

# Mineral Industry Surveys

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## VANADIUM IN AUGUST 2016

Reported domestic consumption of vanadium in August 2016 was about the same as the previous month and was about the 3% less than that of August 2015. Consumer stocks of all forms of vanadium were 164 metric tons (t) at the end of August, a decrease from 166 t at yearend 2015.

According to CRU Group, U.S. ferrovanadium (FeV) prices ranged from \$9.450 to \$10.000 per pound of vanadium content in August, compared with \$10.481 to \$10.813 in July. European FeV prices ranged from \$18.789 to \$19.333 per kilogram of vanadium content in August, compared with \$17.119 to \$17.463 in July. Vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) prices ranged from \$3.083 to \$3.433 per pound of vanadium content in August, compared with \$2.919 to \$3.238 in July (fig. 1).

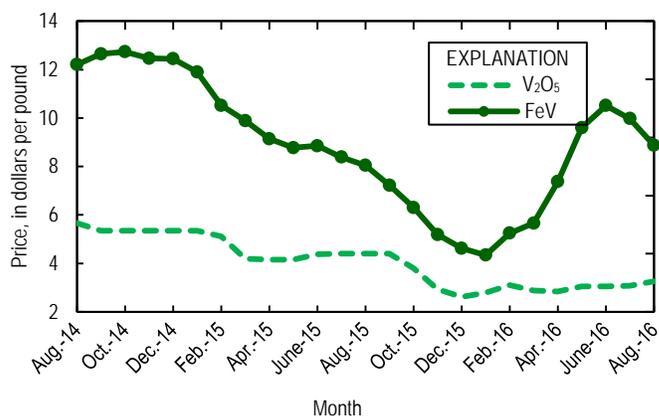


Figure 1. Average monthly prices for U.S. vanadium pentoxide and ferrovanadium from August 2014 through August 2016. Source: CRU Group.

### Reference Cited

CRU Group, 2016, Noble alloys and minor metals prices: CRU Group, September 1. (Accessed October 18, 2016, via <http://www.crugroup.com/>)

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

(Kilograms, contained vanadium)

	2015		2016					
	Consumption	Stocks	July		August		January–August	
			Consumption	Stocks	Consumption	Stocks	Consumption	Stocks
Ferrovandium <sup>2</sup>	2,750,000	96,200	219,000	90,200	220,000	93,900	1,770,000	93,900
Vanadium-aluminum alloy and other forms <sup>3</sup>	803,000	70,100	66,400	70,100	66,500	70,100	531,000	70,100
Total	3,550,000	166,000	286,000	160,000	286,000	164,000	2,300,000	164,000

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

<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)

	2015	2016		January– August
	January– December	July	August	
Steel:				
Carbon	W	W	W	W
Full alloy	1,420,000	118,000	118,000	943,000
High-strength low-alloy	W	W	W	W
Stainless and heat resisting	59,200	4,940	4,940	39,500
Tool	W	W	W	W
Total steel	3,240,000	123,000	123,000	983,000
Superalloys	2,800	W	W	W
Miscellaneous and unspecified <sup>2</sup>	306,000	W	W	W
Total	3,550,000	286,000	286,000	2,300,000

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.

<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 AND EXPORTS OF ALUMINUM-VANADIUM MASTER ALLOYS AND VANADIUM METAL, INCLUDING WASTE AND SCRAP<sup>1</sup>

(Kilograms, gross weight)

	Aluminum-vanadium master alloy <sup>2</sup>		Vanadium metal, including waste and scrap <sup>3</sup>	
	Quantity	Value	Quantity	Value
Imports for consumption:				
2015	204,000	\$4,520,000	182,000	\$3,450,000
2016:				
July	9,070	179,000	3,640	50,100
August:				
China	9,070	177,000	--	--
Netherlands	1,500	36,300	--	--
Russia	17,500	309,000	--	--
Total	28,000	522,000	--	--
January–August	179,000	3,140,000	18,200	410,000
Exports:				
2015	229,000	6,440,000	5,200	354,000
2016:				
July	2,330	96,200	1,000	78,300
August:				
Australia	863	33,300	--	--
Germany	130	5,000	5	5,540
Mexico	--	--	100	4,200
Romania	65	2,520	--	--
United Kingdom	3,550	199,000	--	--
Total	4,610	239,000	105	9,740
January–August	86,500	1,960,000	3,230	246,000

-- Zero.

