

Mineral Industry Surveys

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VANADIUM IN MARCH 2005

Reported domestic consumption of vanadium in March 2005 was about 8% more than that of the previous month and was about 22% more than that of March 2004, according to the U.S. Geological Survey. Consumer stocks of vanadium, in all forms, were 398 metric tons (t) at the beginning of 2005 and 371 t at the end of March.

According to Ryan's Notes (2005b), U.S. ferrovanadium (FeV) prices ranged from \$35.222 to \$36.556 per pound of vanadium content in March, as compared with \$26.188 to \$26.594 in February. European FeV prices ranged from \$82.111 to \$88.000 per kilogram (kg) in March, as compared with \$52.250 to \$54.250 in February. Vanadium pentoxide (V_2O_5) prices ranged from \$16.833 to \$18.222 per pound in March as compared with \$10.938 to \$11.438 in February.

Prices of FeV in both the United States and Europe shot up in March, with the U.S. price hitting a 16-year high. The U.S. FeV price rose to \$40 per pound, a price last seen in April 1989. Consumers and producers agreed that the price spike was due to a shortage of V_2O_5 feed material. Prices for FeV in Europe skyrocketed to near \$100 per kg backed by steady consumer demand and persistent rumors of operational problems at the Rhovan vanadium production facility in South Africa. A spokesman for Rhovan's parent company, Swiss-based metals group Xstrata Plc., reported that scheduled maintenance on the facility's kiln had been brought forward to late February but had been completed, and the plant now was operating normally (Platts Metals Week, 2005).

The rapid rise of FeV prices caught buyers completely off guard. While demand was strong worldwide, the drawdown of Xstrata's excessive stocks by the end of 2004, the reduced production at Russian producer Vanady Tula, and the earlier-than-expected kiln maintenance at the Rhovan facility in South

Africa created the current situation by reducing V_2O_5 supply. While Highveld Steel and Vanadium Corp. Ltd. and Xstrata could increase output, there were no signs that either company intended to do so. Since prices escalated so quickly, producers watched to see if substitution was starting to take place. Ferrocolumbium sellers confirmed that they were fielding more questions about prices and specifications, but they had picked up little extra business (Ryan's Notes, 2005a).

Austrian ferroalloys producer Treibacher Industrie AG had one of its best years in 2004 as its profits almost doubled. With FeV as their primary product, all time high prices, and no new production scheduled to come online, Treibacher expected to do even better in 2005. While their plant was producing at a rate of 4,500 metric tons per year (t/yr) of FeV against a 7,000-t/yr capacity, Treibacher played down speculation that it would boost production owing to a shortage of V_2O_5 and vanadium-bearing slag. Even if additional slag was available, production could not increase owing to a production bottleneck, which would require major capital investment to correct. Expansion was considered, but the company did not believe vanadium prices would hold at current levels over the long term (Metal Bulletin, 2005).

References Cited

- Platts Metals Week, 2005, Ferrovanadium shoots to near 16-year highs: Platts Metals Week, v. 76, no. 12, March 21, p. 1.
Metal Bulletin, 2005, Treibacher rides the noble alloys wave: Metal Bulletin, no. 8886, March 28, p. 12.
Ryan's Notes, 2005a, Ferrovanadium tops \$100 per kg: Ryan's Notes, v. 11, no. 13, March 28, p. 1.
Ryan's Notes, 2005b, [untitled]: Ryan's Notes, v. 11, no. 14, April 4, p. 10.

TABLE 1
U.S. CONSUMPTION AND CONSUMER STOCKS OF VANADIUM, BY FORM¹

(Kilograms, contained vanadium)

	2004 ^p		2005			
	Consumption	Stocks	February		March	
			Consumption	Stocks	Consumption	Stocks
Ferrovandium ²	3,510,000	298,000	293,000	296,000	311,000	280,000
Vanadium-aluminum alloy	W	W	W	W	W	W
Other ³	214,000	101,000	19,200 ^r	108,000	27,800	91,300
Total	3,730,000	398,000	312,000	404,000	338,000	371,000

^pPreliminary. ^rRevised. W Withheld to avoid disclosing company proprietary data; included with "Other."

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

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

³Includes 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 USE¹

(Kilograms, contained vanadium)

	2004 ^p	2005		
		February	March	Year to date
Steel:				
Carbon	996,000	90,000	85,200	275,000
High-strength low-alloy	1,150,000	92,200	99,600	284,000
Stainless and heat-resisting	64,500	4,880 ^r	4,880	14,600
Full alloy	1,060,000	83,500	87,700	260,000
Tool	238,000	21,900	33,100	89,600
Total steel	3,510,000	293,000	310,000	923,000
Superalloys	8,350	833 ^r	816	2,430
Miscellaneous and unspecified ²	211,000	18,700	27,200	61,800
Total consumption	3,730,000	312,000	338,000	987,000

^pPreliminary. ^rRevised.

