

Mineral Industry Surveys

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FLUORSPAR IN THE FOURTH QUARTER 2019

Fluorspar imports in the fourth quarter of 2019 were 96,600 metric tons (t), 88,300 t of which were acid grade and 8,360 t of which were metallurgical grade (fig. 1, table 1). Fluorspar imports in 2019 totaled 425,000 t, 369,000 t of which were acid grade and 55,400 t of which were metallurgical grade. For the full year, acid-grade imports decreased by 3% and metallurgical-grade imports decreased by 29% compared with those in 2018.

In the fourth quarter of 2019, imports of other fluorine-containing materials produced directly from fluorspar were 26,000 t for hydrofluoric acid, 8,940 t for aluminum fluoride, and 5,130 t for cryolite (table 1). In 2019, imports of these materials were 124,000 t for hydrofluoric acid, 37,300 t for aluminum fluoride, and 20,700 t for cryolite. Imports of aluminum fluoride and cryolite increased by 46% and 23%, respectively, as compared with those in 2018. Increased imports of these materials, which are essential in primary aluminum production, were attributed to a 23% increase in domestic primary aluminum production in 2019 (Bray, 2020,

p. 1). Mexico was the leading supplier of hydrofluoric acid accounting for 90% of imports in the fourth quarter of 2019, comparable with import quantities in previous quarters (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 annual average unit value of acid-grade fluorspar imports in 2019 was \$318 per metric ton, a 15% increase compared with the annual average unit value of \$276 per metric ton in 2018 (table 2). The annual average unit value of acid-grade imports from Mexico was \$280 per metric ton, a 9% increase compared with \$257 per metric ton in 2018. Mexico accounted for 63% of acid-grade imports in 2019, essentially unchanged from 62% in 2018. The annual average unit value of imports from Vietnam (14% of acid-grade imports) was \$281 per metric ton compared with \$271 per metric ton in 2018 (19% of acid-grade imports). The annual average unit value of acid-grade imports from China (14% of acid-grade imports) was \$461 per metric ton, a 26% decrease

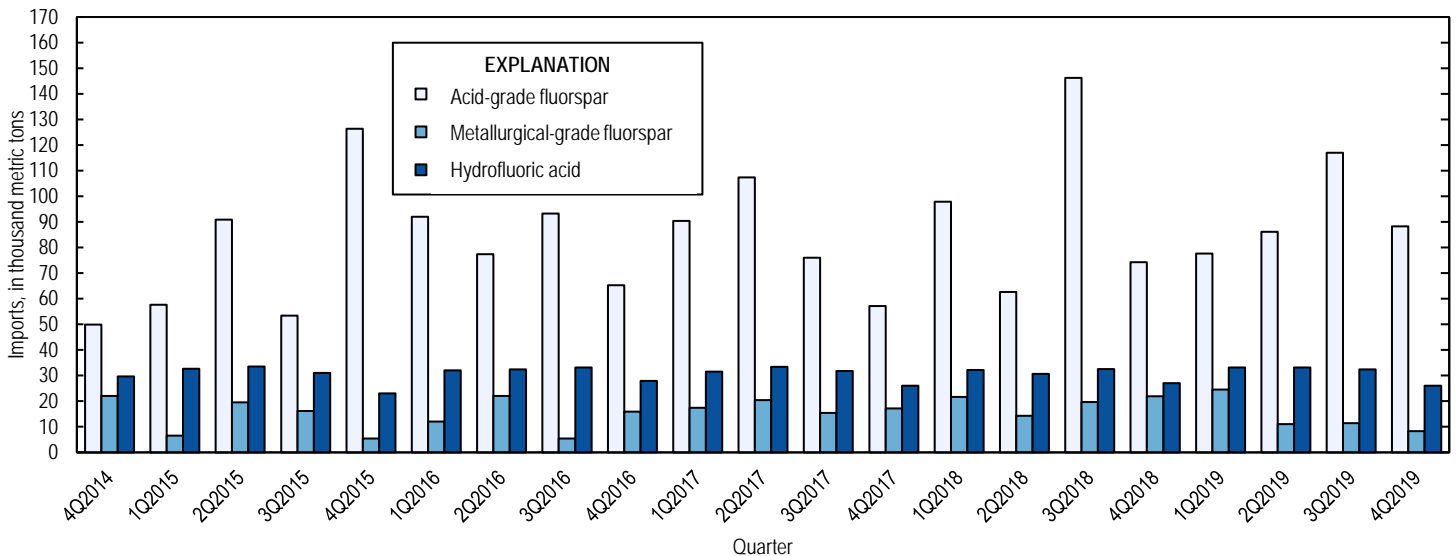


Figure 1. Acid-grade fluorspar, metallurgical-grade fluorspar, and hydrofluoric acid imports from the fourth quarter of 2014 through the fourth quarter of 2019. Source: U.S. Census Bureau.

compared with \$619 per metric ton in 2018 (less than 1% of acid-grade imports). The annual average unit value of acid-grade imports from South Africa (3% of acid-grade imports in 2019) was \$450 per metric ton, a 30% increase from \$346 per metric ton in 2018 (11% of acid-grade imports). The annual average unit value of acid-grade imports from Spain (3% of acid-grade imports) was \$461 per metric ton, a 38% increase compared with \$333 per metric ton in 2018 (5% of acid-grade imports). The annual average unit value of metallurgical-grade imports from Mexico was \$273 per metric ton, an 11% increase compared with \$246 per metric ton in 2018. Mexico accounted for 98% of metallurgical-grade imports in 2019, similar to 97% in 2018.

