

Mineral Industry Surveys

For information, contact:

Michele E. McRae, Fluorspar Commodity Specialist
National Minerals Information Center
Telephone: (703) 648-7743
Email: mmcrae@usgs.gov

Joshua A. Braunstein (Data)

Telephone: (703) 648-7958

Email: jbraunstein@usgs.gov

Internet: <https://www.usgs.gov/centers/national-minerals-information-center/mineral-industry-surveys>

FLUORSPAR IN THE FIRST QUARTER 2022

Fluorspar imports in the first quarter of 2022 were 114,000 metric tons (t), 104,000 t of which were acid grade and 9,940 t of which were metallurgical grade (fig. 1, table 1). In terms of quantity, acid-grade imports decreased slightly, and metallurgical-grade imports decreased by 29% compared with imports in the first quarter of 2021. The leading sources of acid-grade imports were Mexico (60%), Vietnam (22%), and South Africa (17%); Mexico accounted for 96% of metallurgical-grade imports (table 2).

In the first quarter of 2022, imports of other fluorine-containing materials produced directly from fluorspar were 28,000 t for hydrofluoric acid, 6,010 t for cryolite, and 4,600 t for aluminum fluoride (table 1). Mexico was the leading supplier of hydrofluoric acid accounting for 93% of imports (table 3). Exports of acid- and metallurgical-grade fluorspar, aluminum fluoride, and cryolite were likely re-exports as there is no domestic production (table 1).

In the first quarter of 2022, the quarterly average unit value of acid-grade imports was \$308 per metric ton, a decrease of

4% compared with the 2021 annual average unit value of \$322 per metric ton. The quarterly average unit value of acid-grade imports from Mexico was \$309, a 7% decrease compared with \$331 in 2021; and the quarterly average unit value of acid-grade imports from South Africa was \$335 per metric ton, a 16% decrease compared with \$400 per metric ton in 2021. Because the value of acid-grade imports from Vietnam was estimated, there was insufficient data to make a comparison between the 2021 annual average value of acid-grade imports and the first quarter of 2022 average import value. In the first quarter of 2022, the quarterly average value of metallurgical-grade imports from Mexico was \$115 per metric ton, an 18% decrease compared with the 2021 annual average unit value of \$141 per metric ton (table 2).

Mining and Exploration News

In February, the mine and processing operations of Canada Fluorspar (NL) Inc. were idled and placed on care-and-maintenance status after the Supreme Court of Newfoundland

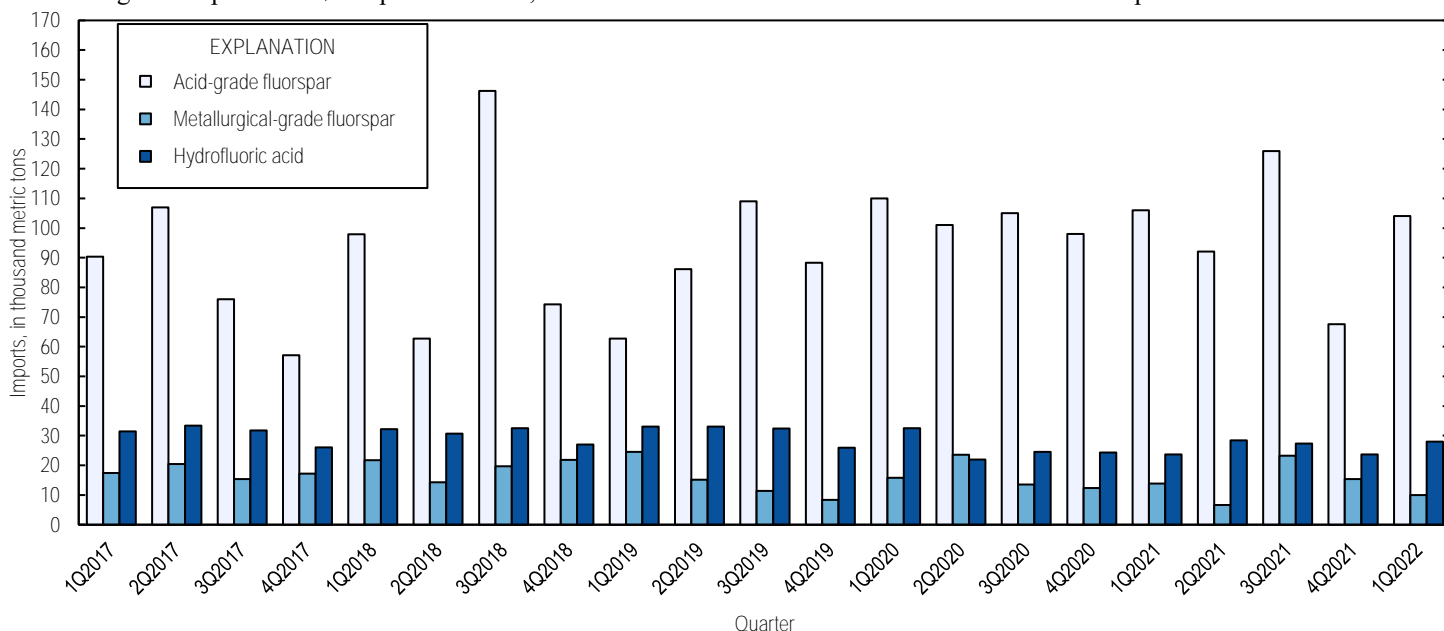


Figure 1. Acid-grade fluorspar, metallurgical-grade fluorspar, and hydrofluoric acid imports from the first quarter of 2017 through the first quarter of 2022. Source: U.S. Census Bureau and U.S. Geological Survey.