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

²Includes 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 SCRAP¹

(Kilograms, gross weight)

	Aluminum-vanadium master alloy		Vanadium metal, including waste and scrap	
	Quantity	Value	Quantity	Value
Imports for consumption:				
2004	19,100	\$66,700	31,200	\$1,710,000
2005:				
January	--	--	3,110	480,000
February:				
Germany	--	--	475	22,700
United Kingdom	1	3,770	--	--
Total	1	3,770	475	22,700
Year to date	1	3,770	3,590	503,000
Exports:				
2004	10,900,000	24,000,000	522,000	7,760,000
2005:				
January	1,260,000	2,890,000	29,900	679,000
February:				
Australia	623	3,960	--	--
Belgium	--	--	5,000	185,000
Canada	149,000	393,000	--	--
France	18,700	63,700	--	--
Germany	--	--	58	59,200
India	5,560	26,900	--	--
Israel	--	--	10	14,200
Japan	53,300	223,000	12,100	486,000
Malaysia	2,580	12,400	--	--
Mexico	387,000	802,000	--	--
United Kingdom	31,000	135,000	18,500	407,000
Taiwan	10,100	49,700	--	--
Thailand	19,300	89,100	--	--
Total	677,000	1,800,000	35,600	1,150,000
Year to date	1,940,000	4,690,000	65,500	1,830,000

-- Zero.

¹Data 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 VANADIUM¹

(Kilograms, contained vanadium)

	Ferrovanadium		Vanadium pentoxide (anhydride) ²		Other oxides and hydroxides of vanadium	
	Quantity	Value	Quantity	Value	Quantity	Value
Imports for consumption:						
2004	3,020,000	\$62,100,000	1,040,000	\$8,600,000	120,000	\$1,650,000
2005:						
January	215,000	9,790,000	87,500	1,610,000	8,390	321,000
February:						
Austria	30,500	1,560,000	--	--	8,400	361,000
Canada	8,350	123,000	--	--	--	--
China	40,000	60,100	15,700	577,000	--	--
Czech Republic	880,000	8,980,000	--	--	--	--
Germany	217	16,500	--	--	--	--
South Africa	--	--	100,000	2,750,000	--	--
Switzerland	47,100	2,050,000	--	--	--	--
Taiwan	--	--	14,500	285,000	--	--
Total	1,010,000	12,800,000	130,000	3,610,000	8,400	361,000
Year to date	1,220,000	22,600,000	218,000	5,220,000	16,800	682,000
Exports:						
2004	267,000	8,770,000	240,000	2,090,000	584,000	4,140,000
2005:						
January	266	5,350	8,000	156,000	63,300	613,000
February:						
Canada	--	--	--	--	507	12,300
Germany	--	--	1,720	23,600	--	--
Italy	--	--	3,280	76,500	--	--
Mexico	9,700	550,000	--	--	--	--
Russia	--	--	--	--	57,600	1,020,000
Total	9,700	550,000	5,010	100,000	58,100	1,030,000
Year to date	9,970	556,000	13,000	256,000	121,000	1,640,000

-- Zero.

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

²May include catalysts containing vanadium pentoxide.

Source: U.S. Census Bureau.

TABLE 5
U.S. IMPORTS FOR CONSUMPTION OF VANADIUM-BEARING ASH, SLAG¹

(Kilograms, contained vanadium pentoxide)

	Ash and residues		Ash and residues (not from the manufacture of iron and steel)		Slag, from the manufacture of iron and steel	
	Quantity	Value	Quantity	Value	Quantity	Value
2004	4,260,000	\$8,520,000	11,100,000	\$2,000,000	244,000,000	\$10,400,000
2005:						
January	321,000	189,000	264,000	63,900	--	--
February:						
Canada	--	--	499,000	98,800	--	--
Mexico	129,000	239,000	--	--	--	--
Spain	--	--	--	--	149,000	522,000
Total	129,000	239,000	499,000	98,800	149,000	522,000
Year to date	450,000	729,000	763,000	163,000	149,000	522,000

-- Zero.

¹Data 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 CHEMICALS¹

(Kilograms, contained vanadium)

	Sulfates		Vanadates	
	Quantity	Value	Quantity	Value
2004	500	\$19,100	74,700	\$1,150,000
2005:				
January	--	--	320	21,700
February:				
Germany	--	--	330	19,300
Total	--	--	330	19,300
Year to date	--	--	650	41,000

-- Zero.

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

Source: U.S. Census Bureau.