The following is a discussion of 2019 yearend prices for leading exporting countries compared with 2018 yearend prices. According to Fastmarkets IM, the price of acid-grade fluorspar from China decreased by 25% to \$400 to \$450 per metric ton; the price of acid-grade fluorspar from Mexico decreased slightly to \$380 to \$450 per metric ton; and the price of acid-grade fluorspar from South Africa decreased by 10% to \$400 to \$450 per metric ton. The price of metallurgical-grade fluorspar from Mexico decreased by 3% to \$280 to \$320 per metric ton.

Mining and Exploration News

SepFluor Ltd. made its first fluorspar shipments from the Nokeng Fluorspar Mine in Rust de Winter, Gauteng, South

Africa, in the fourth quarter of 2019. In October, the company shipped 500 t of metallurgical-grade fluorspar briquettes with a minimum calcium fluoride content of 85% to be used as a flux in steelmaking from the Port of Durban, South Africa, to a customer in India. In December, the company shipped 10,000 dry metric tons of acid-grade fluorspar concentrate from the Port of Durban, South Africa, to a customer in the United States, which was received in January 2020 (SepFluor Ltd., 2019 a, b).

References Cited

- Bray, E.L., 2020, Aluminum in December 2019: U.S. Geological Survey Mineral Industry Surveys, March, 11 p. (Accessed May 8, 2020, at <https://prd-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/mis-201912-alumi.pdf>.)
- SepFluor Ltd., 2019a, Nokeng's first briquette shipment—October 2019: Johannesburg, South Africa, SepFluor Ltd., October. (Accessed May 28, 2020, via <https://www.sepfluor.co.za/>.)
- SepFluor Ltd., 2019b, Nokeng loads acid-spar shipment—December 2019: Johannesburg, South Africa, SepFluor Ltd., December. (Accessed May 28, 2020, via <https://www.sepfluor.co.za/>.)

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TABLE 1
SALIENT FLUORSPAR STATISTICS¹

(Metric tons, unless otherwise specified)

	2018		2019				
	4th quarter	1st quarter– 4th quarter	1st quarter	2d quarter	3d quarter	4th quarter	1st quarter– 4th quarter
Production, fluorspar	--	--	--	--	--	--	--
Imports for consumption: ²							
Fluorspar:							
Acid grade, more than 97% calcium fluoride	74,300	381,000	77,700	86,100	117,000	88,300	369,000
Metallurgical grade, less than 97% calcium fluoride	21,900	77,600	24,500	11,100	11,400	8,360	55,400
Total	96,200	459,000	102,000	97,200	128,000	96,600	425,000
Hydrofluoric acid	27,000	123,000	33,100	33,100	32,400	26,000	124,000
Aluminum fluoride	8,640	25,600	7,050	12,900	8,460	8,940	37,300
Cryolite	6,490	16,800	5,970	5,260	4,390	5,130	20,700
Exports: ²							
Fluorspar:							
Acid grade, more than 97% calcium fluoride	126	2,720	125	796	522	438	1,880
Metallurgical grade, less than 97% calcium fluoride	1,500	6,250	1,740	929	1,180	1,860	5,720
Total	1,620	8,970	1,870	1,730	1,700	2,300	7,600
Hydrofluoric acid	5,330	18,500	4,800	4,610	3,540	3,290	16,200
Aluminum fluoride	450	1,030	89	159	77	64	390
Cryolite	2,070	11,700	2,850	2,360	1,880	1,450	8,530
Apparent consumption, fluorspar: ³							
Acid grade, more than 97% calcium fluoride	74,200	378,000	77,600	85,300	117,000	87,800	367,000
Metallurgical grade, less than 97% calcium fluoride	20,400	71,300	22,700	10,200	10,200	6,500	49,600
Total	94,600	450,000	100,000	95,500	127,000	94,300	417,000

-- 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.

