

Mineral Industry Surveys

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FLUORSPAR IN THE FIRST QUARTER 2017

Fluorspar imports in the first quarter of 2017 were 108,000 metric tons (t), 90,400 t of which were acid grade and 17,400 t of which were metallurgical grade (fig. 1, table 1). These quantities represented an increase in imports of 13% compared with the average quantities for 2016 and an increase of 4% compared with quantities in the first quarter of 2016. Fluorspar exports were 1,750 t, likely re-exports because the United States has no domestic fluorspar production.

Imports of fluorine-containing materials were 31,500 t for hydrofluoric acid, 6,350 t for aluminum fluoride, and 2,670 t for cryolite in the first quarter of 2017 (table 1). These quantities represented a slight increase for hydrofluoric acid, a 24% increase for aluminum fluoride, and a 32% decrease for cryolite compared with the average quantities for 2016. Compared to the first quarter of 2016, imports decreased slightly for hydrofluoric acid, increased by 11% for aluminum

fluoride, and decreased by 35% for cryolite (table 1).

Exports of fluorine-containing materials were 4,000 t for hydrofluoric acid, 82 t for aluminum fluoride, and 2,850 t for cryolite in the first quarter of 2017. Exports were likely re-exports because the United States has no domestic aluminum fluoride or cryolite production.

China and Mexico continued to be the dominant import sources for fluorspar (table 2) and hydrofluoric acid (table 3). Imports of acid-grade fluorspar from China, in particular, increased markedly by 285% from an average of 11,500 tons per quarter in 2016 to 44,300 t in the first quarter of 2017. Exports of fluorspar continued to be primarily to Canada (table 4).

Prices at the end of the first quarter of 2017 for acid-grade fluorspar from Mexico and South Africa remained the same as the previous quarter. Prices at the end of the first quarter of

