and Schedule B of the United States are exports.

⁵Data are kilograms of vanadium pentoxide.

⁶Includes U.S. Geological Survey estimates.

⁷May 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		2023					
		August		September		January–September	
		Gross weight	Vanadium content	Gross weight	Vanadium content	Gross weight	Vanadium content
Imports for consumption:	HTS ³ codes						
Slag, from the manufacture of iron and steel	2619.00.9000						
Canada		830,000	NA	1,580,000	NA	11,600,000	NA
Mexico		44,800	NA	49,900	NA	589,000	NA
Turkey		292,000	NA	243,000	NA	1,410,000	NA
Other [2 countries and (or) localities]		--	--	--	--	11,300	NA
Total		1,170,000	XX	1,870,000	XX	13,600,000	XX
Vanadates	2841.90.1000						
China		--	--	15,000	10,000	15,000	10,000
Germany		600	260	3,000	2,000	3,600	2,260
Other [3 countries and (or) localities]		--	--	--	--	1,200	797
Total		600	260	18,000	12,000	19,800	13,100
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
China		18,000	11,600	18,000	11,600	314,000	204,000
Mexico		120	120	60	60	439	439
Other [8 countries and (or) localities]		1,160 ^r	931 ^r	--	--	22,000	21,300
Total		19,300	12,600	18,100	11,700	337,000	225,000
Exports:	Schedule B ³ codes						
Vanadium bearing ash and residues	2620.50.0000, 2620.99.1000						
Austria		--	--	36,300	NA	117,000	NA
Belgium		8,910	NA	18,800	NA	48,300	NA
Other [6 countries and (or) localities]		19,300 ^r	NA	--	--	969,000	NA
Total		28,200	XX	55,100	XX	1,140,000	XX
Hydrides and nitrides of vanadium	2850.00.2000						
Germany		1,350	1,340	23,500	19,400	99,200	80,900
South Africa		21,200	16,700	10,800	8,500	79,400	62,700
Other [7 countries and (or) localities]		--	--	--	--	24,500	19,700
Total		22,500	18,100	34,200	27,900	203,000	163,000
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
France		--	--	104	NA	5,500	NA
Japan		--	--	21,300	NA	71,000	NA
Vietnam		--	--	477	NA	477	NA
Other [5 countries and (or) localities]		161 ^r	NA	--	--	24,900	NA
Total		161	XX	21,900	XX	102,000	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 September.

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

Source: U.S. Census Bureau.