

Mineral Industry Surveys

For information, contact:

Désirée E. Polyak, Vanadium Commodity Specialist
U.S. Geological Survey
989 National Center
Reston, VA 20192
Telephone: (703) 648-4909, Fax: (703) 648-7757
Email: dpolyak@usgs.gov

Benjamin N. Bryden (Data)
Telephone: (703) 648-7953
Fax: (703) 648-7975
Email: bbryden@usgs.gov

Internet: <http://minerals.usgs.gov/minerals>

VANADIUM IN JULY 2014

Reported domestic consumption of vanadium in July 2014 was slightly more than that of the previous month and was 5% more than that of July 2013. Consumer stocks of vanadium, in all forms, were 166 metric tons (t) at yearend 2013 and 159 t at the end of July.

According to Ryan's Notes, U.S. ferrovanadium (FeV) prices ranged from \$12.517 to \$13.167 per pound of vanadium content in July, compared with \$13.050 to \$13.688 in June. European FeV prices ranged from \$24.878 to \$25.422 per kilogram in July, compared with \$26.163 to \$26.575 in June. Vanadium pentoxide (V₂O₅) prices ranged from \$5.500 to \$6.000 per pound in both June and July.

Imergy Power Systems Inc. announced that it has developed an exclusive process for producing high performance vanadium redox flow batteries with recycled vanadium from fly ash, slag, and other forms of environmental waste. The company announced that the vanadium flow batteries that they were able to produce using their new technology would use 98% pure

vanadium, rather than the 99% or higher level that other vanadium battery manufactures use (Imergy Power Systems Inc., 2014).

List services and Web feed subscribers are the first to receive notification of USGS minerals information publications and data releases. For information on how to subscribe, go to <http://minerals.usgs.gov/minerals/>.

Reference Cited

Imergy Power Systems Inc., 2014, Imergy Power Systems achieves technological breakthrough in energy storage—Flow batteries made from recycled vanadium: Fremont, CA, Imergy Power Systems Inc. news release, July 9, 2 p. (Accessed October 22, 2014, at <http://www.imergypower.com/2014/07/imergy-power-systems-achieves-technological-breakthrough-energy-storage-flow-batteries-made-recycled-vanadium/>.)

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

(Kilograms, contained vanadium)

	2013		June		2014		January–July	
	January–December		Consumption	Stocks	July		Consumption	Stocks
	Consumption	Stocks			Consumption	Stocks		
Ferrovandium ²	2,810,000	93,400	242,000 ^r	98,400 ^r	245,000	88,100	1,640,000	88,100
Vanadium-aluminum alloy and other forms ³	812,000	72,600	66,500	70,900	65,900	70,900	471,000	70,900
Total	3,620,000	166,000	308,000 ^r	169,000	311,000	159,000	2,110,000	159,000

^rRevised.

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 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 USE¹

(Kilograms, contained vanadium)

	2013		2014	
	January–December	June	July	January–July
Steel:				
Carbon	W	45,200 ^r	48,000	301,000
Full alloy	1,430,000	120,000 ^r	120,000	849,000
High-strength low-alloy	W	W	W	W
Stainless and heat resisting	59,200	4,940	4,940	34,500
Tool	W	W	W	W
Total steel	1,490,000	170,000 ^r	173,000	1,180,000
Superalloys	2,540	W	W	970
Miscellaneous and unspecified ²	W	W	W	W
Total	3,620,000	308,000 ^r	311,000	2,110,000

^rRevised. W Withheld to avoid disclosing company proprietary data; included in "Total."

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 ALLOYS AND VANADIUM
METAL, INCLUDING WASTE AND SCRAP¹

(Kilograms, gross weight)

	Aluminum-vanadium master alloy ²		Vanadium metal, including waste and scrap	
	Quantity	Value	Quantity	Value
Imports for consumption:				
2013	169,000	\$4,660,000	35,300	\$1,310,000
2014:				
June	56,800	1,280,000	453	19,900
July:				
Australia	55,800	1,300,000	--	--
China	24,100	554,000	--	--
Germany	1,510	77,300	--	--
Russia	218	25,400	--	--
Total	81,600	1,960,000	--	--
January–July	330,000	7,560,000	89,900	2,120,000
Exports:				
2013	347,000	9,800,000	57,500	1,700,000
2014:				
June	52,300	1,320,000	42	5,500
July:				
Belgium	15,400	544,000	--	--
Germany	495	19,100	--	--
Kazakhstan	13,200	553,000	--	--
Korea	257	9,920	--	--
Russia	24,500	893,000	--	--
Total	53,800	2,020,000	--	--
January–July	258,000	7,710,000	6,840	397,000

-- Zero

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

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

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:						
2013	3,710,000	\$89,800,000	2,040,000	\$29,900,000	205,000	\$2,560,000
2014:						
June	363,000	9,750,000	318,000	3,790,000	--	--
July:						
Austria	12,200	554,000	--	--	8,370	183,000
Canada	84,600	2,110,000	--	--	6,340	7,270
China	--	--	40,100	975,000	--	--
Czech Republic	145,000	3,560,000	--	--	--	--
Germany	--	--	17,900	242,000	--	--
Japan	9,090	227,000	--	--	--	--
Korea, Republic of	79,200	2,040,000	--	--	--	--
Russia	--	--	132,000	1,300,000	--	--
South Africa	--	--	96,700	1,610,000	3,280	63,800
Switzerland	--	--	10	2,580	--	--
Total	330,000	8,500,000	286,000	4,130,000	18,000	254,000
January–July	2,250,000	56,800,000	1,880,000	26,100,000	60,900	1,260,000
Exports:						
2013	395,000	8,790,000	89,600	1,340,000	448,000	4,850,000
2014:						
June	30,600	767,000	15,400	245,000	40,500	644,000
July:						
Argentina	--	--	300	11,100	--	--
Canada	15,400	379,000	--	--	--	--
Estonia	--	--	20,000	255,000	--	--
Netherlands	--	--	--	--	19,100	308,000
Saudi Arabia	--	--	--	--	386	3,430
Total	15,400	379,000	20,300	266,000	19,500	311,000
January–July	210,000	4,370,000	82,100	1,290,000	205,000	2,770,000

-- 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, unless otherwise specified)

	Ash and residues ²		Slag, from the manufacture of iron and steel	
	Quantity	Value	Quantity (gross weight)	Value
2013	4,190,000	\$22,500,000	66,100,000	\$8,480,000
2014:				
June	790,000	4,970,000	9,020,000	350,000
July:				
Canada	427,000	1,860,000	22,900,000	1,580,000
Mexico	--	--	18,500	7,900
Russia	88,000	1,060,000	--	--
Total	515,000	2,920,000	22,900,000	1,590,000
January–July	3,490,000	22,000,000	60,400,000	3,790,000

-- Zero.

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

²Includes Harmonized Tariff Schedule code 2620.40.0030 and 2620.99.1000.

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
2013	29,500	\$306,000	276,000	\$5,700,000
2014:				
June	62	2,960	30,800	594,000
July:				
China	4,810	48,500	6,620	194,000
Germany	--	--	266	8,370
India	--	--	14	2,500
Japan	300	16,900	--	--
South Africa	--	--	20,700	280,000
United Kingdom	--	--	5,480	176,000
Total	5,110	65,400	33,100	662,000
January–July	18,400	200,000	144,000	3,100,000

-- Zero.

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

Source: U.S. Census Bureau.