and Labrador [Canada] appointed an interim receiver for the operation. In March, the Court approved a \$6.5 million plan, jointly funded by the Provincial government and Bridging Finance Inc., to fund for care-and-maintenance operations through July 2022 and authorized sale of the operation's assets. Canada Fluorspar's mining and processing operations in St. Lawrence, Newfoundland, and Labrador, Canada, had been in commercial operation since 2018 (Roberts, 2022; VOCM, 2022).

In February, production levels at Mexichem Fluor, S.A. de C.V.'s (known commercially as Koura) Las Cuevas Mine in San Luis Potosi, Mexico, were reportedly reduced owing to safety issues affecting an access ramp. The company subsequently declared force majeure for its supply contracts, which was expected to remain in affect for at least the first half of 2022 (Cook, 2022). The Las Cuevas Mine is Koura's main fluorspar production asset and is thought to be the world's leading producing and exporting fluorspar mine. Koura is vertically integrated with downstream production of fluorochemicals including aluminum fluoride, hydrofluoric acid, medical propellants, and refrigerant gases (Orbia Advance Corp., S.A.B. de C.V., 2022, p. 68, 69, 93, 94). In 2021, Mexico supplied 260,000 t of domestic acid-grade imports and 57,900 t of metallurgical-grade imports, which together accounted for 71% of total domestic fluorspar imports (table 2). Mexico also accounted for 66% of domestic aluminum fluoride imports and 91% of hydrofluoric acid imports in 2021 (table 3).

Fluorochemical News

Koura began commercial production of medical grade 1,1-difluoroethane (hydrofluoralkane [HFA] 152a) to be used in pressurized metered dose inhalers (pMDI) at its site in Runcorn, United Kingdom. pMDI's previously used either hydrofluorocarbon (HFC) 134a or HFC-227ea. Koura expected that the lower global warming potential of HFA-152a compared with alternatives would decrease pMDI

emissions by 90% (Mexichem Fluor S.A. de C.V., 2022; Pernigotti and others, 2021).

References Cited

- Cook, Alex, 2022, Force majeure imposed in part at Koura's fluorspar mine in Mexico amid safety concerns: Fastmarkets, March 24. (Accessed April 21, 2022, via indmin.com.)
- Mexichem Fluor, S.A. de C.V., 2022, Koura opens world's first HFA 152a medical propellant production facility: San Luis Potosi, Mexico, Mexichem Fluor, S.A. de C.V., March 31. (Accessed June 7, 2022, at <https://www.kouraglobal.com/5899/>.)
- Orbia Advance Corp., S.A.B. de C.V., 2022, Annual report 2021: Mexico City, Mexico, Orbia Advance Corp., S.A.B. de C.V., April 29, 179 p. (Accessed June 7, 2022, at https://www.orbia.com/49c4eb/siteassets/5.-investor-relations/annual-reports/orbia-2021-annual-report-complete_en.pdf.)
- Pernigotti, Daniele, Stonham, Carol, Panigone, Sara, Sandri, Federica, Ferri, Rossella, Unal, Yasemin, and Roche, Nicolas, 2021, Reducing carbon footprint of inhalers—analysis of climate and clinical implications of different scenarios in five European countries: BMJ Open Respiratory Research, November 17, 11 p. (Accessed June 7, 2022, at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8650484/pdf/bmjresp-2021-001071.pdf>.)
- Roberts, Terry, 2022, Judge approves St. Lawrence mine sale process, with province committing up to \$3.25M: St. John's, Newfoundland, and Labrador, Canada, CBC Radio-Canada, March 11. (Accessed June 15, 2022, at <https://www.cbc.ca/news/canada/newfoundland-labrador/court-fluorspar-sale-1.6381208>.)
- VOCM, 2022, Judge grants motion for more time, money to save Canada Fluorspar: St. John's, Newfoundland and Labrador, Canada, VOCM, March 11. (Accessed May 17, 2022, at <https://vocm.com/2022/03/11/canada-fluorspar-mine-3-million/>.)

List services and web feed subscribers are the first to receive notification of USGS minerals information publications and data releases. For information on how to subscribe, go to <https://www.usgs.gov/centers/national-minerals-information-center>.