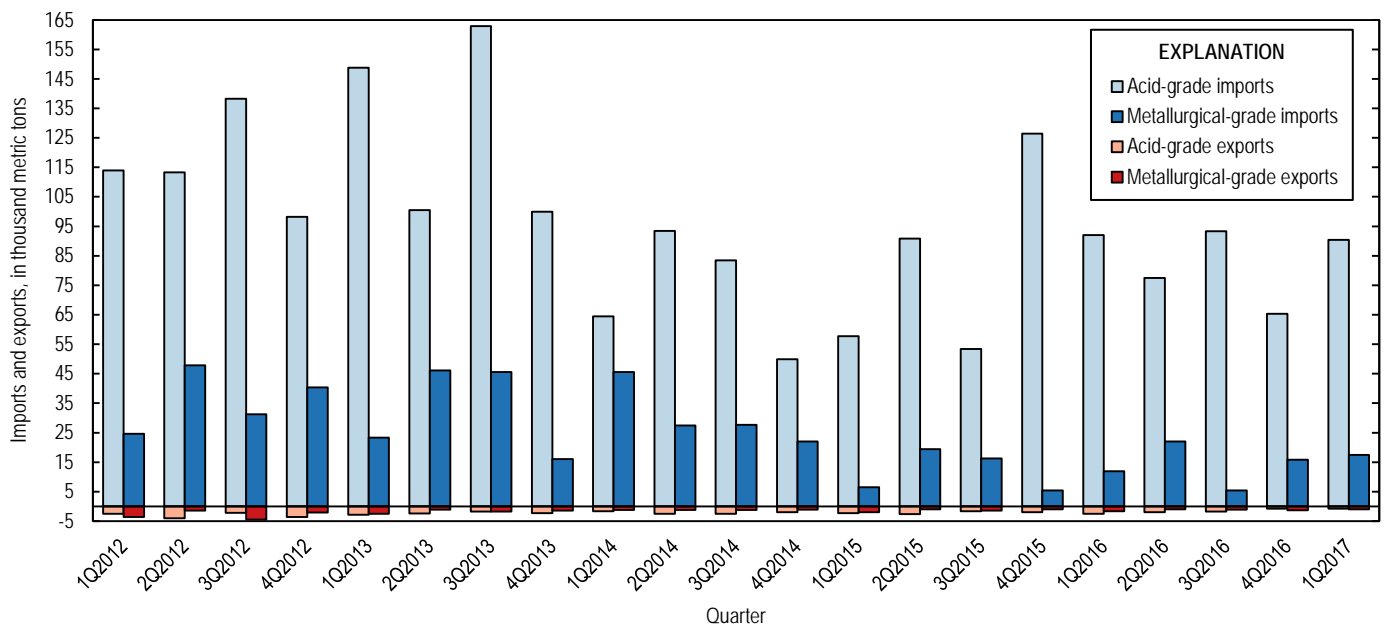


Figure 1. Acid- and metallurgical-grade fluorspar imports and exports from the first quarter of 2012 through the first quarter of 2017. Source: U.S. Geological Survey and U.S. Census Bureau.

2017 for metallurgical-grade fluorspar from Mexico also remained the same as the fourth quarter of 2016 (fig. 2, table 5). However, prices for acid-grade fluorspar from China, specifically free-on-board wet filtercake, increased by 22% to 24% from prices at the end of the fourth quarter of 2016.

U.S. domestic stocks and reported consumption are no longer included in the tables that accompany this report owing to low response rates from the largest fluorspar consumers.

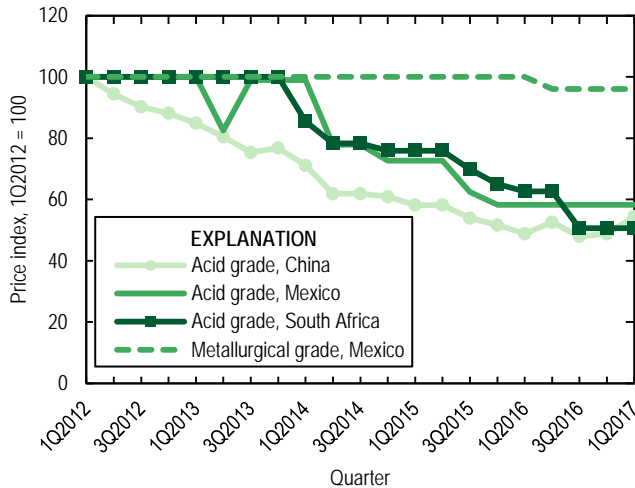


Figure 2. Acid- and metallurgical-grade fluorspar prices, by country, from the first quarter of 2012 through the first quarter of 2017. Prices are indexed to the first quarter of 2012. Notice the recent increase for China for first quarter 2017. Source: U.S. Geological Survey and Industrial Minerals (London).

Mining and Exploration News

The Atlantic Canada Opportunities Agency (ACOA) has provided Canada Fluorspar Inc. with \$5 million as part of its Business Development Program for the St. Lawrence fluorspar mine (CBC News, 2017). This is in addition to a \$17 million loan that the Provincial government has provided the company (McLeod, 2017). The ACOA estimated that the mine, set to open in September 2017, could create 350 to 400 jobs during construction and as many as 200 jobs when fully operational.

Legislation and Government Programs

Mexichem announced on March 23, 2017, that it would impose duties ranging from 149% to 167% on imports of R-134a, a high-temperature refrigerant used in domestic refrigerators and automobile air conditioning, from China (Businesswire, 2017). This decision was in response to the

U.S. Department of Commerce’s investigation, which found that imports of R-134a from China were being dumped in the United States market at below fair value prices and were causing or threatened to cause material injury to the United States industry (U.S. Department of Commerce, 2017).

The Chemours Co. and E.I. du Pont de Nemours and Co. each agreed to pay a \$335 million settlement for the 2001 class action lawsuit involving personal injury claims related to perfluorooctanoic acid (PFOA), also referred to as C-8, that was used in the production of Teflon™ at the Washington Works plant in Wood County, OH (Mancini, 2017; PR Newswire, 2017).

