

# Mineral Industry Surveys

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## FLUORSPAR IN THE FIRST QUARTER 2019

Fluorspar imports in the first quarter of 2019 were 102,000 metric tons (t), 77,700 t of which were acid grade and 24,500 t of which were metallurgical grade (fig. 1, table 1). Acid-grade imports increased by 5% as compared with those in the previous quarter but decreased by 21% as compared with imports in the first quarter of 2018. Metallurgical-grade imports increased by 12% as compared with those in the previous quarter and increased by 13% as compared with imports in the first quarter of 2018. Fluorspar imports can vary substantially from quarter to quarter based on supply agreements and production schedules of leading fluorspar consumers.

In the first quarter of 2019 imports of other fluorine-containing materials produced directly from fluorspar were 33,100 t for hydrofluoric acid, 7,050 t for aluminum fluoride, and 5,970 t for cryolite (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).

The average unit value of acid-grade imports in the first quarter of 2019 was \$272 per metric ton, a 2% decrease as compared with the 2018 annual average unit value of \$276 per metric ton. The average unit value of metallurgical-grade fluorspar from Mexico (98% of metallurgical-grade imports) in the first quarter of 2019 was \$236 per metric ton, a 4% decrease as compared with the 2018 annual average unit value from Mexico of \$246 per metric ton.

According to Fastmarkets IM, the price of acid-grade fluorspar including cost, insurance, and freight at ports in the Gulf coast was \$260 to \$270 per metric ton in the first quarter of 2019, unchanged from prices reported in 2018 (table 4). The price in the Gulf coast continued to be lower than prices from major exporting countries including China (\$450 to \$515 per metric ton), Mexico (\$400 to \$450 per metric ton), and South Africa (\$440 to \$490 per metric ton).

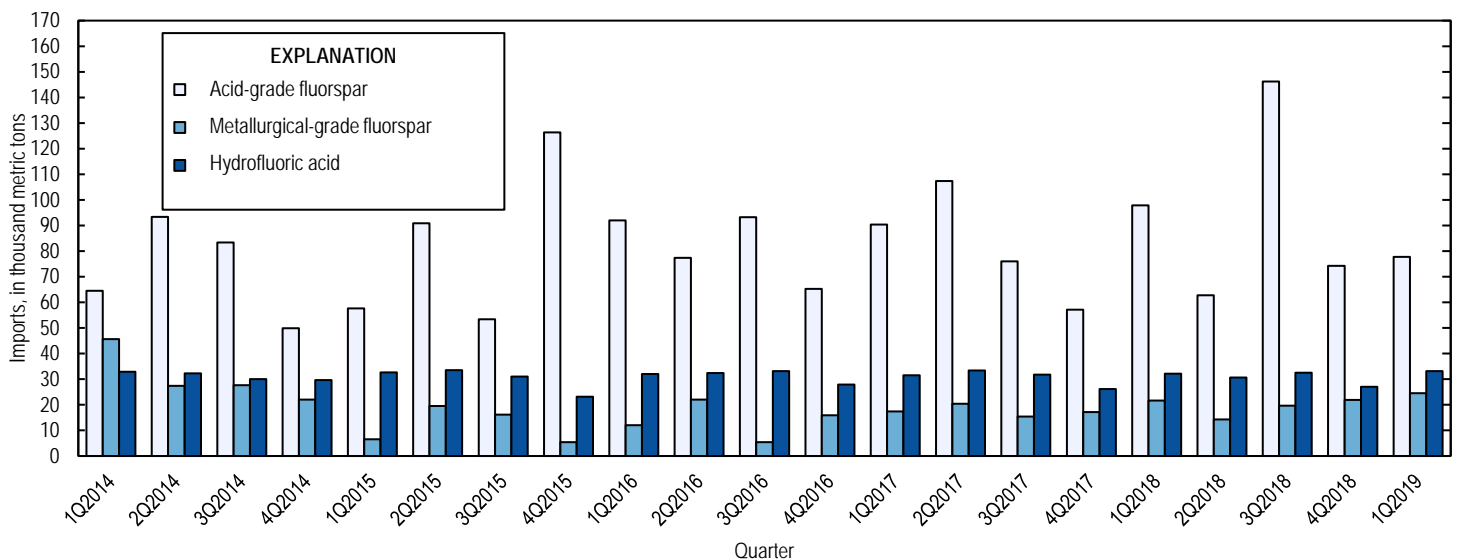


Figure 1. Acid-grade fluorspar, metallurgical-grade fluorspar, and hydrofluoric acid imports from the first quarter of 2014 through the first quarter of 2019. Source: U.S. Census Bureau.