TABLE 1
SALIENT FLUORSPAR STATISTICS¹

(Metric tons)

	2021					2022
	1st quarter	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter	1st quarter
Production, fluorspar	--	--	--	--	--	--
Imports for consumption: ²						
Fluorspar:						
Acid grade, more than 97% calcium fluoride	106,000	92,100	126,000	67,600	392,000	104,000
Metallurgical grade, less than 97% calcium fluoride	13,900	6,640	23,200	15,400	59,200	9,940
Total	120,000	98,700	149,000	83,000	451,000	114,000
Hydrofluoric acid	23,700	28,400	27,400	23,700	103,000	28,000
Aluminum fluoride	4,970	5,200	10,200	7,220	27,600	4,600
Cryolite	11,300	12,400	8,190	9,670	41,600	6,010
Exports: ²						
Fluorspar:						
Acid grade, more than 97% calcium fluoride	1,010	1,010	754	1,070	3,840	2,250
Metallurgical grade, less than 97% calcium fluoride	2,440	3,520	2,570	2,380	10,900	2,420
Total	3,440	4,530	3,320	3,450	14,700	4,670
Hydrofluoric acid	6,100	4,550	3,490	2,480	16,600	2,310
Aluminum fluoride	43	60	65	28	196	560
Cryolite	1,570	2,040	2,720	4,470	10,800	2,980
Apparent consumption, fluorspar: ³						
Acid grade, more than 97% calcium fluoride	105,000	91,100	125,000	66,500	388,000	102,000
Metallurgical grade, less than 97% calcium fluoride	11,500	3,120	20,600	13,100	48,300	7,520
Total	117,000	94,200	145,000	79,600	436,000	109,000

-- Zero.

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

²Source: U.S. Census Bureau; may be adjusted by U.S. Geological Survey.

³Imports minus exports.

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

	2021										2022	
	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	12,500	\$3,480	8,480	\$2,460	--	--	18,400	\$5,350	39,400	\$11,300	1	\$3
Germany	154	85	194	108	82	\$47	82	47	512	288	--	--
Hong Kong	--	--	--	--	--	--	--	--	--	--	134	71
Japan	24	30	892	537	636	370	824	446	2,380	1,380	629	361
Mexico	47,200	16,100	82,400	26,600	83,100	27,400	47,700	16,000	260,000	86,200	62,300	19,200
Mongolia	131	83	131	79	396	237	532	350	1,190	750	--	--
South Africa	24,800	9,940	--	--	--	--	--	--	24,800	9,940	18,200	6,090
Spain	--	--	--	--	7	5	--	--	7	5	--	--
United Kingdom	3	12	3	8	1	3	3	8	10	32	3	9
Vietnam	21,600	5,550 ^c	--	--	41,400	10,600	--	--	63,000	16,200 ^c	23,000	6,310 ^c
Total	106,000	35,300	92,100	29,800	126,000	38,700	67,600	22,200	392,000	126,000	104,000	32,100
Metallurgical grade, less than 97% calcium fluoride:												
Canada	--	--	--	--	--	--	6	4	6	4	--	--
China	140	82	--	--	15	12	300	169	455	263	270	150
Mexico	13,800	1,900	6,600	1,200	22,900	2,840	14,600	2,220	57,900	8,160	9,580	1,110
Mongolia	--	--	--	--	245	144	498	295	743	439	--	--
Netherlands	1	3	35	22	--	--	1	4	37	28	--	--
Pakistan	--	--	--	--	--	--	--	--	--	--	83	57
South Africa	18	10	11	5	--	--	--	--	29	15	--	--
United Kingdom	1	6	--	--	3	7	6	18	10	31	5	4
Total	13,900	2,000	6,640	1,230	23,200	3,000	15,400	2,710	59,200	8,940	9,940	1,320
Grand total	120,000	37,300	98,700	31,100	149,000	41,700	83,000	24,900	451,000	135,000	114,000	33,400

^cEstimated. -- 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; may be adjusted by U.S. Geological Survey.

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

	2021										2022	
	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	103	\$210	63	\$133	70	\$153	90	\$183	325	\$679	121	\$230
China	205	242	89	153	18	20	17	48	329	464	56	96
Germany	277	452	221	464	136	276	250	619	884	1,810	111	282
India	106	136	182	277	89	151	53	93	430	656	--	--
Japan	579	1,260	503	1,150	662	1,440	536	1,190	2,280	5,040	393	854
Korea, Republic of	194	598	223	623	308	1,010	293	953	1,020	3,190	200	614
Mexico	21,400	33,300	25,800	39,900	25,300	40,900	21,300	35,500	93,800	150,000	26,100	47,900
Mongolia	--	--	17	39	--	--	--	--	17	39	--	--
Singapore	93	315	114	346	113	398	97	365	417	1,430	80	295
Spain	352	534	580	785	389	541	510	795	1,830	2,660	331	649
Taiwan	382	1,090	632	1,730	365	795	559	1,260	1,940	4,870	610	2,100
United Kingdom	--	--	--	--	(3)	3	--	--	(3)	3	--	--
Total	23,700	38,100	28,400	45,600	27,400	45,700	23,700	41,000	103,000	170,000	28,000	53,100

-- Zero.

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

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

³Less than ½ unit.

Source: U.S. Census Bureau.