References Cited

Businesswire, 2017, Mexichem announces U.S. International Trade Commission vote will impose antidumping duties on imports of R-134a from China: Businesswire, March 23. (Accessed May 22, 2017, at <http://www.businesswire.com/news/home/20170323006123/en/>.)

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TABLE 1
SALIENT FLUORSPAR STATISTICS¹

(Metric tons, unless otherwise specified)

| | 2016 | | | | 1st quarter– 4th quarter | 2017 1st quarter |
|---|----------------|---------------|---------------|---------------|-----------------------------|---------------------|
| | 1st quarter | 2d quarter | 3d quarter | 4th quarter | | |
| Production: | | | | | | |
| Fluorspar: | -- | -- | -- | -- | -- | -- |
| Imports for consumption:² | | | | | | |
| Fluorspar: | | | | | | |
| Acid grade, more than 97% calcium fluoride | 92,000 | 77,400 | 93,300 | 65,300 | 328,000 | 90,400 |
| Metallurgical grade, less than 97% calcium fluoride | 12,000 | 22,000 | 5,390 | 15,900 | 55,200 | 17,400 |
| Total | 104,000 | 99,500 | 98,700 | 81,200 | 383,000 | 108,000 |
| Hydrofluoric acid | 32,000 | 32,400 | 33,100 | 28,000 | 126,000 | 31,500 |
| Aluminum fluoride | 5,740 | 3,530 | 5,430 | 5,780 | 20,500 | 6,350 |
| Cryolite | 4,080 | 4,250 | 2,960 | 4,400 | 15,700 | 2,670 |
| Exports:² | | | | | | |
| Fluorspar: | | | | | | |
| Acid grade, more than 97% calcium fluoride | 2,520 | 1,940 | 1,710 | 761 | 6,930 | 811 |
| Metallurgical grade, less than 97% calcium fluoride | 1,590 | 991 | 1,110 | 1,310 | 5,000 | 941 |
| Total | 4,120 | 2,930 | 2,820 | 2,070 | 11,900 | 1,750 |
| Hydrofluoric acid | 3,820 | 2,230 | 1,940 | 3,490 | 11,500 | 4,010 |
| Aluminum fluoride | 716 | 253 | 249 | 56 | 1,270 | 82 |
| Cryolite | 3,040 | 3,980 | 3,470 | 2,780 | 13,300 | 2,850 |
| Apparent consumption:³ | | | | | | |
| Fluorspar: | | | | | | |
| Acid grade, more than 97% calcium fluoride | 89,500 | 75,500 | 91,600 | 64,600 | 321,000 | 89,600 |
| Metallurgical grade, less than 97% calcium fluoride | 10,400 | 21,000 | 4,280 | 14,500 | 50,200 | 16,500 |
| Total | 99,800 | 96,500 | 95,900 | 79,100 | 371,000 | 106,000 |

-- Zero.

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

²Source: U.S. Census Bureau.

³Imports minus exports. Note that unlike previous apparent consumption values this does not include stock adjustments in the calculation.