## Fluorochemical News

In February 2019, the U.S. Environmental Protection Agency (EPA) released a Per- and Polyfluoroalkyl Substances (PFAS) Action Plan. In response to public concern about PFAS-related water contamination at sites around the country, the EPA convened a summit of stakeholders in 2018 and announced several actions, including 1) evaluating the viability of establishing a maximum contaminant level for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), 2) evaluating the possible designation of PFOA and PFOS as “hazardous substances” under existing federal statutory mechanisms, 3) developing groundwater cleanup recommendations for PFOA and PFOS, and 4) developing toxicity values or oral reference doses for hexafluoropropylene oxide dimer acid (GenX) and perfluorobutane sulfonic acid. The action plan provided updates on EPA’s progress on those initial actions, and announced additional long- and short-term regulatory and research approaches to reduce exposure to and further characterize potential human health and environmental risks associated with PFAS (U.S. Environmental Protection Agency, 2019, p. 1–8).

In February 2019, The Chemours Co. (Wilmington, DE) announced the startup of production at its newly constructed refrigerant production facility in Ingleside, TX. The facility would triple Chemours capacity to produce Opteon™ YF and

would be the largest plant of its kind in the world, according to the company. Opteon™ YF is a hydrofluoroolefin-1234yf refrigerant with low-global-warming potential used primarily in automotive air-conditioning systems, and as a refrigerant blend in a wide range of applications (Chemours Co., The, 2019).

## References Cited

Chemours Co., The, 2019, Chemours triples capacity of Opteon™ YF with startup of new U.S. production facility: Wilmington, DE, The Chemours Co. press release, February 12. (Accessed April 17, 2020, at <https://investors.chemours.com/news-releases/news-releases-details/2019/Chemours-Triples-Capacity-of-Opteon-YF-with-Startup-of-New-US-Production-Facility/default.aspx>.)

U.S. Environmental Protection Agency, 2019, EPA’s per- and polyfluoroalkyl substances (PFAS) action plan: U.S. Environmental Protection Agency, EPA 823-R-10-04, February, 64 p. (Accessed April 17, 2020, at [https://www.epa.gov/sites/production/files/2019-02/documents/pfas\\_action\\_plan\\_021319\\_508compliant\\_1.pdf](https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf).)

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

(Metric tons, unless otherwise specified)

	2018				1st quarter– 4th quarter	2019 1st quarter
	1st quarter	2d quarter	3d quarter	4th quarter		
Production, fluorspar	--	--	--	--	--	--
Imports for consumption: <sup>2</sup>						
Fluorspar:						
Acid grade, more than 97% calcium fluoride	97,900	62,700	146,000	74,300	381,000	77,700
Metallurgical grade, less than 97% calcium fluoride	21,700	14,300	19,700	21,900	77,600	24,500
Total	120,000	77,000	166,000	96,200	459,000	102,000
Hydrofluoric acid	32,200	30,700	32,500	27,000	122,000	33,100
Aluminum fluoride	3,770	6,830	6,320	8,640	25,600	7,050
Cryolite	2,330	3,940	4,060	6,490	16,800	5,970
Exports: <sup>2</sup>						
Fluorspar:						
Acid grade, more than 97% calcium fluoride	891	1,300	403	126	2,720	125
Metallurgical grade, less than 97% calcium fluoride	1,810	1,190	1,750	1,500	6,250	1,740
Total	2,710	2,490	2,150	1,620	8,970	1,870
Hydrofluoric acid	4,290	4,510	4,420	5,330	18,500	4,800
Aluminum fluoride	102	170	304	450	1,030	89
Cryolite	3,190	3,900	2,570	2,070	11,700	2,850
Apparent consumption, fluorspar: <sup>3</sup>						
Acid grade, more than 97% calcium fluoride	97,000	61,400	146,000	74,200	378,000	77,600
Metallurgical grade, less than 97% calcium fluoride	19,900	13,100	17,900	20,400	71,300	22,700
Total	117,000	74,500	164,000	94,600	450,000	100,000

-- Zero.

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

<sup>2</sup>Source: U.S. Census Bureau.

<sup>3</sup>Imports minus exports.

