

# Mineral Industry Surveys

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## VANADIUM IN JULY 2018

Reported domestic consumption of vanadium in July 2018 was slightly more than that of the previous month and 14% less than that of July 2017. Consumer stocks of all forms of vanadium were 178 metric tons (t) at the end of July, an increase from 155 t at yearend 2017 (table 1).

According to CRU Group (2018), U.S. ferrovanadium (FeV) prices ranged from \$37.444 to \$38.389 per pound of contained vanadium in July 2018, compared with \$34.019 to \$34.825 per pound in June 2018. European FeV prices ranged from \$80.772 to \$81.428 per kilogram of contained vanadium in July, compared with \$71.406 to \$72.213 per kilogram in June 2018. CRU Group discontinued publishing U.S. vanadium pentoxide ( $V_2O_5$ ) prices from July 2017 onward. The Chinese  $V_2O_5$  prices ranged from \$15.300 to \$15.800 per pound of contained vanadium in July 2018, compared with \$15.113 to \$15.550 per pound in June 2018 (fig. 1).

## Reference Cited

CRU Group, 2018, Noble alloys and minor metals prices: CRU Group, August 31. (Accessed September 20, 2018, via <http://www.crugroup.com/>.)

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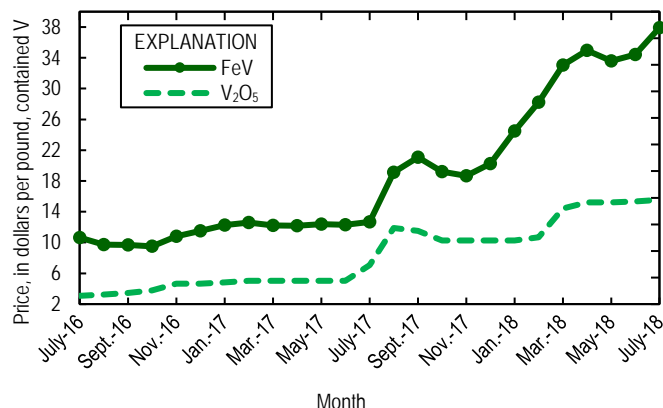


Figure 1. Average monthly prices for FeV and  $V_2O_5$  from July 2016 through July 2018. Prices for FeV are U.S. prices, and prices for  $V_2O_5$  are U.S. prices from May 2016 through June 2017 and Chinese prices from July 2017 through July 2018. Source: CRU Group.

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

(Kilograms, contained vanadium)

	2018					
	June		July		January–July	
	Consumption	Stocks	Consumption	Stocks	Consumption	Stocks
Ferrovandium <sup>2</sup>	223,000	154,000 <sup>r</sup>	226,000	141,000	1,560,000	141,000
Vanadium-aluminum alloy and other forms <sup>3</sup>	21,100	37,900	21,100	37,800	284,000	37,800
Total	244,000	192,000 <sup>r</sup>	247,000	178,000	1,840,000	178,000

<sup>p</sup>Preliminary.

<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)

	2018		
	June	July	January– July
Steel:			
Carbon	W	W	W
Full alloy	101,000	101,000	757,000
High-strength low-alloy	W	W	W
Stainless and heat resisting	4,930	4,930	34,500 *
Tool	W	W	W
Total steel	106,000	106,000	791,000 *
Superalloys	W	W	W
Miscellaneous and unspecified <sup>2</sup>	W	W	W
Total	244,000	247,000	1,840,000

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.

\*Corrections posted on November 20, 2018.

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

(Kilograms, unless otherwise specified)

Material	HTS <sup>2</sup> Code	2018								
		June			July			January–July		
		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	1,780,000	328,000	\$4,500,000	1,790,000	314,000	\$4,410,000	14,100,000	2,510,000	\$24,900,000
Chemical compounds:										
Vanadium pentoxide (anhydride)	2825.30.0010	361,000	345,000	13,200,000	713,000	696,000	25,200,000	2,820,000	2,770,000	87,500,000
Vanadium oxides and hydroxides, other	2825.30.0050	36	23	8,870	40,000	26,200	1,600,000	140,000	91,300	4,990,000
Vanadium sulfates	2833.29.3000	--	--	--	100	100	6,700	2,990	2,010	45,000
Vanadates	2841.90.1000	35,200	21,800	943,000	17,300	3,030	572,000	333,000	196,000	7,770,000
Ferrovandium	7202.92.0000	411,000	303,000	26,200,000	378,000	284,000	20,200,000	2,360,000	1,760,000	113,000,000
Vanadium metal, including waste and scrap and vanadium and articles thereof <sup>3</sup>	8112.92.7000, 8112.99.2000	36,700	23,500	1,960,000	41,500	29,200	2,050,000	289,000	189,000	11,400,000
Total		2,620,000	1,020,000	46,800,000	2,980,000	1,350,000	54,000,000	20,000,000	7,510,000	249,000,000

-- 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 (HTS).

<sup>3</sup>Aluminum-vanadium master alloy consisting of 35% aluminum and 64.5% vanadium, and vanadium metal, including waste and scrap.

Source: U.S. Census Bureau.

