

# Mineral Industry Surveys

## For information, contact:

M. Michael Miller, Fluorspar Commodity Specialist  
U.S. Geological Survey  
983 National Center  
Reston, VA 20192  
Telephone: (703) 648-7716, Fax: (703) 648-7757  
E-mail: mmiller1@usgs.gov

Barbara McNair (Data)  
Telephone: (703) 648-7952  
Fax: (703) 648-7975  
E-mail: bmcnair@usgs.gov

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

## FLUORSPAR IN THE SECOND QUARTER 2004

Reported fluorspar consumption in the second quarter was 190,000 metric tons (t), about a 14% increase compared with the previous quarter and about 36% higher compared with the figure for the second quarter of 2003. Consumption of fluorspar for hydrofluoric acid (HF) and aluminum fluoride was 169,000 t, a 15% increase compared with the previous quarter and about 44% higher compared with the second quarter of 2003. Imports of fluorspar were 101,000 t, a decrease of 55% compared with the previous quarter but about 12% higher than in the second quarter of 2003.

### Industry News

In June, China announced the release of another 375,000 t of fluorspar in round two of its auction of export licenses for 2004. Following its usual pattern, China divided the quota into public (150,000 t) and invitational bidding (225,000 t). The average export license fee for the public bids was about \$92 per ton and the average license fee for the invitational bids was \$37 per ton, for a weighted average of \$61 per ton.

Tiberon Minerals Ltd. announced that metallurgical test work performed by SGS Lakefield Research on a composite master sample from its Nui Phao tungsten-fluorspar deposit in Vietnam returned results significantly better than results obtained in its prefeasibility study. Recoveries of acid-grade fluorspar were 78% compared with 70% in the prefeasibility study. The recovery rates for tungsten, bismuth, and copper also were higher, but the recovery rate for gold was lower. Tiberon also announced that final-pilot plant test work would be delayed up to 6 months because of problems with the pilot feed sample. Remaining pilot-plant work was put on hold while additional drilling was performed to acquire new samples for testing (Tiberon Minerals Ltd., 2004<sup>§1</sup>).

Work on the Speewah fluorspar project in Australia continued. Progress was made on engineering, environmental studies, and metallurgical test work. A number of objections were made by affected parties on the license application for the 40-kilometer access road, but the problems were resolved and

Government approval was expected within a couple of months. Metallurgical test work was completed, which allowed the finalization of specifications for the process plant equipment. Proven reserves identified to date are only sufficient for a 5-year mine life. The company hoped to discover additional reserves through additional exploration drilling to justify an economical project life of 10 years. Cost projections have increased because of the need for additional drilling, increased infrastructure costs, and adverse movements in the A\$-US\$ exchange rate. As a result, the joint-venture partners (Doral Mineral Industries Ltd. and Minerals Securities Ltd.) decided to consult with potential customers on pricing and demand before continuing work on the feasibility study. It was anticipated that liaison work with customers could be undertaken in the next few months, and, if the results were successful, the bankable feasibility study would then be completed (Doral Mineral Industries Ltd., 2004).

### Fluorochemical News

Rhodia S.A. plans to close its Avonmouth HF plant near Bristol in the United Kingdom. Rhodia said the decision to stop making hydrofluoric acid was because of the high price of raw materials and low prices for the finished product. Production at the site is focused on fluorochemicals, which in addition to HF includes fluorocarbon refrigerants, fluoroaromatic compounds for pharmaceutical and agricultural uses, and anesthetics for human and veterinary applications. The plant is part of the firm's Perfumery, Performance and Agrochemical division.

Annual consumption of acid-grade fluorspar in the United Kingdom is estimated to be about 72,000 t, and roughly 66% of this is supplied domestically by Glebe Mines Ltd., which supplies the Rhodia plant and INEOS Fluor's HF plant at Runcorn in Cheshire (Industrial Minerals, 2004).