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

	2018										2019	
	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	--	--	--	--	11,000	\$3,430	--	--	11,000	\$3,430	4,810	\$1,250
China	114	\$78	280	\$166	--	--	--	--	394	244	--	--
Germany	480	77	189	102	76	55	444	\$73	1,190	307	452	77
Japan	--	--	1	3	629	330	--	--	630	333	--	--
Mexico	53,400	13,700	62,200	15,900	61,600	16,400	58,100	14,400	235,000	60,500	57,300	15,500
Mongolia	--	--	--	--	340	227	231	154	571	381	57	37
Russia	--	--	1	14	--	--	--	--	1	14	--	--
South Africa	15,000	4,940	--	--	26,700	9,470	--	--	41,700	14,400	--	--
Spain	10,000	3,330	19	13	8,990	2,980	--	--	19,000	6,320	1	6
United Kingdom	2	7	2	6	--	--	11	6	15	18	--	--
Vietnam	18,900	5,180	--	--	36,900	10,300	15,500	3,910	71,300	19,400	15,100	4,260
Total	97,900	27,300	62,700	16,300	146,000	43,200	74,300	18,600	381,000	105,000	77,700	21,100
Metallurgical grade, less than 97% calcium fluoride:												
Belgium	--	--	--	--	1	\$4	--	--	1	\$4	--	--
China	26	\$18	233	\$157	294	191	306	\$183	859	549	212	\$133
India	--	--	--	--	--	--	--	--	--	--	21	12
Mexico	21,300	5,230	13,700	3,560	19,200	5,020	21,200	4,730	75,400	18,500	23,900	5,640
Mongolia	280	212	280	189	200	152	340	224	1,100	777	336	198
Netherlands	--	--	--	--	--	--	--	--	--	--	(4)	4
South Africa	27	11	--	--	--	--	1	11	28	22	--	--
Spain	52	39	81	50	--	--	--	--	133	89	--	--
United Kingdom	--	--	--	--	--	--	1	17	1	17	--	--
Total	21,700	5,510	14,300	3,950	19,700	5,360	21,900	5,170	77,600	20,000	24,500	5,990
Grand total	120,000	32,800	77,000	20,200	166,000	48,600	96,200	23,700	459,000	125,000	102,000	27,100

-- 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>Cost, insurance, and freight at U.S. ports.

<sup>4</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 3  
U.S. IMPORTS FOR CONSUMPTION OF HYDROFLUORIC ACID<sup>1,2</sup>

	2018								2019			
	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)
Belgium	--	--	--	--	--	--	--	--	--	--	18	\$42
Canada	102	\$230	83	\$163	122	\$246	104	\$216	410	\$855	63	210
China	689	867	660	911	803	929	395	480	2,550	3,190	431	592
Germany	390	738	443	843	389	800	243	541	1,460	2,920	271	634
India	--	--	55	87	--	--	18	22	74	109	37	49
Japan	282	483	524	1,290	330	1,090	354	956	1,490	3,820	270	682
Korea, Republic of	109	194	303	310	395	464	325	869	1,130	1,840	674	1,310
Mexico	30,000	43,800	27,600	40,400	29,800	43,500	24,800	37,300	112,000	165,000	30,600	46,500
Singapore	97	284	129	379	97	310	64	206	386	1,180	129	407
Spain	457	610	714	1,040	496	738	601	876	2,270	3,260	493	872
Sweden	--	--	--	--	18	70	--	--	18	70	--	--
Taiwan	87	251	148	370	70	201	133	403	438	1,230	56	158
United Kingdom	(3)	2	--	--	--	--	--	--	(3)	2	--	--
Total	32,200	47,500	30,700	45,800	32,500	48,400	27,000	41,900	122,000	183,000	33,100	51,400

-- Zero.

<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.

<sup>3</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 4  
END OF QUARTER FLUORSPAR PRICES

(Dollars per metric ton)

	2018				2019
	1st quarter	2d quarter	3d quarter	4th quarter	1st quarter
Acid grade, more than 97% calcium fluoride:					
Dry basis, cost, insurance, and freight, Gulf port, filtercake	260–270	260–270	260–270	260–270	260–270
China, free on board (f.o.b.) China, wet filtercake	480–520	450–530	410–500	550–580	450–515
Mexican, f.o.b. Tampico, wet filtercake <sup>1</sup>	260–280	260–280	300–320	400–450	400–450
Mexican, f.o.b. Tampico, arsenic <5 parts per million	280–310	280–310	NA	NA	NA
South Africa, f.o.b. Durban, filtercake	350–400	350–400	350–400	450–490	440–490
Metallurgical grade, minimum 85% calcium fluoride, Mexican, f.o.b. Tampico	230–250	230–250	230–250	300–320	280–320

NA Not available.

<sup>1</sup>As of the third quarter of 2018, price includes material formerly listed as "Mexican, f.o.b. Tampico, arsenic <5 parts per million."

Source: Fastmarkets IM (London).