

# Mineral Industry Surveys

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## FLUORSPAR IN THE SECOND QUARTER 2012

Reported fluorspar consumption in the second quarter was about 114,000 metric tons (t), a 10% decrease compared with that of the previous quarter but nearly 14% more than consumption in the second quarter of 2011. Stocks ended the second quarter at about 156,000 t, a 5% decrease compared with those of the previous quarter. Fluorspar imports in the second quarter were 141,000 t, a 6% decrease compared with that of the previous quarter. Second quarter hydrofluoric acid (HF) imports were 36,500 t, a 3% increase compared with those of the previous quarter.

### Industry News

Hastie Mining and Trucking Co. (Cave-In-Rock, IL) continued development work on its Klondike II Mine in Livingston County, KY. The company was driving an incline to the vein orebody, and although the work was progressing slower than expected, the company expected to reach the orebody sometime in September (Don Hastie, Hastie Mining & Trucking Co., oral commun., September 6, 2012). At least one other company has an interest in exploring for fluorspar in the Kentucky Fluorspar District. In June, Appalachian Spar LLC (Lexington, KY) was expected to start exploration drilling in southern Crittenden County (Crittenden Press Online, 2012).

Kenya Fluorspar Co. Ltd. (Nairobi, Kenya) completed the de-bottlenecking project at its fluorspar mill, which included commissioning of an additional ball mill. The new ball mill was expected to allow a 20% increase in feed input to the flotation mill and allow the use of vacant systems and cells within the plant. The completion of the project was expected to improve plant efficiencies and allow for an increase in acid-grade fluorspar output (Kenya Fluorspar Co. Ltd., 2012).

Russian aluminum producer, United Company RUSAL Plc (Moscow, Russia), announced that it was investing about \$3 million to modernize the operations of its fluorspar subsidiary Yaroslavsk Mining Co. RUSAL planned to refurbish existing equipment and purchase new equipment and machinery to replace old or worn out equipment. These funds will also be spent on carrying out stripping operations to guarantee access to ore and allow the stable operation of the Yaroslavsk mining operation for future years. The operation was currently

producing 9,500 to 10,000 metric tons per month of acid-grade concentrates, which RUSAL uses to produce aluminum fluoride and synthetic cryolite for use in its aluminum smelting operations (United Company RUSAL Plc, 2012).

The assets and facilities of the United Kingdom's sole fluorspar producer, Glebe Mines Ltd., were acquired out of receivership by British Fluorspar Ltd. (Derbyshire, United Kingdom). British Fluorspar, originally registered in the United Kingdom as Minmet UK Ltd., is wholly owned by Minmet Financing Co. S.A. (Lausanne, Switzerland). Minmet Financing also owns Industrie Chimiche Ing. Bonelli S.p.A. (ICIB) (Treviglio, Italy), a leading Italian producer of aqueous HF, and owns about 60% of Fluorsid S.p.A. (Assemini, Italy), a producer of aluminum fluoride and synthetic cryolite (Brian L. Hodge, written commun., June 18, 2012). British Fluorspar planned to restart operations in early 2013 and supply acid-grade fluorspar to the ICIB and Fluorsid plants in Italy and to customers in Northern Europe and the United Kingdom (Roberts, 2012).

There was some indication that fluorspar prices softened during the second quarter, although at the end of June only the Industrial Minerals published U.S. Gulf port import price for acid-grade fluorspar had changed (table 5). Chinese prices, free on board China, were reportedly in the \$410-to-\$425 per metric ton range according to one industry source. There were reports of acid-grade fluorspar offered to buyers at much lower prices, but it was believed that this material was likely Chinese domestic grade, which contains significantly higher levels of silica (Syrett, 2012). China normally exports acid-grade fluorspar with a maximum silica content of about 1.0%, but produces domestic grades containing 1.2% and 1.5% silica. Silica is an undesirable impurity in acid-grade fluorspar that reduces the HF production efficiency by reacting with fluorine to form silicon tetrafluoride.

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

(Metric tons, unless otherwise specified)

	2011				2012		
	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	1st quarter– 2d quarter
<b>Fluorspar:</b>							
Imports for consumption	126,000	206,000	213,000	727,000	151,000	141,000	292,000
Exports	6,250	6,650	5,630	24,100	6,040	5,350	11,400
End of the period stocks, consumer	137,000	141,000	162,000	162,000	164,000	156,000	156,000
Reported consumption	99,900	123,000	108,000	454,000	126,000	114,000	240,000
<b>Other compounds, imports for consumption:</b>							
Aluminum fluoride	11,100	9,430	12,500	41,200	14,200	11,600	25,800
Cryolite	2,090	3,140	2,440	9,560	2,170	1,800	3,970
Hydrofluoric acid	35,100	33,200	29,800	132,000	35,300	36,500	71,800