TABLE 4  
U.S. IMPORTS AND EXPORTS OF FERROVANADIUM, VANADIUM PENTOXIDE (ANHYDRIDE)  
AND OTHER OXIDES AND HYDROXIDES OF VANADIUM<sup>1,2</sup>

(Kilograms, gross and contained weight)

Country or locality	HTS <sup>3</sup> code	2018					
		June		July		January–July	
		Gross weight	Contained weight	Gross weight	Contained weight	Gross weight	Contained weight
Imports for consumption:							
Vanadium pentoxide (anhydride) <sup>4</sup>	2825.30.0010						
Brazil		40,000	39,800	440,000	438,000	1,320,000	1,310,000
China		156,000	141,000	109,000	100,000	396,000	367,000
Germany		--	--	45,800	39,100	83,900	69,000
South Africa		144,000	144,000	98,000	97,600	900,000	896,000
Taiwan		--	--	20,800	20,800	83,200	80,500
Other [2 countries and (or) localities]		21,000 <sup>r</sup>	20,200 <sup>r</sup>	--	--	41,000	39,800
Total		361,000	345,000	713,000	696,000	2,820,000	2,770,000
Other oxides and hydroxides of vanadium:	2825.30.0050						
South Africa		--	--	40,000	26,200	140,000	91,300
Other [1 country and (or) locality]		36	23	--	--	36	23
Total		36	23	40,000	26,200	140,000	91,300
Ferrovanadium	7202.92.0000						
Austria		264,000	203,000	118,000	94,400	1,330,000	1,030,000
Canada		43,900	34,100	92,900	74,300	430,000	337,000
India		20,000	16,000	20,000	16,200	80,000	64,300
Japan		19,000	9,750	19,000	9,790	127,000	73,400
Latvia		44,000	24,600	47,900	25,300	182,000	99,200
Russia		20,300	16,200	80,000	63,800	198,000	159,000
Other [2 countries and (or) localities]		--	--	--	--	5,520	2,870
Total		411,000	303,000	378,000	284,000	2,360,000	1,760,000
Exports:							
Vanadium pentoxide (anhydride) <sup>4</sup>	2825.30.0010						
India		11,400	NA	28,000	NA	252,000	NA
Other [3 countries and (or) localities]		--	--	--	--	29,800	NA
Total		11,400	XX	28,000	XX	282,000	XX
Other oxides and hydroxides of vanadium	2825.30.0050						
Canada		234	NA	--	--	521	NA
Trinidad and Tobago		8,650	NA	--	--	8,650	NA
Other [2 countries and (or) localities]		--	--	--	--	35,800	NA
Total		8,880	XX	--	--	44,900	XX
Ferrovanadium	7202.92.0000						
Canada		--	--	20,000	15,000	58,400	43,800
Chile		--	--	5,890	4,420	5,890	4,420
Mexico		41,100	30,100	68	51	183,000	99,300
Peru		7,460	3,660	1,520	1,140	14,900	9,280
Other [4 countries and (or) localities]		125 <sup>r</sup>	94 <sup>r</sup>	--	--	9,360	7,020
Total		48,700	33,800	27,500	20,600	271,000	164,000

<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 July.

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

<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)

		2018					
		June		July		January–July	
Country or locality	HTS <sup>3</sup> code	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		16,000,000	NA	213,000	NA	47,100,000	NA
Mexico		36,700	NA	18,000	NA	256,000	NA
Turkey		1,470,000	NA	20,400,000	NA	22,300,000	NA
Other [1 country and (or) locality]		--	--	--	--	6,000	NA
Total		17,500,000	XX	20,600,000	XX	69,700,000	XX
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000						
Canada		1,740,000	305,000	1,790,000	314,000	13,800,000	2,410,000
Other [4 countries and (or) localities]		38,500	23,500	--	--	301,000	95,300
Total		1,780,000	328,000	1,790,000	314,000	14,100,000	2,510,000
Vanadium sulfates	2833.29.3000						
China		--	--	100	100	2,830	1,910
Other [1 country and (or) locality]		--	--	--	--	160	100
Total		--	--	100	100	2,990	2,010
Vanadates	2841.90.1000						
China		11,300	9,000	17,000	2,830	63,300	43,800
South Africa		--	--	250	193	250	193
Other [7 countries and (or) localities]		23,900 <sup>r</sup>	12,800 <sup>r</sup>	--	--	270,000	152,000
Total		35,200	21,800	17,300	3,030	333,000	196,000
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
Canada		--	--	40	39	40	39
Germany		10	8	20,000	14,500	21,900	16,200
Latvia		--	--	300	297	900	801
Russia		36,700	23,500	20,500	13,600	202,000	130,000
United Kingdom		--	--	689	689	1,050	1,050
Other [4 countries and (or) localities]		--	--	--	--	62,900	41,600
Total		36,700	23,500	41,500	29,200	289,000	189,000
Exports:							
Vanadium bearing ash and residues	2620.40.0030, 2620.99.1000						
Korea, Republic of		--	--	98,000	NA	273,000	NA
Mexico		--	--	540,000	NA	793,000	NA
United Kingdom		--	--	905	NA	905	NA
Other [5 countries and (or) localities]		18,100	NA	--	--	454,000	NA
Total		18,100	XX	639,000	XX	1,520,000	XX
Vanadium metal, including waste and scrap and aluminum-vanadium master alloy	8112.92.7000, 8112.99.2000						
Australia		--	--	4,000	NA	7,680	NA
France		250	NA	614	NA	3,860	NA
Japan		1,000	NA	5,000	NA	25,900	NA
Korea, Republic of		--	--	18,500	NA	18,500	NA
Russia		52,400	NA	52,300	NA	105,000	NA
Other [9 countries and (or) localities]		2,750 <sup>r</sup>	NA	368	NA	14,700	NA
Total		56,400	XX	80,800	XX	175,000	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 July.

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

Source: U.S. Census Bureau.