Honeywell International Inc. announced plans to build a manufacturing plant for non-ozone-depleting refrigerant products in Qingpu, Shanghai, China. The new facility is expected to be operational in November 2004, and will serve as the production and service center in Asia for hydrofluorocarbon refrigerants such as R-410A, R-407C and R-404A. Facilities in the United States will supply some of the source materials for the Chinese facility. The new facility will blend and package

<sup>1</sup>References that include a section mark (§) are found in the Internet References Cited section.

finished products tailored to meet the rapidly expanding needs of the air-conditioning and refrigeration industries in Asia (Honeywell International, 2004§).

### References Cited

Doral Mineral Industries Ltd., 2004, Speewah fluorspar joint venture—Project progress report no. 2: Perth, Australia, Doral Mineral Industries Ltd. progress report, July, 2 p.  
Industrial Minerals, 2004, Rhodia to close Avonmouth HF plant: Industrial Minerals, no. 443, August, p. 290.

### Internet References Cited

Honeywell International Inc., 2004 (August 11), Honeywell to build refrigerant manufacturing plant in China, accessed August 20, 2004, at URL [http://www.honeywell.com/sites/portal?smap=honeywell&page=pressrel\\_detail&theme=T8&id=AJXRQR3L3G22BTMB6DJG1R44AUM1OJFD9&catID=cat1b754a4-fb536f3d74-3e3e4447ab3472a0c2a5e5fdc1e6517d&c=n](http://www.honeywell.com/sites/portal?smap=honeywell&page=pressrel_detail&theme=T8&id=AJXRQR3L3G22BTMB6DJG1R44AUM1OJFD9&catID=cat1b754a4-fb536f3d74-3e3e4447ab3472a0c2a5e5fdc1e6517d&c=n).  
Tiberon Minerals Ltd., 2004 (July 6), Tiberon update re bankable feasibility study—Improved metallurgical recoveries, bankable feasibility study delayed, accessed August 23, 2004, at URL <http://www.tiberon.com/press/2004/04-11.pdf>.

TABLE 1  
SALIENT FLUORSPAR STATISTICS<sup>1</sup>

(Metric tons, unless otherwise specified)

	2003 <sup>p</sup>			2004			
	Second quarter	Third quarter	Fourth quarter	Total	First quarter	Second quarter	Total
Imports for consumption:	90,400	151,000	143,000	567,000	226,000	101,000	327,000
Value per ton, c.i.f. U.S. port, acid grade	\$122	\$141	\$156	\$138 <sup>2</sup>	\$172	\$162	\$169 <sup>2</sup>
Value per ton, c.i.f. U.S. port, metallurgical	\$85	\$85	\$85	\$85 <sup>2</sup>	\$83	\$75	\$80 <sup>2</sup>
Exports	8,090	7,330	7,100	30,700	6,800	5,100	11,900
End of quarter stocks, consumer	125,000	113,000	126,000	XX	172,000	110,000	XX
Fluorspar equivalent of imported hydrofluoric acid	51,000	32,800	35,500	167,000	43,300	48,600	91,900
Fluorspar equivalent of imported cryolite	6,650	845	758	9,740	1,370	1,240	2,610
Quarterly reported fluorspar consumption	140,000	166,000	161,000	616,000	167,000	190,000	357,000

<sup>p</sup>Preliminary. XX Not applicable.

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

<sup>2</sup>Average value.

TABLE 2  
CONSUMPTION OF FLUORSPAR BY END USE AND ASSAY RANGE<sup>1</sup>  
(DOMESTIC AND FOREIGN IN THE UNITED STATES)

(Metric tons)

End use or product	First quarter 2004		Second quarter 2004		Total	Year to date
	More than 97% calcium fluoride	Not more than 97% calcium fluoride	More than 97% calcium fluoride	Not more than 97% calcium fluoride		
Hydrofluoric acid and aluminum fluoride	147,000	--	147,000	169,000	--	316,000
Metallurgical	4,150	9,850	14,000	13,900	9,510	27,900
Other uses or products <sup>2</sup>	6,600	--	6,600	6,880	--	13,500
Total	158,000	9,850	167,000	180,000	9,510	357,000
Stocks, end of quarter <sup>3</sup>	147,000	26,600	173,000	84,700	25,200	110,000

-- Zero.

