

# Mineral Industry Surveys

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## FLUORSPAR IN THE FIRST QUARTER 2001

In order to collect more accurate data on the merchant market, the U.S. Geological Survey (USGS) has initiated a change in the quarterly consumption survey. Over the years the number of cooperating companies on the quarterly consumption mailing list has decreased significantly. Accurate data are still received from the large hydrofluoric acid (HF) and aluminum fluoride producers, but data from ceramics, enamel, glass, metallurgical, and welding rod companies are underreported. As a result, the USGS will henceforth survey the small number of fluorspar distributors that sell fluorspar to these markets to collect the nonchemicals end-use data. But to protect company proprietary data and to garner full cooperation by the distributors, the data will simply be collected and published under the headings of Metallurgical and Other (see table 2). Stocks data for these markets will no longer be available.

Reported consumption of fluorspar in the first quarter was 144,000 metric tons, about 17% higher than in the previous quarter and nearly 4% higher than in the first quarter of 2000. The increases were mainly the result of more complete consumption data collected on fluorspar's merchant markets. Consumption of fluorspar for hydrofluoric acid (HF) and aluminum fluoride production was 116,000 tons, essentially unchanged from the previous quarter, but 10% lower than in the first quarter of 2000. Imports of fluorspar were 152,000 tons, 39% higher than the previous quarter and 33% higher than in the first quarter of 2000.

### Industry News

The Industrial Minerals Fluorspar 2001 Conference was held near Johannesburg, South Africa, on March 25-27, 2001. Presentations were made on global supply and demand; China; mining operations in the Czech Republic, Iran, and South Africa; aluminum fluoride; and fluorocarbon markets. Field trips were taken to the operations of Vergenoeg Mining Co. (Pty.) Ltd. and Witkop Fluorspar Mine (Pty.) Ltd. (Industrial Minerals, 2001b).

### Fluorochemical News

Honeywell International Inc. announced it has begun construction of a new hydrofluorocarbon (HFC) 245fa manufacturing facility at Geismar, LA. The plant is scheduled to start up in July 2002. HFC 245fa is Honeywell's non-ozone-depleting blowing agent designed primarily to replace hydrochlorofluorocarbon (HCFC) 141b in a variety of foam blowing applications. According to Honeywell, the insulation performance of HFC 245fa is superior to other non-ozone-depleting products, such as hydrocarbons, HFC 365mfc and HFC 134a. In addition, it is nonflammable and is not considered a volatile organic compound by the U.S. Environmental Protection Agency (Honeywell International Inc., April 20, 2001, Honeywell breaks ground on new fluorine products HFC-245fa plant, start-up on track for July 1, 2002, accessed May 24, 2001, at URL <http://www.specialtychem.com/news/index.html>).

In a competing technology, ATOFINA Chemicals Inc. announced the development of new technology to improve polyurethane foams manufactured with HFC 134a and other gaseous blowing agents. The new technology yields foams similar to those made with the current standard HCFC 141b, while allowing the use of up to 75% HFC 134a. Based on laboratory testing, the insulation value of the foam is within in 6% of that blown with HCFC 141b. ATOFINA plans to develop and evaluate this technology further to confirm the commercial performance of the foams (ATOFINA Chemicals, Inc., January 24, 2001, ATOFINA Chemicals, Inc. announces development of improved technology for HFC 134a in insulation foam applications, accessed May 24, 2001, via URL <http://www.atofinachemicals.com/whatsnew>).

Also in the foam blowing sector, several European companies, including Solvay Fluor und Derivate GmbH, commissioned a life-cycle-assessment study of Solvay's new blowing agent HFC 365mfc. The study evaluated polyurethane foams blown using HFC 365mfc, HCFC 141b, and water/carbon dioxide that were used in the insulation of walls and roofs of domestic dwellings in Spain and Portugal. The results of the

study indicated that, considering the complete life cycle, HFC 365mfc blown foams showed environmental profiles that were superior to or at least competitive with water/carbon dioxide blown products (Solvay Fluor und Derivate GmbH, May 2001, HFC-365mfc-blown PU insulation sprays in Spain and Portugal, accessed June 1, 2001, via URL [http://www.solvay.com/fluor/en/frame\\_news.html](http://www.solvay.com/fluor/en/frame_news.html)).

Stell Chemifa Corp. of Osaka, Japan, announced plans to build a high-purity HF plant in Singapore to serve the semiconductor market in China, Singapore, and Taiwan. The new venture will be called Chemifa Singapore Pte. Ltd., and plant completion is scheduled for the summer 2002. It is estimated that production will total 20,000 tons per year (Industrial Minerals, 2001c).

Daikin Industries Ltd. of Osaka, Japan, and China National

Chemical Construction Corp. (CNCC) are forming a joint venture to build a plant to produce fluoropolymer resins and other fluorochemicals in Changshu, China. The joint venture, which is expected to start up in 2003, will be 80% owned by Daikin and 20% by CNCC (Industrial Minerals, 2001a).