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

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 other uses <sup>2</sup>	Metallurgical	Total	Stocks, end of period <sup>3</sup>
2011:				
2d quarter:				
More than 97% calcium fluoride	89,500	2,990	92,500	121,000
Not more than 97% calcium fluoride	--	7,340	7,340	16,300
Total	89,500	10,300	99,900	137,000
3d quarter:				
More than 97% calcium fluoride	112,000	2,990	115,000	113,000
Not more than 97% calcium fluoride	--	8,100	8,100	28,800
Total	112,000	11,100	123,000	141,000
4th quarter:				
More than 97% calcium fluoride	97,000	2,990	100,000	145,000
Not more than 97% calcium fluoride	--	8,000	8,000	17,500
Total	97,000	11,000	108,000	162,000
Grand total	412,000	42,400	454,000	162,000
2012:				
1st quarter:				
More than 97% calcium fluoride	115,000	2,990	118,000	142,000
Not more than 97% calcium fluoride	--	7,590	7,590	21,700
Total	115,000	10,600	126,000	164,000
2d quarter:				
More than 97% calcium fluoride	99,700	2,990	103,000	139,000
Not more than 97% calcium fluoride	--	10,900	10,900	16,400
Total	99,700	13,900	114,000	156,000
Grand total	215,000	24,500	240,000	156,000

-- 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 cement, enamel, glass and fiberglass, steel castings, hydrofluoric acid, and welding rod coatings.

<sup>3</sup>Stocks include some distributor stocks and consumer stocks for hydrofluoric acid.

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

	2011						2012					
	2d quarter		3d quarter		4th quarter		1st quarter		2d quarter		1st quarter–2d quarter	
	Quantity (metric tons)	Value (thousands)										
Containing more than 97% calcium fluoride:												
China	26,300	\$13,400	27,600	\$16,900	40,300	\$20,300	28,400	\$17,800	3,740	\$1,850	32,200	\$19,700
Mexico	61,600	11,900	121,000	17,400	128,000	19,900	64,500	17,300	85,300	20,400	150,000	37,700
South Africa	6,670	1,700	17,200	5,420	--	--	21,000	5,670	12,100	3,280	33,100	8,950
United Kingdom	1	5	414	49	4	15	2	7	2	7	4	14
Other	--	--	--	--	--	--	17	18	12,000	4,440	12,100	4,460
Total	94,600	27,000	166,000	39,800	169,000	40,200	114,000	40,800	113,000	29,900	227,000	70,800
Containing not more than 97% calcium fluoride:												
Mexico	31,500	3,800	40,200	4,130	44,600	4,350	36,400	3,830	27,900	2,750	64,400	6,580
Other	--	--	--	--	--	--	428	48	--	--	428	48
Total	31,500	3,800	40,200	4,130	44,600	4,350	36,900	3,880	27,900	2,750	64,800	6,630
Grand total	126,000	30,800	206,000	44,000	213,000	44,600	151,000	44,700	141,000	32,700	292,000	77,400

-- 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.

Source: U.S. Census Bureau.

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

	2011						2012					
	2d quarter		3d quarter		4th quarter		1st quarter		2d quarter		1st quarter–2d quarter	
	Quantity (metric tons)	Value <sup>2</sup> (thousands)										
Canada	4,940	\$13,000	5,860	\$14,200	2,640	\$7,400	4,560	\$11,700	3,220	\$9,530	7,780	\$21,300
China	1,280	2,080	1,010	1,770	1,400	2,260	1,080	1,570	1,980	2,860	3,070	4,430
Germany	83	239	69	141	66	162	87	198	37	122	124	320
Japan	358	755	212	501	335	813	230	549	316	753	546	1,300
Mexico	28,200	40,700	25,900	37,200	25,300	39,600	29,200	47,500	30,800	50,900	60,100	98,400
Other	204	407	205	469	108	348	124	515	104	333	228	848
Total	35,100	57,200	33,200	54,200	29,800	50,600	35,300	62,100	36,500	64,500	71,800	127,000

<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.

TABLE 5  
END OF QUARTER FLUORSPAR PRICES

(Dollars per metric ton)

	2011			2012	
	2d quarter	3d quarter	4th quarter	1st quarter	2d quarter
Acidspars:					
Chinese, dry basis, cost, insurance, and freight (c.i.f.) Gulf port, filtercake	550–650	550–650	550–650	550–650	480–600
Chinese, free on board (f.o.b.) China, wet filtercake	500–600	500–600	450–500	450–500	450–500
Mexican, f.o.b. Tampico, filtercake	400–450	400–450	400–450	400–450	400–450
Mexican, f.o.b. Tampico, arsenic <5 parts per million	450–480	500–550	540–550	540–550	540–550
South African, f.o.b. Durban, filtercake	330–335	330–335	380–450	380–450	380–450
Metspar, Mexican, f.o.b. Tampico	220–270	230–270	230–270	230–270	230–270

Source: Industrial Minerals magazine (London).