

# Mineral Industry Surveys

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## VANADIUM IN AUGUST 2019

Reported domestic consumption of vanadium in August 2019 was essentially unchanged from that of the previous month and slightly less than that of August 2018. Consumer stocks of all forms of vanadium were 198 metric tons (t) at the end of August, an increase from 185 t at yearend 2018 (table 1).

**Prices**

According to CRU Group (2019), U.S. ferrovandium (FeV) prices ranged from \$14.750 to \$16.061 per pound of contained vanadium in August 2019, compared with \$16.239 to \$17.750 per pound in July 2019. In Europe, FeV prices ranged from \$31.033 to \$32.422 per kilogram of contained vanadium in August 2019, compared with \$31.489 to \$33.000 per kilogram in July 2019. In China, vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) prices ranged from \$10.000 to \$10.500 per pound of contained vanadium since June 2019 (fig. 1).

**Reference Cited**

CRU Group, 2019, Noble alloys and minor metals prices: CRU Group, September 30. (Accessed October 21, 2019, via <http://www.crugroup.com/>.)

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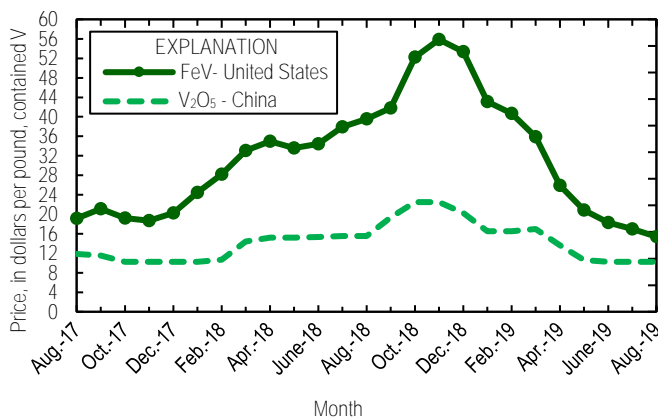


Figure 1. Average monthly prices for FeV and V<sub>2</sub>O<sub>5</sub> from August 2017 through August 2019. Source: CRU Group.

TABLE 1  
U.S. CONSUMPTION AND CONSUMER STOCKS OF VANADIUM, BY FORM<sup>p,1</sup>

(Kilograms, contained vanadium)

	2019					
	July		August		January–August	
	Consumption	Stocks	Consumption	Stocks	Consumption	Stocks
Ferrovandium <sup>2</sup>	219,000	155,000 <sup>r</sup>	218,000	160,000	1,760,000	160,000
Vanadium-aluminum alloy and other forms <sup>3</sup>	21,000	37,600	21,000	37,600	168,000	37,600
<b>Total</b>	<b>240,000</b>	<b>192,000</b>	<b>239,000</b>	<b>198,000</b>	<b>1,930,000</b>	<b>198,000</b>

<sup>p</sup>Preliminary. <sup>r</sup>Revised.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown. Includes estimates.

<sup>2</sup>Includes other vanadium-iron-carbon alloys as well as vanadium oxides added directly to steel.

<sup>3</sup>Includes vanadium-aluminum alloy, other vanadium alloys, vanadium metal, vanadium pentoxide, vanadates, chlorides, and other specialty chemicals.

TABLE 2  
U.S. CONSUMPTION OF VANADIUM, BY END USE<sup>1</sup>

(Kilograms, contained vanadium)

	2019		
	July	August	January– August
Steel:			
Carbon	W	W	W
Full alloy	101,000	101,000	806,000
High-strength low-alloy	W	W	W
Stainless and heat resisting	4,930	4,930	39,500
Tool	W	W	W
Total steel	106,000	106,000	845,000
Superalloys	W	W	W
Miscellaneous and unspecified <sup>2</sup>	W	W	W
Total	240,000	239,000	1,930,000

W Withheld to avoid disclosing company proprietary data; included in "Total."

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown. Includes estimates.

<sup>2</sup>Includes cast irons, alloys excluding steel and superalloys, chemical and ceramic uses, and other miscellaneous and unspecified uses.

TABLE 3  
U.S. IMPORTS FOR CONSUMPTION OF VANADIUM PRODUCTS<sup>1</sup>

(Kilograms, unless otherwise specified)

Material	HTS <sup>2</sup> code	2019								
		July			August			January–August		
		Gross weight	Contained weight	Value (thousands)	Gross weight	Contained weight	Value (thousands)	Gross weight	Contained weight	Value (thousands)
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000	1,410,000	138,000	\$3,690,000	1,760,000	172,000	\$2,680,000	13,900,000	1,380,000	\$50,100,000
Chemical compounds:										
Vanadium pentoxide (anhydride)	2825.30.0010	312,000	310,000	6,040,000	441,000	432,000	8,460,000	2,840,000	2,760,000	88,600,000
Vanadium oxides and hydroxides, other	2825.30.0050	--	--	--	--	--	--	129,000	82,200	5,660,000
Vanadium sulfates	2833.29.3000	--	--	--	2,130	1,330	12,800	7,030	4,390	42,200
Vanadates	2841.90.1000	5	2	2,200	--	--	--	90,600	54,000	2,680,000
Ferrovandium	7202.92.0000	236,000	139,000	9,820,000	367,000	257,000	12,800,000	2,560,000	1,730,000	136,000,000
Vanadium metal, including waste and scrap	8112.92.7000	10,600	7,100	740,000	11,000	10,800	521,000	57,200	44,300	3,970,000
Vanadium and articles thereof <sup>3</sup>	8112.99.2000	60,800	40,100	2,950,000	5,910	3,870	177,000	210,000	141,000	12,600,000
Total		2,030,000	634,000	23,200,000	2,580,000	878,000	24,600,000	19,800,000	6,200,000	299,000,000

-- 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>Aluminum-vanadium master alloy consisting of 35% aluminum and 64.5% vanadium.