### References Cited

- Industrial Minerals, 2001a, Daikin fluorochemicals plant: Industrial Minerals, no. 403, April, p. 76.  
———2001b, Sandton safari—The big game of fluorspar: Industrial Minerals, no. 404, May, p. 33-37.  
———2001c, Stella Chemifa HF plant: Industrial Minerals, no. 402, March, p. 29.

TABLE 1  
SALIENT FLUORSPAR STATISTICS 1/

(Metric tons, unless otherwise specified)

|  | 2000          |                |               |                | Total      | 2001          |
|--|---------------|----------------|---------------|----------------|------------|---------------|
|  | First quarter | Second quarter | Third quarter | Fourth quarter |            | First quarter |
| Imports for consumption                            | 114,000       | 153,000        | 147,000       | 109,000        | 523,000    | 152,000       |
| Value per ton, c.i.f. U.S. port, acid grade        | \$126         | \$132          | \$124         | \$130          | \$128 2/   | \$136         |
| Value per ton, c.i.f. U.S. port, metallurgical     | \$85          | \$81           | \$80          | \$89           | \$84 2/    | \$76          |
| Exports  | 5,320         | 23,900         | 4,830         | 5,790          | 39,800     | 4,570         |
| End of quarter stocks: consumer 3/                 | 84,600 r/     | 87,500         | 97,700        | 73,900 r/      | XX         | 95,800        |
| Fluorspar equivalent of imported hydrofluoric acid | 50,800        | 49,300         | 52,200        | 43,700         | 196,000    | 40,500        |
| Fluorspar equivalent of imported cryolite          | 2,910         | 2,470          | 2,950         | 2,700          | 11,000     | 3,500         |
| Quarterly reported fluorspar consumption 4/        | 139,000 r/    | 138,000        | 112,000       | 123,000        | 512,000 r/ | 144,000       |

r/ Revised. XX Not applicable.

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

2/ Average value.

3/ Because of a change in survey methodology, beginning with the first quarter 2001 stocks data are only available for hydrofluoric acid and aluminum fluoride.

4/ Beginning with the first quarter 2001, data from distributors have replaced all consumption data except for hydrofluoric acid and aluminum fluoride.

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

(Metric tons)

| End use or product                      | Fourth quarter 2000                  |  |           | 2000<br>Year to date | First quarter 2001                   |  | Total   |
|---|--------------------------------------|--|-----------|----------------------|--------------------------------------|--|---------|
|   | More than<br>97% calcium<br>fluoride | Not more than<br>97% calcium<br>fluoride | Total     |                      | More than<br>97% calcium<br>fluoride | Not more than<br>97% calcium<br>fluoride |         |
| Hydrofluoric acid and aluminum fluoride | 114,000                              | --                                       | 114,000   | 474,000              | 116,000                              | --                                       | 116,000 |
| Metallurgical 2/                        | W                                    | 3,730 r/                                 | 3,730 r/  | 15,900 r/            | 6,650                                | 15,500                                   | 22,100  |
| Other uses or products 3/               | 3,380                                | 1,630                                    | 5,010 r/  | 22,200 r/            | 6,230                                | --                                       | 6,230   |
| Total                                   | 117,000                              | 5,360 r/                                 | 123,000   | 512,000 r/           | 129,000                              | 15,500                                   | 144,000 |
| Stocks, end of quarter 4/               | 48,300                               | 25,700                                   | 73,900 r/ | 73,900 r/            | 95,800                               | NA                                       | 95,800  |

r/ Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; included in "Other uses or products." -- Zero.

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

2/ Fourth quarter data include consumption for basic oxygen and electric arc furnaces; first quarter data include consumption for all metallurgical uses.

3/ Includes acid grade used in enamel, glass and fiberglass, steel castings, welding rod coatings, and data represented by symbol "W."

4/ Because of a change in survey methodology, beginning with the first quarter 2001 stocks data are only available for hydrofluoric acid and aluminum fluoride.

