

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
E-mail: dpolyak@usgs.gov

Jackie Arbour (Data)
Telephone: (703) 648-4792
Fax: (703) 648-7975
E-mail: jarbour@usgs.gov

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

VANADIUM IN APRIL 2008

Reported domestic consumption of vanadium in April 2008 was slightly more than that of the previous month, and was about 22% more than that of April 2007, according to the U.S. Geological Survey. Consumer stocks of vanadium, in all forms, were 295 metric tons (t) at the beginning of 2008 and 277 t at the end of April.

According to Ryan's Notes (2008b), U.S. ferrovanadium (FeV) prices ranged from \$37.167 to \$38.444 per pound of vanadium content in April, as compared with \$40.000 to \$41.188 in March. European FeV prices ranged from \$60.889 to \$63.444 per kilogram in April, as compared with \$76.000 to \$80.000 in March. Vanadium pentoxide (V₂O₅) prices ranged from \$13.211 to \$13.900 per pound in April, as compared with \$14.063 to \$14.688 in March.

Evrax Group S.A. (Russia) announced that it found a buyer for vanadium assets it agreed to divest when it acquired 54.1% of Highveld Steel and Vanadium Corp. Ltd. (South Africa) in May 2007 (AZo Journal of Materials Online, 2007). Duferco Investment Partners (Switzerland) agreed to pay \$160 million for Highveld's shares of the Mapochs Mine, Highveld's Vanchem operations, and Highveld's 50% stake in South Africa Japan Vanadium. Highveld entered into definitive agreements

with Vanchem Vanadium Products Ltd., a special purpose company controlled by Duferco. The Mapochs Mine produces magnetite ore which is supplied to Highveld's steelworks. Vanadium-bearing pig iron slag from Highveld and magnetite ore from the Mapochs Mine are used by Vanchem to produce vanadium products (Ryan's Notes, 2008a).

The European Commission (EC) approved Evrax's merger with Highveld on the condition that it sell the vanadium assets. The EC calculated that after divesting Highveld's interest in the Mapochs Mine, Evrax would control less than 40% of global vanadium feedstock supply. The EC commented that the sale of Highveld's vanadium oxides and FeV business would eliminate the merged company's ability and incentive to reduce output (Ryan's Notes, 2008a).

References Cited

- AZo Journal of Materials Online, 2007, Evrax take stake in Highveld Steel and Vanadium: AZo Journal of Materials Online, May 7, 1 p. (Accessed January 14, 2009, at <http://www.azom.com/news.asp?newsID=8449>.)
- Ryan's Notes, 2008a, Evrax divests some V assets: Ryan's Notes, v. 14, no. 17, April 28, p. 2.
- Ryan's Notes, 2008b, [untitled]: Ryan's Notes, v. 14, no. 18, May 5, p. 10.

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

(Kilograms, contained vanadium)

| | 2007 | | 2008 | | | | | |
|---------------------------|-------------|---------|-------------|---------|-------------|---------|--------------|---------|
| | | | March | | April | | Year to date | |
| | Consumption | Stocks | Consumption | Stocks | Consumption | Stocks | Consumption | Stocks |
| Ferrovandium ² | 3,320,000 | 253,000 | 354,000 | 223,000 | 355,000 | 236,000 | 1,400,000 | 236,000 |
| Vanadium-aluminum alloy | W | W | W | W | W | W | W | W |
| Other ³ | 809,000 | 42,400 | 77,200 | 40,900 | 77,200 | 40,900 | 289,000 | 40,900 |
| Total | 4,130,000 | 295,000 | 431,000 | 264,000 | 432,000 | 277,000 | 1,690,000 | 277,000 |

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)

| | 2007 | 2008 | | |
|--|-----------|---------|---------|--------------|
| | | March | April | Year to date |
| Steel: | | | | |
| Carbon | 882,000 | 64,200 | 68,400 | 246,000 |
| High-strength low-alloy | 1,270,000 | 132,000 | 132,000 | 528,000 |
| Stainless and heat-resisting | 61,400 | 5,110 | 5,110 | 20,400 |
| Full alloy | 1,180,000 | 176,000 | 173,000 | 703,000 |
| Tool | 420,000 | 21,400 | 21,400 | 85,500 |
| Total steel | 3,810,000 | 399,000 | 400,000 | 1,580,000 |
| Superalloys | 7,180 | 559 | 397 | 1,810 |
| Miscellaneous and unspecified ² | 314,000 | 31,500 | 31,500 | 106,000 |
| Total consumption | 4,130,000 | 431,000 | 432,000 | 1,690,000 |

