

# Mineral Industry Surveys

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## VANADIUM IN SEPTEMBER 2006

Reported domestic consumption of vanadium in September 2006 was about 3% less than that of the previous month, and was about 2% more than that of September 2005, according to the U.S. Geological Survey. Year-to-date consumption of vanadium from January through September was about 21% less than during the same period in 2005. Consumer stocks of vanadium, in all forms, were 361 metric tons (t) at the beginning of 2006 and 301 t at the end of September.

According to Ryan's Notes (2006), U.S. ferrovanadium (FeV) prices ranged from \$17.722 to \$18.472 per pound of vanadium content in September, as compared with \$19.083 to \$19.778 in August. European FeV prices ranged from \$39.222 to \$40.556 per kilogram in September, as compared with \$35.556 to \$37.556 in August. Vanadium pentoxide ( $V_2O_5$ ) prices ranged from \$7.500 to \$8.000 per pound in September, as compared with \$6.639 to \$7.139 in August.

Prices in China for domestic-origin 50% FeV rose about 20% from the beginning of August through mid-September, based on limited supply of FeV and strong demand from the steel market. Export prices for Chinese 80% FeV shipped to Europe also increased about 8% from August to September. The U.S. FeV market remained static during the same period owing to limited demand, but because  $V_2O_5$  prices moved up in September, United States-origin FeV prices are expected to follow (Metal Bulletin Research, 2006).

### References Cited

Metal Bulletin Research, 2006, Vanadium highlights: Metal Bulletin Research, Ferro-alloys Monthly, no. 169, September 26, p. 15.  
Ryan's Notes, 2006, [untitled]: Ryan's Notes, v. 12, no. 35, September 4, p. 10.

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

(Kilograms, contained vanadium)

	2005 <sup>p</sup>		2006			
	Consumption	Stocks	August		September	
			Consumption	Stocks	Consumption	Stocks
Ferrovandium <sup>2</sup>	3,430,000	335,000	293,000 <sup>r</sup>	310,000 <sup>r</sup>	271,000	287,000
Vanadium-aluminum alloy	W	W	W	W	W	W
Other <sup>3</sup>	260,000	25,700	18,800	32,000	30,900	13,600
Total	3,690,000	361,000	312,000 <sup>r</sup>	342,000 <sup>r</sup>	302,000	301,000

<sup>p</sup>Preliminary. <sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data; included with "Other."

<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 other vanadium alloys, vanadium metal, vanadium pentoxide, vanadates, chlorides, other specialty chemicals, and items indicated by symbol W.

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

(Kilograms, contained vanadium)

	2005 <sup>p</sup>	2006		
		August	September	Year to date
Steel:				
Carbon	902,000	84,600	75,500	644,000
High-strength low-alloy	1,060,000	85,900	86,200	694,000
Stainless and heat-resisting	59,900	5,060	5,060	40,500
Full alloy	1,000,000	82,500 <sup>r</sup>	83,600	693,000
Tool	401,000	35,200	20,300	217,000
Total steel	3,430,000	293,000 <sup>r</sup>	271,000	2,290,000
Superalloys	9,610	303	326	2,800
Miscellaneous and unspecified <sup>2</sup>	253,000	18,600	30,700	178,000
Total consumption	3,690,000	312,000 <sup>r</sup>	302,000	2,470,000

<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.

<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 ALLOY AND  
VANADIUM METAL, INCLUDING WASTE AND SCRAP<sup>1</sup>

(Kilograms, gross weight)

