

# Mineral Industry Surveys

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## VANADIUM IN AUGUST 2006

Reported domestic consumption of vanadium in August 2006 was about 3% more than that of the previous month, and was about 4% more than that of August 2005, according to the U.S. Geological Survey. Consumer stocks of vanadium, in all forms, were 361 metric tons (t) at the beginning of 2006 and 340 t at the end of August.

According to Ryan's Notes (2006b), U.S. ferrovanadium (FeV) prices ranged from \$19.083 to \$19.778 per pound of vanadium content in August, as compared with \$19.250 to \$20.000 in July. European FeV prices ranged from \$35.556 to \$37.556 per kilogram in August, as compared with \$35.857 to \$36.714 in July. Vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) prices ranged from \$6.639 to \$7.139 per pound in August, as compared with \$7.571 to \$7.957 in July.

Highveld Steel and Vanadium Corp. Ltd. (South Africa) expected its vanadium production to drop in the second half of 2006 as they proceeded with furnace upgrades to increase steel

and vanadium output. In addition, new equipment was being installed to upgrade and debottleneck the V<sub>2</sub>O<sub>5</sub> plant. Xstrata Plc. (South Africa) focused on increased V<sub>2</sub>O<sub>5</sub> output by increasing kiln and beneficiation efficiency, and its V<sub>2</sub>O<sub>5</sub> output rose 1.3% in the first half of 2006 over 2005 levels. Xstrata expected to consider a brownfield expansion at its Rhovan Mine (South Africa) in the second half of 2006 that could increase V<sub>2</sub>O<sub>5</sub> production capacity by 3,850 metric tons per year (t/yr) (8.5 million pounds per year) from current capacity of about 10,600 t/yr (Ryan's Notes, 2006a).

### References Cited

- Ryan's Notes, 2006a, V producers weather short-term output losses: Ryan's Notes, v. 12, no. 31, August 7, p. 3.  
Ryan's Notes, 2006b, [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	July		August	
			Consumption	Stocks	Consumption	Stocks
Ferrovandium <sup>2</sup>	3,430,000	335,000	282,000 <sup>r</sup>	308,000 <sup>r</sup>	294,000	308,000
Vanadium-aluminum alloy	W	W	W	W	W	W
Other <sup>3</sup>	260,000	25,700	22,500 <sup>r</sup>	17,400 <sup>r</sup>	18,800	32,000
Total	3,690,000	361,000	305,000	325,000 <sup>r</sup>	313,000	340,000

<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		
		July	August	Year to date
Steel:				
Carbon	902,000	81,000 <sup>r</sup>	84,600	644,000
High-strength low-alloy	1,060,000	87,800	85,900	694,000
Stainless and heat-resisting	59,900	5,060	5,060	40,500
Full alloy	1,000,000	84,500	83,400	693,000
Tool	401,000	23,500	35,200	217,000
Total steel	3,430,000	282,000 <sup>r</sup>	294,000	2,290,000
Superalloys	9,610	313 <sup>r</sup>	303	2,800
Miscellaneous and unspecified <sup>2</sup>	253,000	22,300 <sup>r</sup>	18,600	246,000
Total consumption	3,690,000	305,000	313,000	2,540,000

<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
<b>2006:</b>				
May	--	--	5,590	239,000
June	102,000	312,000	35,600	1,330,000
<b>July:</b>				
Brazil	--	--	--	--
United Kingdom	--	--	281	51,400
Total	--	--	281	51,400
Year to date	102,000	312,000	67,500	3,120,000
<b>Exports:</b>				
2005	14,100,000	42,000,000	293,000	1,640,000
<b>2006:</b>				
May	857,000	4,030,000	46,400	1,620,000
June	1,650,000	6,620,000	32,900	1,100,000
<b>July:</b>				
Belgium	24,100	314,000	--	--
Brazil	7,090	35,700	--	--
Canada	145,000	652,000	--	--
China	20,100	111,000	--	--
Germany	6,300	87,400	1,870	26,000
India	7,480	41,600	--	--
Japan	34,700	451,000	2,430	35,700
Malaysia	4,970	26,000	--	--
Mexico	840,000	2,710,000	--	--
Taiwan	8,510	44,500	--	--
Thailand	54,000	265,000	--	--
United Kingdom	19,200	106,000	21,900	696,000
Total	1,170,000	4,850,000	26,200	757,000
Year to date	13,600,000	39,200,000	312,000	7,690,000

-- 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>						
May	268,000	11,400,000	211,000	4,470,000	--	--
June	216,000	9,560,000	193,000	4,570,000	31,900	963,000
<b>July:</b>						
Austria	23,200	883,000	--	--	--	--
China			51,800	1,390,000	--	--
Czech Republic	64,800	2,910,000	--	--	--	--
Germany	81	8,860	--	--	--	--
Korea, Republic of	30,600	1,170,000	--	--	--	--
Russia	--	--	56,500	1,010,000	--	--
South Africa	--	--	187,000	4,500,000	--	--
Total	119,000	4,970,000	296,000	6,900,000	--	--
Year to date	1,270,000	56,300,000	1,460,000	42,800,000	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>						
May	53,400	1,720,000	59,300	1,180,000	57,200	518,000
June	22,200	752,000	--	--	74,100	727,000
<b>July:</b>						
Brazil	8,090	348,000	--	--	2,720	39,900
Canada	14,100	306,000	--	--	63,800	574,000
Denmark	--	--	920	6,150	--	--
Mexico	--	--	--	--	27,100	97,000
Trinidad and Tobago	--	--	725	19,800	--	--
United Kingdom	--	--	--	--	910	8,100
Total	22,100	654,000	1,650	25,900	94,500	719,000
Year to date	274,000	8,000,000	201,000	4,210,000	1,000,000	5,570,000

-- 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	4,360,000	\$9,820,000	6,850,000	\$1,100,000
<b>2006:</b>				
May	--	--	92,400	97,500
June	--	--	49,700	79,100
July, Canada	--	--	93,300	98,800
Year to date	128,000	1,450,000	688,000	704,000

-- 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:				
May	4	8,460	16,700	341,000
June	12	17,300	11,000	283,000
July, South Africa	--	--	9,420	170,000
Year to date	16	25,800	88,900	2,550,000

-- 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.