

# Mineral Industry Surveys

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## FLUORSPAR IN THE THIRD QUARTER 2008

Reported fluorspar consumption in the third quarter was 127,000 metric tons (t), a decrease of more than 8% compared with that of the previous quarter and a decrease of about 4% compared with consumption in the third quarter of 2007. Consumption of acid-grade fluorspar (acidspar) for hydrofluoric acid (HF) and aluminum fluoride was 107,000 t, a decrease of nearly 10% compared with that of the previous quarter and 6% less than that in the third quarter of 2007. Consumption of metallurgical-grade fluorspar (metspar) for metallurgical and other uses was 9,170 t, essentially unchanged compared with that of the previous quarter, but 16% more than was consumed in the third quarter of 2007.

In recent years, the import values [cost, insurance, and freight (c.i.f.)] for some acidspar imports appear to have been underreported. As a result, average import values for acidspar, as calculated from U.S. import statistics, are judged to be unreliable and are not listed in table 1. According to *Industrial Minerals* magazine, end-of-third-quarter-2008 acidspar prices were—China, dry basis, c.i.f. U.S. Gulf of Mexico port, \$530 to \$550 per metric ton; Mexico, free on board (f.o.b.) Tampico, \$200 to \$250 per metric ton and \$400 to \$420 per metric ton (low arsenic); and South Africa, f.o.b. Durban, \$250 per metric ton (*Industrial Minerals*, 2008).

### Industry News

Sallies Limited (Pretoria, South Africa) reported that it was mothballing its Buffalo Fluorspar Mine, which was treating tailings from previous fluorspar mining performed between 1974 and 1994. Fluorspar produced from the tailings was high in phosphorus—1,200 parts per million (ppm) compared with 400 ppm for the company's Witkop Fluorspar Mine—and Sallies found it difficult to market the high-phosphorus product at a reasonable price. Phosphorus is an undesirable contaminant in acidspar, and most HF producers have upper limits of 500 ppm in their purchase specifications. The Buffalo property contains in-ground reserves of fluorspar, but the operation lacked mining infrastructure and would require the allocation of more power from Eskom Holdings Limited, South Africa's public electricity utility, to exploit the reserves (Mathews, 2008).

Sephaku Holdings Limited (Centurion, South Africa) announced results of fluorspar exploration work on two projects in South Africa. The Naauwpoort/Kromdraai project is adjacent to South Africa's largest fluorspar producer, Vergenoeg Mining Company (Pty) Limited, and reportedly has a measured resource in excess of 8 million metric tons (Mt) of ore grading 24.6% calcium fluoride (CaF<sub>2</sub>). Sephaku identified the second project as the Plattekop project, which, according to company resource totals, contains an additional resource of 4 Mt. The Plattekop deposit is about 800 meters (m) south of the Vergenoeg deposit and is described as a relatively flat-lying cap to a hill. This cap comprises a body of fluorspar/iron mineralization 400 m by 200 m in extent and averaging 18 m thick, with a grade of approximately 40% CaF<sub>2</sub>.

The company's plans call for construction of a 130,000-metric-ton-per-year flotation plant that would be fed by a blend of ore from both deposits at 32% CaF<sub>2</sub> average feed grade. Determination of capital budget requirements was to begin shortly after the announcement and was expected to be completed by the end of the first quarter of 2009 (Mineweb, 2008).

Kenya Fluorspar Company (KFC), which operates a fluorspar mine in the Kerio Valley in northwestern Kenya, announced that they had expanded their markets by securing orders from two European fluorochemical manufacturers. KFC previously shipped most of its product to India. The company recently invested \$1.8 million on port and mine improvements that included an upgrade to the crushing equipment, a new laboratory, and improved environmental compliance (allAfrica.com, 2008).

Hastie Mining Co. (Cave-In-Rock, IL) experienced permitting delays on its Klondike II fluorspar mine in Livingston, KY. The company was in the final stages of selecting a contractor to begin construction work (Boyce Moody, III, Moody Minerals Co., oral commun., November 18, 2008).

### Fluorochemical News

Canada's Cameco Corporation (Saskatoon, Saskatchewan) announced that it was suspending production of uranium hexafluoride (UF<sub>6</sub>) at its complex in Port Hope, Ontario.

Cameco is one of the world's leading uranium producers and uses HF to produce UF<sub>6</sub> as part of the uranium enrichment process. The shutdown was due to a long-simmering contract dispute with its supplier of HF. Cameco was in talks with other sources of HF while seeking to resolve the contract problem. The company had exhausted the inventory of HF it had purchased on a spot basis. The shutdown was expected to last until at least the middle of 2009 (Cameco Corporation, 2008).

### References Cited

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

(Metric tons, unless otherwise specified)

	2007		2008			
	Third quarter	Fourth quarter	First quarter	Second quarter	Third quarter	Total or average
Imports for consumption:						
Quantity	129,000	177,000	122,000	157,000	125,000	404,000
Average value per ton, c.i.f. U.S. port, acid grade	(2)	(2)	(2)	(2)	(2)	(2)
Average value per ton, c.i.f. U.S. port, metallurgical grade	\$110	\$110	\$103	\$106	\$109	\$106
Exports	3,010	3,600	4,070	4,620	4,690	13,400
End of quarter stocks, consumer	114,000	90,100	102,000	107,000	89,800	XX
Imports for consumption of hydrofluoric acid <sup>3</sup>	35,000	34,300	35,000	36,700	30,300	102,000
Imports for consumption of cryolite <sup>3</sup>	800	853	2,370	2,160	2,070	6,600
Quarterly reported fluorspar consumption	132,000	132,000	142,000	138,000	127,000	407,000

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>Value data appear to be underreported and are too low to make accurate average-value-per-ton calculations for acid-grade imports.