	Aluminum-vanadium master alloy		Vanadium metal, including waste and scrap	
	Quantity	Value	Quantity	Value
<b>Imports for consumption:</b>				
2005	1,010	\$15,500	54,800	\$3,800,000
2006:				
June	102,000	312,000	35,600	1,330,000
July	--	--	281	51,400
August, Germany	--	--	33,800	1,200,000
Total	--	--	33,800	1,200,000
Year to date	102,000	312,000	101,000	4,320,000
<b>Exports:</b>				
2005	14,100,000	42,000,000	293,000	1,640,000
2006:				
June	1,650,000	6,620,000	32,900	1,100,000
July	1,170,000	4,850,000	26,200	757,000
August:				
Australia	--	--	400	22,600
Austria	--	--	3,530	97,100
Brazil	7,380	89,800	--	--
Canada	420,000	1,180,000	--	--
China	12,700	67,100	--	--
Germany	26	8,010	2,580	41,900
Guatemala	10,800	166,000	--	--
India	8,580	47,900	--	--
Japan	2,950	20,800	--	--
Malaysia	4,320	30,800	--	--
Mexico	405,000	1,150,000	--	--
Thailand	71,500	315,000	--	--
United Kingdom	22,400	249,000	18,300	581,000
Total	966,000	3,320,000	24,800	743,000
Year to date	11,200,000	32,300,000	337,000	8,440,000

-- Zero.

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

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		Vanadium pentoxide (anhydride) <sup>2</sup>		Other oxides and hydroxides of vanadium	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Imports for consumption:</b>						
2005	12,000,000	\$131,000,000	1,410,000	\$52,900,000	213,000	\$6,540,000
<b>2006:</b>						
June	216,000	9,560,000	193,000	4,570,000	31,900	963,000
July	12,200,000	141,000,000	1,600,000	57,400,000	--	--
<b>August:</b>						
Austria	16,000	639,000	4,220	113,000	--	--
Canada	12,900	517,000	--	--	--	--
China	--	--	60,200	1,530,000	--	--
Czech Republic	113,000	4,810,000	--	--	--	--
Japan	--	--	182	24,600	--	--
Korea, Republic of	61,500	2,340,000	--	--	--	--
Mexico	--	--	9,930	165,000	--	--
Russia	--	--	56,800	967,000	--	--
South Africa	--	--	67,600	1,590,000	--	--
Total	204,000	8,310,000	199,000	4,390,000	--	--
Year to date	1,480,000	64,600,000	1,420,000	34,700,000	105,000	2,900,000
<b>Exports:</b>						
2005	500,000	19,100,000	247,000	5,340,000	822,000	14,500,000
<b>2006:</b>						
June	22,200	752,000	--	--	74,100	727,000
July	22,100	654,000	1,650	25,900	94,500	719,000
<b>August:</b>						
Australia	374	19,700	--	--	--	--
Canada	6,900	152,000	--	--	88,200	785,000
Mexico	17,300	328,000	--	--	--	--
Netherlands	13,100	447,000	--	--	--	--
Russia	--	--	18,000	366,000	--	--
Spain	--	--	11,200	181,000	--	--
Trinidad and Tobago	--	--	2,250	48,500	--	--
Total	37,600	947,000	31,400	596,000	88,200	785,000
Year to date	286,000	7,770,000	224,000	4,730,000	666,000	6,000,000

-- Zero.

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

<sup>2</sup>May include catalysts containing vanadium pentoxide.

Source: U.S. Census Bureau.

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

(Kilograms, contained vanadium pentoxide)

	Ash and residues		Ash and residues (not from the manufacture of iron and steel)	
	Quantity	Value	Quantity	Value
2005	1,060,000	\$9,820,000	1,200,000	\$1,100,000
2006:				
June	--	--	49,700	79,100
July	--	--	93,300	98,800
August, Canada	--	--	77,400	90,100
Year to date	128,000	1,450,000	766,000	794,000

-- Zero.

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

Source: U.S. Census Bureau.

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

(Kilograms, contained vanadium)

	Sulfates		Vanadates	
	Quantity	Value	Quantity	Value
2005	35,000	\$77,000	91,700	\$2,800,000
2006:				
June	12	17,300	11,000	283,000
July	--	--	9,420	170,000
August:				
Japan	--	--	45	6,720
South Africa	--	--	6,220	165,000
Total	--	--	6,260	172,000
Year to date	16	25,800	95,100	2,730,000

-- Zero.

Source: U.S. Census Bureau.