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

| | 2016 | | | | | | | | 2017 | | | |
|--|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|
| | 1st quarter | | 2d quarter | | 3d quarter | | 4th quarter | | 1st quarter–4th quarter | | 1st quarter | |
| | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) |
| Acid grade, more than 97% calcium fluoride: | | | | | | | | | | | | |
| China | 7,150 | \$2,100 | 30,400 | \$9,350 | 8,550 | \$2,550 | -- | -- | 46,100 | \$14,000 | 44,300 | \$12,900 |
| France | 285 | 150 | -- | -- | -- | -- | -- | -- | 285 | 150 | -- | -- |
| Germany | 89 | 50 | 184 | 95 | -- | -- | 168 | \$91 | 441 | 235 [†] | 137 | 73 |
| Israel | -- | -- | 1 | 7 | -- | -- | -- | -- | 1 | 7 | -- | -- |
| Mexico | 62,500 | 17,300 | 36,000 | 9,890 | 52,000 | 14,000 | 62,900 | 17,200 | 213,000 | 58,400 | 31,300 | 8,450 |
| Mongolia | -- | -- | -- | -- | 95 | 51 [†] | 152 | 78 | 247 | 129 [†] | 76 | 39 |
| Russia | -- | -- | -- | -- | -- | -- | 1 | 6 | 1 | 6 | -- | -- |
| South Africa | 16,400 | 3,140 | -- | -- | 14,900 | 3,130 | -- | -- | 31,300 | 6,260 | -- | -- |
| Spain | -- | -- | 10,900 | 2,680 | -- | -- | -- | -- | 10,900 | 2,680 | 10,100 | 2,240 |
| United Kingdom | -- | -- | 2 | 7 | 167 | 87 | 2,070 | 997 | 2,230 | 1,090 | 2 | 5 |
| Vietnam | 5,600 | 1,130 | -- | -- | 17,700 | 5,360 | -- | -- | 23,300 | 6,490 | 4,500 | 993 |
| Total | 92,000 | 23,900 | 77,400 | 22,000 | 93,300 | 25,200 | 65,300 | 18,300 | 328,000 | 89,500 | 90,400 | 24,700 |
| Metallurgical grade, less than 97% calcium fluoride: | | | | | | | | | | | | |
| China | -- | -- | -- | -- | 9 | 6 | 52 | 17 | 61 | 23 | 191 | 122 |
| Mexico | 11,500 | 2,540 | 21,800 | 5,130 | 5,380 | 1,130 | 15,800 | 3,650 | 54,500 | 12,400 | 17,300 | 3,970 |
| Mongolia | 500 | 272 | 200 | 134 | -- | -- | -- | -- | 700 | 406 | -- | -- |
| Total | 12,000 | 2,810 | 22,000 | 5,260 | 5,390 | 1,140 | 15,900 | 3,670 | 55,200 | 12,900 | 17,400 | 4,090 |
| Grand total | 104,000 | 26,700 | 99,500 | 27,300 | 98,700 | 26,300 | 81,200 | 22,000 | 383,000 | 102,000 | 108,000 | 28,800 |

[†]Revised. -- Zero.

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

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

³Cost, insurance, and freight at U.S. ports.

Source: U.S. Census Bureau.

TABLE 3
U.S. IMPORTS FOR CONSUMPTION OF HYDROFLUORIC ACID^{1,2}

| | 2016 | | | | | | | | | | 2017 | |
|--------------------|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|
| | 1st quarter | | 2d quarter | | 3d quarter | | 4th quarter | | 1st quarter–4th quarter | | 1st quarter | |
| | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) |
| Canada | 88 | \$151 | 198 | \$317 | 176 | \$290 | 132 | \$228 | 594 | \$986 | 182 | \$225 |
| China | 1,510 | 1,400 | 1,990 | 1,800 | 2,100 | 1,940 | 1,980 | 1,780 | 7,570 | 6,920 | 1,650 | 1,450 |
| Germany | 326 | 769 | 180 | 379 | 312 | 591 | 281 | 521 | 1,100 | 2,260 | 386 | 737 |
| Japan | 217 | 310 | 276 | 366 | 517 | 618 | 551 | 728 | 1,560 | 2,020 | 955 | 1,170 |
| Mexico | 29,700 | 45,700 | 29,500 | 45,300 | 29,700 | 45,700 | 24,700 | 38,100 | 114,000 | 175,000 | 27,900 | 40,100 |
| Taiwan | 50 | 132 | 100 | 297 | 166 | 295 | 217 | 418 | 533 | 1,140 | 126 | 264 |
| Other ³ | 120 | 300 | 138 | 383 | 186 | 549 | 139 | 355 | 584 | 1,590 | 244 | 653 |
| Total | 32,000 | 48,800 | 32,400 | 48,800 | 33,100 | 50,000 | 28,000 | 42,200 | 126,000 | 190,000 | 31,500 | 44,600 |

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

²Cost, insurance, and freight at U.S. ports.