<sup>3</sup>In the past, these data showed imports in fluorspar equivalents, but data are now actual imports for consumption of indicated materials.

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

(Metric tons)

	Hydrofluoric acid and aluminum fluoride	Metallurgical	Other uses or products <sup>2</sup>	Total	Stocks, end of period <sup>3</sup>
2007:					
First quarter:					
More than 97% calcium fluoride	114,000	3,630	7,020	124,000	67,900
Not more than 97% calcium fluoride	--	3,920	3,810	7,740	20,900
Total	114,000	7,550	10,800	132,000	88,900
Second quarter:					
More than 97% calcium fluoride	124,000	3,710	7,120	135,000	94,600
Not more than 97% calcium fluoride	--	8,230	--	8,230	20,700
Total	124,000	11,900	7,120	143,000	115,000
Third quarter:					
More than 97% calcium fluoride	114,000	3,710	6,990	124,000	95,800
Not more than 97% calcium fluoride	--	7,890	--	7,890	18,300
Total	114,000	11,600	6,990	132,000	114,000
Fourth quarter:					
More than 97% calcium fluoride	112,000	3,710	7,230	123,000	78,200
Not more than 97% calcium fluoride	--	4,210	4,450	8,660	11,900
Total	112,000	7,920	11,700	132,000	90,100
Grand total	464,000	39,000	36,600	539,000	XX
2008:					
First quarter:					
More than 97% calcium fluoride	120,000	4,020	7,640	132,000	85,800
Not more than 97% calcium fluoride	--	9,660	--	9,660	16,100
Total	120,000	13,700	7,640	142,000	102,000
Second quarter:					
More than 97% calcium fluoride	118,000	3,630	7,170	129,000	92,000
Not more than 97% calcium fluoride	--	9,280	--	9,280	15,100
Total	118,000	12,900	7,170	138,000	107,000
Third quarter:					
More than 97% calcium fluoride	107,000	3,630	7,170	118,000	70,900
Not more than 97% calcium fluoride	--	9,170	--	9,170	18,900
Total	107,000	12,800	7,170	127,000	89,800
Grand total	345,000	39,400	22,000	407,000	XX

XX Not applicable. -- 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 cement, enamel, glass and fiberglass, steel castings, and welding rod coatings.

<sup>3</sup>Stocks include some distributor stocks 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>

	2008											
	Third quarter		Fourth quarter		First quarter		Second quarter		Third quarter		Year	
	Quantity (metric tons)	Value <sup>3</sup> (thousands)	Quantity (metric tons)	Value <sup>3</sup> (thousands)	Quantity (metric tons)	Value <sup>3</sup> (thousands)	Quantity (metric tons)	Value <sup>3</sup> (thousands)	Quantity (metric tons)	Value <sup>3</sup> (thousands)	Quantity (metric tons)	Value <sup>3</sup> (thousands)
Containing more than 97% calcium fluoride:												
China	11,900	\$2,630	88,600	\$20,600	14,700	\$3,540	68,400	\$21,400	41,800	\$17,200	125,000	\$42,100
Germany	--	--	--	--	133	17	--	--	--	--	133	17
Mexico	66,600	10,300	63,500	10,100	67,300	12,300	63,000	11,000	54,400	8,670	185,000	32,000
Mongolia	23,800	4,450	--	--	--	--	--	--	--	--	--	--
Russia	--	--	--	--	1	7	--	--	--	--	1	7
South Africa	19,900	3,320	10,600	2,840	15,000	2,540	14,500	2,920	39	19	29,500	5,470
United Kingdom	21	6	348	51	7	20	4	11	592	79	603	110
Total	122,000	20,700	163,000	33,600	97,100	18,400	146,000	35,400	96,800	25,900	340,000	79,700
Containing not more than 97% calcium fluoride:												
Mexico	6,560	722	14,300	1,580	24,500	2,530	11,100	1,190	28,300	3,100	64,000	6,820
Namibia	191	17	--	--	276	24	243	21	--	--	519	45
South Africa	--	--	--	--	--	--	--	--	--	--	--	--
Total	6,750	739	14,300	1,580	24,800	2,560	11,400	1,210	28,300	3,100	64,500	6,860
Grand total	129,000	21,400	177,000	35,100	122,000	21,000	157,000	36,600	125,000	29,000	404,000	86,600

-- 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>Value data for imports "containing more than 97% calcium fluoride" are believed to be underreported; insufficient information is available to make accurate adjustments.

Source: U.S. Census Bureau.

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

	2008											
	Third quarter		Fourth quarter		First quarter		Second quarter		Third quarter		Year	
	Quantity (metric tons)	Value <sup>2</sup> (thousands)	Quantity (metric tons)	Value <sup>2</sup> (thousands)	Quantity (metric tons)	Value <sup>2</sup> (thousands)	Quantity (metric tons)	Value <sup>2</sup> (thousands)	Quantity (metric tons)	Value <sup>2</sup> (thousands)	Quantity (metric tons)	Value <sup>2</sup> (thousands)
Canada	6,880	\$12,200	5,230	\$9,390	5,130	\$10,000	7,300	\$13,000	6,750	\$13,700	19,200	\$36,800
China	708	680	441	457	442	595	279	365	276	454	997	1,410
Germany	92	232	163	371	162	346	159	440	165	412	486	1,200
Japan	298	618	255	543	391	933	270	439	246	471	907	1,840
Mexico	26,900	28,000	28,200	29,700	28,800	30,600	28,700	30,700	22,800	27,100	80,300	88,500
Other	123	144	35	82	16	52	16	58	48	207	80	317
Total	35,000	41,800	34,300	40,500	35,000	42,600	36,700	45,000	30,300	42,400	102,000	130,000

<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.

Source: U.S. Census Bureau.