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

<sup>2</sup>Aluminum-vanadium master alloy consisting of 35% aluminum and 64.5% vanadium. Includes Harmonized Tariff Schedule code 8112.99.2000.

<sup>3</sup>Vanadium metal, including waste and scrap (HTS 8112.92.7000).

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</sup>

(Kilograms, contained vanadium)

	Ferrovanadium <sup>2</sup>		Vanadium pentoxide (anhydride) <sup>3,4</sup>		Other oxides and hydroxides of vanadium <sup>5</sup>	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Imports for consumption:</b>						
2015	2,030,000	\$64,700,000	2,870,000	\$32,800,000	93,700	\$1,840,000
2016:						
July	278,000	6,240,000	250,000	2,510,000	66,700	1,080,000
August:						
Austria	143,000	1,860,000	--	--	--	--
Brazil	--	--	119,000	789,000	--	--
Canada	18,900	270,000	--	--	--	--
China	--	--	69,700	574,000	--	--
Czech Republic	NA	1,750,000	--	--	--	--
Germany	500	23,300	35,700	413,000	--	--
Japan	18,000	151,000	--	--	--	--
Korea, Republic of	20,000	376,000	19,700	137,000	--	--
Russia	988	17,900	--	--	--	--
Singapore	2,570	38,500	--	--	--	--
South Africa	--	--	--	--	52,200	856,000
Taiwan	8,150	277,000	21,000	330,000	--	--
Total	212,000	4,760,000	265,000	2,240,000	52,200	856,000
January–August	1,570,000	31,700,000	1,640,000	16,200,000	478,000	7,140,000
<b>Exports:</b>						
2015	163,000	3,190,000	356,000	3,430,000	99,800	841,000
2016:						
July	17,900	372,000	509	6,190	14,800	132,000
August:						
Canada	12,300	249,000	--	--	2,210	19,700
Germany	--	--	--	--	19,100	170,000
Korea, Republic of	2,000	45,000	--	--	--	--
Peru	1,000	30,300	--	--	--	--
Total	15,300	324,000	--	--	21,300	190,000
January–August	404,000	5,050,000	3,220	86,200	114,000	970,000

NA Not available. -- Zero.

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

<sup>2</sup>Includes HTS code 7202.92.0000.

<sup>3</sup>Includes HTS code 2825.30.0010.

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

<sup>5</sup>Includes HTS code 2825.30.0050.

Source: U.S. Census Bureau.

TABLE 5  
U.S. IMPORTS FOR CONSUMPTION OF VANADIUM-BEARING ASH, SLAG<sup>1</sup>

(Kilograms, contained vanadium pentoxide, unless otherwise specified)

	Ash and residues <sup>2</sup>		Slag, from the manufacture of iron and steel	
			Quantity	
	Quantity	Value	(gross weight)	Value
2015	9,440,000	\$36,700,000	87,600,000	\$4,600,000
2016:				
July	547,000	1,890,000	29,000,000 <sup>†</sup>	439,000
August:				
Canada	591,000	1,460,000	24,500,000 <sup>3</sup>	434,000 <sup>3</sup>
Mexico	--	--	18,100	6,780
Netherlands	63,700	57,500	--	--
Singapore	--	--	700	2,540
Total	654,000	1,520,000	24,500,000	443,000
January–August	3,390,000	7,250,000	69,000,000	1,590,000

<sup>†</sup>Revised. -- Zero.

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

<sup>2</sup>Includes HTS code 2620.99.1000 and 2619.00.9000.

<sup>3</sup>Referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF MISCELLANEOUS VANADIUM CHEMICALS<sup>1</sup>

(Kilograms, contained vanadium)

	Sulfates <sup>2</sup>		Vanadates <sup>3</sup>	
	Quantity	Value	Quantity	Value
2015	12,600	\$142,000	173,000	\$2,330,000
2016:				
July	2,160	20,000	29,100	396,000
August:				
China	62	3,010	11,800	151,000
Japan	--	--	375	16,200
South Africa	--	--	930	18,600
Taiwan	--	--	12,300	125,000
Total	62	3,010	25,500	312,000
January–August	9,330	95,500	222,000	2,960,000

-- Zero.

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

<sup>2</sup>Sulfates (HTS code 2833.29.3000).

<sup>3</sup>Vanadates (HTS code 2841.90.1000).

Source: U.S. Census Bureau.