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

|   | 2000                      |                         |                           |                         |                           |                         |                           |                         |                           |                         | 2001                      |                         |
|---|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|
|   | First quarter             |                         | Second quarter            |                         | Third quarter             |                         | Fourth quarter            |                         | Year to date              |                         | First quarter             |                         |
|   | Quantity<br>(metric tons) | Value 3/<br>(thousands) |
| Containing more than<br>97% calcium fluoride:     |                           |                         |                           |                         |                           |                         |                           |                         |                           |                         |                           |                         |
| China 4/  | 55,200                    | \$7,190                 | 120,000                   | \$16,100                | 108,000                   | \$13,400                | 45,000                    | \$6,340                 | 328,000                   | \$43,000                | 108,000                   | \$15,000                |
| France  | 77                        | 27                      | 29                        | 13                      | 78                        | 27                      | 20                        | 13                      | 204                       | 80                      | 59                        | 20                      |
| Germany   | 17                        | 11                      | 163                       | 40                      | 172                       | 20                      | --                        | --                      | 352                       | 71                      | 17                        | 8                       |
| Kenya   | 18                        | 3                       | --                        | --                      | --                        | --                      | --                        | --                      | 18                        | 3                       | --                        | --                      |
| Mexico  | 9,230                     | 1,120                   | 5,690                     | 689                     | 2,760                     | 372                     | 4,050                     | 558                     | 21,700                    | 2,740                   | 9,450                     | 1,160                   |
| South Africa 4/                                   | 37,900                    | 4,490                   | 18,100                    | 2,180                   | 29,200                    | 3,560                   | 48,600                    | 5,760                   | 134,000                   | 16,000                  | 26,800                    | 3,380                   |
| United Kingdom                                    | 10                        | 21                      | 5                         | 7                       | --                        | --                      | 182                       | 23                      | 197                       | 51                      | --                        | --                      |
| Total   | 102,000                   | 12,900                  | 144,000                   | 19,000                  | 140,000                   | 17,400                  | 97,900                    | 12,700                  | 484,000                   | 62,000                  | 144,000                   | 19,600                  |
| Containing not more than<br>97% calcium fluoride: |                           |                         |                           |                         |                           |                         |                           |                         |                           |                         |                           |                         |
| Canada  | --                        | --                      | --                        | --                      | --                        | --                      | 21                        | 6                       | 21                        | 6                       | 22                        | 8                       |
| Mexico  | 11,200                    | 948                     | 8,830                     | 710                     | 7,560                     | 593                     | 11,100                    | 988                     | 38,700                    | 3,240                   | 7,680                     | 573                     |
| United Kingdom                                    | --                        | --                      | 2                         | 4                       | 3                         | 11                      | 1                         | 3                       | 6                         | 18                      | 2                         | 4                       |
| Total   | 11,200                    | 948                     | 8,830                     | 714                     | 7,560                     | 604                     | 11,100                    | 997                     | 38,700                    | 3,260                   | 7,700                     | 585                     |

-- Zero.

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

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

3/ C.i.f. at U.S. ports.

4/ Data do not agree with published U.S. Census Bureau data due to adjustments made by the U.S. Geological Survey.

Source: U.S. Census Bureau.

TABLE 4  
IMPORTS FOR CONSUMPTION OF HYDROFLUORIC ACID 1/

|                    | 2000                      |                         |                           |                         |                           |                         |                           |                         |                           |                         | 2001                      |                         |
|--------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|
|                    | First quarter             |                         | Second quarter            |                         | Third quarter             |                         | Fourth quarter            |                         | Year to date              |                         | First quarter             |                         |
|                    | Quantity<br>(metric tons) | Value 2/<br>(thousands) |
| Canada             | 9,610                     | \$10,300                | 10,900                    | \$12,400                | 7,950                     | \$9,490                 | 7,500                     | \$8,900                 | 36,000                    | \$41,100                | 7,220                     | \$8,380                 |
| China              | 17                        | 14                      | 17                        | 14                      | 17                        | 14                      | 93                        | 57                      | 144                       | 99                      | 50                        | 38                      |
| France             | 71                        | 67                      | 74                        | 74                      | 58                        | 58                      | 9                         | 9                       | 212                       | 208                     | 57                        | 54                      |
| Germany            | 18                        | 43                      | 49                        | 87                      | 52                        | 98                      | 31                        | 58                      | 150                       | 286                     | 148                       | 205                     |
| Ireland            | --                        | --                      | --                        | --                      | --                        | --                      | --                        | --                      | --                        | --                      | 211                       | 212                     |
| Japan              | 404                       | 1,070                   | 365                       | 1,030                   | 465                       | 1,290                   | 439                       | 1,200                   | 1,670                     | 4,590                   | 283                       | 771                     |
| Korea, Republic of | 17 r/                     | 68 r/                   | 16                        | 64                      | 32                        | 135                     | 15                        | 62                      | 80 r/                     | 329 r/                  | 32                        | 126                     |
| Mexico             | 23,800                    | 21,700                  | 21,400                    | 19,600                  | 26,200                    | 23,900                  | 21,000                    | 19,300                  | 92,400                    | 84,500                  | 19,000                    | 17,800                  |
| United Kingdom     | --                        | --                      | 72                        | 78                      | 55                        | 75                      | 35                        | 36                      | 162                       | 189                     | 16                        | 14                      |
| Total              | 33,900                    | 33,300 r/               | 32,900                    | 33,400                  | 34,800                    | 35,000                  | 29,200                    | 29,600                  | 131,000                   | 131,000                 | 27,000                    | 27,600                  |

r/ Revised. -- Zero.

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

2/ C.i.f. at U.S. ports.

Source: U.S. Census Bureau.