

# Mineral Industry Surveys

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## VANADIUM IN DECEMBER 2012

Reported domestic consumption of vanadium in December 2012 was slightly less than that of the previous month, and was 18% less than that of December 2011. Reported domestic consumption of vanadium in 2012 was 26% less than that of 2011. Consumer stocks of vanadium, in all forms, were 185 metric tons (t) at the beginning of 2012 and 227 t at yearend 2012.

Ryan's Notes U.S. ferrovanadium (FeV) prices ranged from \$12.964 to \$14.000 per pound of vanadium content in December, compared with \$12.200 to \$14.375 in November. European FeV prices ranged from \$27.000 to \$28.000 per kilogram in December, compared with \$23.500 to \$24.500 in November. Vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) prices ranged from \$5.964 to \$6.500 per pound in December, compared with \$6.000 to \$6.500 in November.

American Vanadium Corp. (Vancouver, British Columbia, Canada) announced that it submitted a plan of operations for its Gibellini project in Nevada to the U.S. Bureau of Land Management. The plan detailed mine design, processing facilities, and eventual reclamation plans. The plan also included a micro grid design utilizing solar power generation and a vanadium battery which was expected to be capable of powering the mine off-grid (American Vanadium Corp., 2012).

### Reference Cited

American Vanadium Corp., 2012, American Vanadium announces submission of the plan of operations to the Bureau of Land Management: Vancouver, British Columbia, Canada, American Vanadium Corp., December 24. (Accessed March 8, 2013, at <http://www.americanvanadium.com/cms-assets/documents/92116-151238.avc-nr-dec-poo-final12.24.12.pdf>).

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

(Kilograms, contained vanadium)

	2011		2012					
	Consumption	Stocks	November		December		January–December	
			Consumption <sup>r</sup>	Stocks	Consumption	Stocks	Consumption	Stocks
Ferrovandium <sup>2</sup>	4,240,000	122,000	237,000	166,000 <sup>r</sup>	230,000	171,000	2,960,000	171,000
Vanadium-aluminum alloy and other forms <sup>3</sup>	882,000	63,300	62,600	65,800	63,400	56,400	818,000	56,400
Total	5,120,000	185,000	300,000	232,000 <sup>r</sup>	293,000	227,000	3,780,000	227,000

<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 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)

	2011	2012		
		November	December	January–December
Steel:				
Carbon	677,000	40,700 <sup>r</sup>	44,500	602,000
Full alloy	2,120,000	121,000 <sup>r</sup>	110,000	1,450,000
High-strength low-alloy	W	W	W	W
Stainless and heat resisting	61,500	5,110	5,120	61,500
Tool	W	W	W	W
Total steel	2,860,000	167,000 <sup>r</sup>	160,000	2,120,000
Superalloys	15,300	455	455	5,390
Miscellaneous and unspecified <sup>2</sup>	W	W	W	W
Total	5,120,000	300,000 <sup>r</sup>	293,000	3,780,000

<sup>r</sup>Revised. 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 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>				
2011	278,000	\$1,210,000	43,900	\$1,930,000
2012:				
November	7,140	40,000	12,100	356,000
December, Germany	--	--	9,590	267,000
January–December	103,000	681,000	154,000	4,840,000
<b>Exports:</b>				
2011	920,000	6,930,000	102,000	3,340,000
2012:				
November	2,360,000	6,370,000	81	3,120
December:				
Canada	235,000	568,000	--	--
Colombia	20,400	62,800	--	--
Japan	5,680	140,000	10,000	253,000
Mexico	1,600,000	4,150,000	--	--
Netherlands	1,390	18,000	--	--
United Kingdom	14,100	63,100	--	--
Total	1,880,000	5,010,000	10,000	253,000
January–December	23,900,000	65,300,000	26,000	698,000

-- 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>						
2011	2,220,000	\$64,600,000	2,800,000	\$45,800,000	886,000	\$17,400,000
<b>2012:</b>						
November	279,000	7,040,000	87,300	1,430,000	--	--
<b>December:</b>						
Austria	28,800	793,000	--	--	8,870	180,000
Canada	45,400	1,230,000	--	--	--	--
Czech Republic	194,000	4,660,000	--	--	--	--
Korea, Republic of	16,200	388,000	--	--	--	--
Russia	--	--	94,500	745,000	--	--
South Africa	--	--	59,800	696,000	--	--
Total	285,000	7,080,000	154,000	1,440,000	8,870	180,000
January–December	4,190,000	108,000,000	1,640,000	26,500,000	905,000	12,800,000
<b>Exports:</b>						
2011	314,000	9,970,000	88,700	1,410,000	254,000	2,390,000
<b>2012:</b>						
November	30,300	669,000	8,870	172,000	44,600	696,000
<b>December:</b>						
Canada	20,500	510,000	--	--	--	--
China	--	--	--	--	646	5,750
Colombia	--	--	--	--	2,970	13,900
Germany	--	--	--	--	11,200	155,000
Japan	--	--	--	--	4,090	72,900
Mexico	19,000	369,000	--	--	--	--
Peru	510	16,900	--	--	--	--
Thailand	--	--	200	7,200	--	--
Total	40,000	895,000	200	7,200	18,900	248,000
January–December	454,000	11,000,000	61,800	1,160,000	287,000	3,540,000

-- 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, unless otherwise specified)

	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 (gross weight)	Value
	2011	1,420,000	\$1,570,000	89,600	\$479,000	189,000,000
2012:						
November	154,000	1,140,000	--	--	189,000	671,000
December:						
Austria	--	--	--	--	7,440	99,100
Canada	133,000	593,000	--	--	79,100	52,600
Mexico	287,000	3,030,000	--	--	27,400	26,400
South Africa	--	--	--	--	80,000	1,030,000
Thailand	6,850	55,100	--	--	--	--
Total	427,000	3,680,000	--	--	194,000	1,210,000
January–December	2,040,000	9,880,000	175,000	141,000	108,000,000	14,700,000

-- 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
2011	42,200	\$738,000	303,000	\$7,400,000
2012:				
November	5,000	43,500	18,900	273,000
December:				
Austria	--	--	2,040	47,600
China	1	5,750	--	--
Japan	--	--	25	4,000
Total	1	5,750	2,060	51,600
January–December	29,100	370,000	280,000	6,190,000

-- 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.