³Includes imports from Belgium, India, the Republic of Korea, Singapore, and Spain.

Source: U.S. Census Bureau.

TABLE 4
U.S. EXPORTS OF FLUORSPAR, BY COUNTRY AND VALUE^{1,2,3}

| | 2016 | | | | | | | | 2017 | | | |
|--|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|---------------------------|----------------------|
| | 1st quarter | | 2d quarter | | 3d quarter | | 4th quarter | | 1st quarter–4th quarter | | 1st quarter | |
| | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) | Quantity (metric tons) | Value (thousands) |
| Acid grade, more than 97% calcium fluoride: | | | | | | | | | | | | |
| Canada | 2,520 | \$378 | 1,940 | \$301 | 1,420 | \$239 | 636 | \$137 | 6,520 | \$1,060 | 729 | \$196 |
| Mexico | -- | -- | -- | -- | 285 | 32 | -- | -- | 285 | 32 | -- | -- |
| Other ⁴ | -- | -- | -- | -- | -- | -- | 125 | 15 | 125 | 15 | 82 | 27 |
| Total | 2,520 | 378 | 1,940 | 301 | 1,710 | 271 | 761 | 152 | 6,930 | 1,100 | 811 | 223 |
| Metallurgical grade, less than 97% calcium fluoride: | | | | | | | | | | | | |
| Canada | 1,590 | 245 | 987 | 167 | 642 | 102 | 968 | 157 | 4,190 | 672 | 936 | 156 |
| Mexico | -- | -- | -- | -- | 387 | 53 | -- | -- | 387 | 53 | -- | -- |
| Other ⁵ | -- | -- | 4 | 4 | 80 | 17 | 341 | 55 | 425 | 75 | 5 | 4 |
| Total | 1,590 | 245 | 991 | 171 | 1,110 | 172 | 1,310 | 212 | 5,000 | 800 | 941 | 160 |
| Grand total | 4,120 | 623 | 2,930 | 472 | 2,820 | 443 | 2,070 | 364 | 11,900 | 1,900 | 1,750 | 383 |

¹Revised. -- Zero.

¹Exports include domestic exports only.

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

³Free alongside ship values at U.S. ports.

⁴Includes exports to Chile, Italy, and the Republic of Korea.

⁵Includes exports to Chile, the Dominican Republic, France, Indonesia, Malaysia, Nicaragua, and Trinidad and Tobago.

Source: U.S. Census Bureau.

TABLE 5
END OF QUARTER FLUORSPAR PRICES

(Dollars per metric ton)

| | 2016 | | | | 2017 |
|--|-------------|------------|------------|-------------|-------------|
| | 1st quarter | 2d quarter | 3d quarter | 4th quarter | 1st quarter |
| <u>Acid grade, more than 97% calcium fluoride:</u> | | | | | |
| Chinese, dry basis, cost, insurance, and freight, Gulf port, filtercake | 270–300 | 270–300 | 260–270 | 260–270 | 260–270 |
| Chinese, free on board (f.o.b.) China, wet filtercake | 230–250 | 270–290 | 240–260 | 250–270 | 310–330 |
| Mexican, f.o.b. Tampico, filtercake | 260–280 | 260–280 | 260–280 | 260–280 | 260–280 |
| Mexican, f.o.b. Tampico, arsenic <5 parts per million | 280–310 | 280–310 | 280–310 | 280–310 | 280–310 |
| South African, f.o.b. Durban, filtercake | 250–270 | 250–270 | 200–220 | 200–220 | 200–220 |
| Metallurgical grade, less than 97% calcium fluoride, Mexican, f.o.b. Tar | 230–270 | 230–250 | 230–250 | 230–250 | 230–250 |

Source: Industrial Minerals magazine (London).