Source: U.S. Census Bureau.

TABLE 4  
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	2019					
		July		August		January–August	
		Gross weight	Contained weight	Gross weight	Contained weight	Gross weight	Contained weight
<b>Imports for consumption:</b>							
Vanadium pentoxide (anhydride) <sup>4</sup>	2825.30.0010						
Brazil		220,000	219,000	180,000	179,000	1,500,000	1,500,000
China		1,600	914	8,770	5,010	92,300	52,900
Germany		10,000	10,000	35,000	31,800	121,000	114,000
Russia		--	--	220	198	220	198
South Africa		80,000	79,700	217,000	216,000	1,070,000	1,050,000
Other [4 countries and (or) localities]		--	--	--	--	54,900	49,700
Total		312,000	310,000	441,000	432,000	2,840,000	2,760,000
Other oxides and hydroxides of vanadium, South Africa	2825.30.0050	--	--	--	--	129,000	82,200
Ferrovanadium	7202.92.0000						
Austria		23,000	18,600	170,000	125,000	606,000	447,000
Canada		42,700	34,800	96,400	75,800	1,030,000	795,000
Japan		50,000	25,200	40,000	20,600	320,000	164,000
Russia		--	--	20,000	15,900	40,000	31,800
Ukraine		80,000	40,000	40,000	19,700	385,000	193,000
Other [4 countries and (or) localities]		40,000 <sup>r</sup>	20,600 <sup>r</sup>	--	--	181,000	95,600
Total		236,000	139,000	367,000	257,000	2,560,000	1,730,000
<b>Exports:</b>							
Vanadium pentoxide (anhydride) <sup>4</sup>	2825.30.0010						
Australia		--	--	NA	407	NA	407
China		--	--	NA	153,000	NA	161,000
Other [5 countries and (or) localities]		--	--	--	--	NA	115,000
Total		--	--	XX	154,000	XX	276,000
Other oxides and hydroxides of vanadium	2825.30.0050						
Netherlands		NA	54,600	NA	54,600	NA	203,000
Other [5 countries and (or) localities]		NA	32,800	--	--	NA	129,000
Total		XX	87,400	XX	54,600	XX	332,000
Ferrovanadium	7202.92.0000						
Canada		8,890	6,670	2,680	2,010	54,800	41,100
Chile		--	--	1,000	750	3,040	1,750
Mexico		45,500	21,800	2,000	1,500	247,000	154,000
Other [3 countries and (or) localities]		2,310 <sup>r</sup>	1,740 <sup>r</sup>	--	--	41,400	31,100
Total		56,700	30,200	5,680	4,260	347,000	228,000

<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 five leading countries and (or) localities in August.

<sup>3</sup>Harmonized Tariff Schedule of the United States.

<sup>4</sup>May include catalysts containing vanadium pentoxide.

Source: U.S. Census Bureau.

TABLE 5  
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	2019					
		July		August		January–August	
		Gross weight	Contained weight	Gross weight	Contained weight	Gross weight	Contained weight
<b>Imports for consumption:</b>							
Slag, from the manufacture of iron and steel	2619.00.9000						
Canada		561,000	NA	396,000	NA	77,400,000	NA
Finland		3,100	NA	9,040	NA	87,000	NA
Mexico		33,200	NA	52,700	NA	311,000	NA
Other [3 countries and (or) localities]		--	--	--	--	40,900	NA
Total		597,000	XX	457,000	XX	77,800,000	XX
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000						
Canada		1,410,000	138,000	1,760,000	172,000	13,100,000	1,280,000
Other [3 countries and (or) localities]		--	--	--	--	791,000	98,800
Total		1,410,000	138,000	1,760,000	172,000	13,900,000	1,380,000
Sulfates, China	2833.29.3000	--	--	2,130	1,330	7,030	4,390
Vanadates	2841.90.1000						
Russia		5	2	--	--	5	2
Other [6 countries and (or) localities]		--	--	--	--	90,600	54,000
Total		5	2	--	--	90,600	54,000
Vanadium metal, including waste and scrap, and Aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
China		3,910	2,550	5,910	3,870	31,700	22,000
Germany		12,000	8,210	11,000	10,800	45,400	34,400
Other [7 countries and (or) localities]		55,500 <sup>r</sup>	36,400 <sup>r</sup>	--	--	190,000	129,000
Total		71,400	47,200	16,900	14,700	267,000	186,000
<b>Exports:</b>							
Vanadium bearing ash and residues	2620.50.0030, 2620.99.1000						
France		55,500	NA	72,800	NA	755,000	NA
Germany		182,000	NA	257,000	NA	891,000	NA
Other [1 country and (or) locality]		22,000	NA	--	--	76,400	NA
Total		260,000	XX	330,000	XX	1,720,000	XX
Vanadium metal, including waste and scrap, and Aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
China		--	--	376	NA	376	NA
France		--	--	896	NA	8,370	NA
Russia		--	--	24,500	NA	24,500	NA
United Kingdom		--	--	433	NA	1,890	NA
Other [8 countries and (or) localities]		2,140 <sup>r</sup>	NA	--	--	22,000	NA
Total		2,140	XX	26,200	XX	57,100	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 five leading countries and (or) localities in August.

<sup>3</sup>Harmonized Tariff Schedule of the United States.

Source: U.S. Census Bureau.