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

<sup>2</sup>Includes acid grade used in enamel, glass and fiberglass, steel castings, and welding rod coatings.

<sup>3</sup>Stocks data include distributor stocks (excluding National Defense Stockpile holdings) and consumer stocks for hydrofluoric acid and aluminum fluoride.

TABLE 3  
U.S. IMPORTS FOR CONSUMPTION OF FLUORSPAR, BY COUNTRY AND VALUE<sup>1,2</sup>

	2003												2004				
	Second quarter			Third quarter			Fourth quarter			First quarter			Second quarter			Year to date	
	Quantity (metric tons)	Value <sup>3</sup> (thousands)	Quantity (metric tons)	Value (thousands)													
Containing more than 97% calcium fluoride:																	
China	14,700	\$2,010	111,000	\$16,200	94,900	\$15,700	171,000	\$31,100	23,500	\$4,430	194,000	\$35,500					
France	40	13	--	--	42	14	--	--	--	--	19	9	9				
Germany	17	11	--	--	--	--	--	--	--	--	--	--	--				
Japan	--	--	--	--	--	--	--	--	--	--	--	--	--				
Mexico	16,800	1,820	15,500	1,950	12,100	1,740	16,100	2,020	27,100	4,210	43,200	6,230					
Mongolia	--	--	20	3	--	--	--	--	13,400	2,210	13,400	2,210					
South Africa	52,700	6,410	15,000	1,870	27,900	3,580	21,000	2,640	28,300	4,180	49,300	6,820					
Spain	--	--	--	--	--	--	--	--	--	--	--	--	--				
United Kingdom	44	22	46	21	445	53	4	5	--	--	4	4	4				
Total	84,300	10,300	142,000	20,000	135,000	21,100	208,000	35,800	92,400	15,000	300,000	50,800					
Containing not more than 97% calcium fluoride:																	
Canada	--	--	--	--	--	--	7	3	--	--	7	7	7				
Mexico	6,150	525	9,010	762	7,390	629	18,200	1,520	6,350	511	24,600	513					
Other	--	--	--	--	--	--	--	--	1,880	102	1,880	102					
Total	6,150	525	9,010	762	7,390	629	18,300	1,520	8,230	614	26,500	618					
Grand total	90,400	10,800	151,000	20,800	143,000	21,800	226,000	37,300	101,000	15,700	327,000	51,400					

-- Zero.

<sup>1</sup>Imports for consumption include imports of immediate entry, and warehouse withdrawals.

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Cost, insurance, and freight at U.S. ports.

Source: U.S. Census Bureau.

TABLE 4  
IMPORTS FOR CONSUMPTION OF HYDROFLUORIC ACID<sup>1</sup>

	2003												2004				
	Second quarter			Third quarter			Fourth quarter			First quarter			Second quarter			Year to date	
	Quantity (metric tons)	Value <sup>2</sup> (thousands)															
Canada	11,000	\$12,500	6,990	\$8,060	7,360	\$8,050	9,780	\$11,700	11,900	\$12,400	21,600	\$24,100					
Japan	184	442	311	755	250	608	347	816	214	530	561	1,350					
Mexico	22,600	21,900	13,900	12,900	15,500	14,600	18,400	17,500	19,700	18,700	38,100	36,200					
Other <sup>3</sup>	261	368	656	836	555	545	279	508	678	752	957	1,260					
Total	34,000	35,200	21,800	23,800	23,700	23,800	28,800	30,500	32,400	32,400	61,300	62,900					

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

<sup>2</sup>Cost, insurance, and freight at U.S. ports.

<sup>3</sup>Includes China, France, Germany, Italy, the Republic of Korea, the Netherlands, Singapore, Spain, Switzerland, Taiwan, and the United Kingdom.

Source: U.S. Census Bureau.