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: | | | | |
| 2007 | 1,110,000 | \$2,110,000 | 3,620 | \$198,000 |
| 2008: | | | | |
| February | 44,600 | 140,000 | 2 | 5,300 |
| March: | -- | -- | -- | -- |
| Year to date | 44,600 | 140,000 | 2 | 5,300 |
| Exports: | | | | |
| 2007 | 21,100,000 | 72,700,000 | 49,400 | 2,690,000 |
| 2008: | | | | |
| February | 2,530,000 | 8,030,000 | 9,480 | 1,010,000 |
| March: | | | | |
| Brazil | 1,050 | 24,700 | -- | -- |
| Canada | 859,000 | 2,590,000 | -- | -- |
| Chile | 5,370 | 69,800 | -- | -- |
| Costa Rica | 287 | 8,450 | -- | -- |
| Hong Kong | 882 | 7,380 | -- | -- |
| Japan | 5,820 | 171,000 | -- | -- |
| Mexico | 1,060,000 | 2,940,000 | -- | -- |
| Switzerland | 96 | 2,820 | -- | -- |
| United Kingdom | 1,900 | 9,890 | -- | -- |
| Total | 1,930,000 | 5,830,000 | -- | -- |
| Year to date | 6,150,000 | 19,600,000 | 16,600 | 1,280,000 |

-- 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: | | | | | | |
| 2007 | 2,220,000 | \$81,300,000 | 2,390,000 | \$46,800,000 | 41,900 | \$1,400,000 |
| 2008: | | | | | | |
| February | 384,000 | 14,400,000 | 319,000 | 6,050,000 | 4,790 | 81,100 |
| March: | | | | | | |
| Austria | 15,900 | 643,000 | -- | -- | 8,350 | 473,000 |
| Canada | 23,500 | 1,120,000 | -- | -- | -- | -- |
| China | -- | -- | 65,000 | 2,000,000 | -- | -- |
| Germany | 36 | 2,990 | -- | -- | -- | -- |
| Korea, Republic of | 140,000 | 7,440,000 | -- | -- | -- | -- |
| Mexico | 2,940 | 126,000 | -- | -- | -- | -- |
| South Africa | -- | -- | 80,600 | 2,520,000 | -- | -- |
| Taiwan | 7,950 | 286,000 | -- | -- | -- | -- |
| Total | 191,000 | 9,620,000 | 146,000 | 4,520,000 | 8,350 | 473,000 |
| Year to date | 858,000 | 35,100,000 | 951,000 | 19,100,000 | 42,200 | 1,190,000 |
| Exports: | | | | | | |
| 2007 | 206,000 | 5,810,000 | 327,000 | 5,460,000 | 626,000 | 7,530,000 |
| 2008: | | | | | | |
| February | 40,400 | 1,510,000 | 17,600 | 329,000 | 158,000 | 1,230,000 |
| March: | | | | | | |
| Canada | 27,300 | 1,120,000 | -- | -- | 1,130 | 3,630 |
| France | -- | -- | 17,900 | 716,000 | -- | -- |
| Germany | -- | -- | -- | -- | 10,500 | 163,000 |
| Mexico | 22,000 | 732,000 | -- | -- | -- | -- |
| Russia | -- | -- | 41,300 | 965,000 | 88,300 | 786,000 |
| Trinidad and Tobago | 7,950 | 616,000 | -- | -- | -- | -- |
| Total | 57,200 | 2,470,000 | 59,200 | 1,680,000 | 100,000 | 953,000 |
| Year to date | 104,000 | 4,290,000 | 137,000 | 2,890,000 | 347,000 | 3,310,000 |

-- 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) | |
|--------------|------------------|-------------|--|-----------|
| | Quantity | Value | Quantity | Value |
| 2007 | 1,000,000 | \$9,960,000 | 641,000 | \$913,000 |
| 2008: | | | | |
| February | 36,400 | 369,000 | 37,500 | 47,200 |
| March: | | | | |
| Canada | -- | -- | 75,100 | 67,100 |
| Mexico | 173,000 | 2,030,000 | -- | -- |
| Total | 173,000 | 2,030,000 | 75,100 | 67,100 |
| Year to date | 232,000 | 2,570,000 | 150,000 | 161,000 |

-- 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 |
| 2007 | 80,200 | \$783,000 | 211,000 | \$3,550,000 |
| 2008: | | | | |
| February | -- | -- | 11,400 | 206,000 |
| March: | | | | |
| Germany | -- | -- | -- | -- |
| Japan | -- | -- | 45 | 9,380 |
| South Africa | -- | -- | 25,600 | 374,000 |
| Total | -- | -- | 25,700 | 383,000 |
| Year to date | 1 | 11,000 | 60,200 | 972,000 |

-- Zero.

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

Source: U.S. Census Bureau.