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

	2018				2019									
	4th quarter		1st quarter–4th quarter		1st quarter		2d quarter		3d quarter		4th quarter		1st quarter–4th 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)	Quantity (metric tons)	Value (thousands)
Acid grade, more than 97% calcium fluoride:														
Canada	--	--	11,000	\$3,430	--	--	--	--	--	--	--	--	4,810	\$1,250
China	--	--	394	244	--	--	9,960	\$4,760	18,300	\$8,910	23,600	\$10,300	51,900	23,900
Germany	444	\$73	1,190	307	--	--	38	21	--	--	--	--	38	21
Japan	--	--	630	333	--	--	--	--	566	312	316	163	490	107
Mexico	58,100	14,400	235,000	60,500	57,300	15,500	55,900	15,100	70,000	20,300	47,700	13,600	231,000	64,600
Mongolia	231	154	571	381	57	37	168	104	57	33	517	310	799	484
Russia	--	--	1	14	--	--	--	--	6,560	2,600	--	--	6,560	2,600
South Africa	--	--	41,700	14,400	--	--	9,990	4,500	--	--	--	--	9,990	4,500
Spain	--	--	19,000	6,320	1	6	10,100	4,640	--	--	--	--	10,100	4,640
United Kingdom	11	6	15	18	--	--	4	12	2	6	80	5	86	23
Vietnam	15,500	3,910	71,300	19,400	--	--	--	--	--	--	--	--	--	--
Total	74,300	18,600	381,000	105,000	4	12	2	6	80	5	86	23		
Metallurgical grade, less than 97% calcium fluoride:														
Belgium	--	--	1	4	--	--	--	--	--	--	--	--	--	--
China	306	183	859	549	--	--	--	--	--	--	--	--	--	--
Mexico	21,200	4,730	75,400	18,500	--	--	--	--	--	--	--	--	--	--
Mongolia	340	224	1,100	777	--	--	--	--	--	--	--	--	--	--
South Africa	1	11	28	22	--	--	--	--	--	--	--	--	--	--
Spain	--	--	133	89	--	--	--	--	--	--	--	--	--	--
United Kingdom	1	17	1	17	--	--	--	--	--	--	--	--	--	--
Total	21,900	5,170	77,600	20,000	--	--	--	--	--	--	--	--	--	--
Grand total	96,200	23,700	459,000	125,000										

See footnotes at end of table.

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

	2019									
	1st quarter		2d quarter		3d quarter		4th quarter		1st quarter–4th 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)
Acid grade, more than 97% calcium fluoride—Continued:										
Vietnam	15,100	\$4,260	--	--	21,500	\$6,500	16,000	\$4,040	52,600	\$14,800
Total	77,700	21,100	86,100	\$29,100	117,000	38,700	88,300	28,400	369,000	117,000
Metallurgical grade, less than 97% calcium fluoride:										
China	212	133	89	58	415	248	14	9	730	449
Germany	--	--	6	4	--	--	--	--	6	4
India	21	12	36	21	36	21	--	--	93	54
Mexico	23,900	5,640	11,000	3,320	10,900	3,300	8,350	2,540	54,200	14,800
Mongolia	336	198	--	--	--	--	--	--	336	198
Netherlands	1	4	--	--	--	--	--	--	1	4
Total	24,500	5,990	11,100	3,400	11,400	3,570	8,360	2,540	55,400	15,500
Grand total	102,000	27,100	97,200	32,600	128,000	42,200	96,600	31,000	425,000	133,000

-- 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.

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

	2018			
	4th quarter		1st quarter–4th quarter	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Canada	104	\$216	410	\$855
China	395	480	2,550	3,190
Germany	243	541	1,460	2,920
India	18	22	74	109
Japan	354	956	1,490	3,820
Korea, Republic of	325	869	1,130	1,840
Mexico	24,800	37,300	112,000	165,000
Singapore	64	206	386	1,180
Spain	601	876	2,270	3,260
Sweden	--	--	18	70
Taiwan	133	403	438	1,230
Thailand	--	--	249	--
United Kingdom	--	--	(3)	2
Total	27,000	41,900	123,000	183,000

	2019									
	1st quarter		2d quarter		3d quarter		4th quarter		1st quarter–4th 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)
Belgium	18	\$42	--	--	--	--	--	--	18	\$42
Canada	63	210	44	\$154	129	\$242	73	\$165	309	771
China	431	592	892	1,110	685	778	514	606	2,520	3,080
Germany	271	634	238	605	338	802	338	782	1,190	2,820
India	37	49	179	179	89	107	231	312	536	648
Israel	--	--	--	--	15	17	--	--	15	17
Japan	270	682	589	1,480	642	1,570	605	1,480	2,110	5,210
Korea, Republic of	674	1,310	692	1,470	339	891	192	604	1,900	4,270
Mexico	30,600	46,500	29,600	46,200	29,500	49,800	23,300	37,000	113,000	179,000
Netherlands	--	--	18	23	--	--	--	--	18	23
Singapore	129	407	32	102	64	204	64	206	290	920
Spain	493	872	591	936	368	525	419	593	1,870	2,930
Taiwan	56	158	175	475	182	478	226	598	640	1,710
Total	33,100	51,400	33,100	52,700	32,400	55,400	26,000	42,300	124,000	202,000

-- 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.

TABLE 4
END OF QUARTER FLUORSPAR PRICES

(Dollars per metric ton)

	2018	2019			
	4th quarter	1st quarter	2d quarter	3d quarter	4th quarter
Acid grade, more than 97% calcium fluoride:					
Dry basis, cost, insurance, and freight, Gulf port, filtercake	260–270	260–270	NA	NA	NA
China, free on board (f.o.b.) China, wet filtercake	550–580	450–515	460–520	430–500	400–450
Mexican, f.o.b. Tampico, wet filtercake ¹	400–450	400–450	400–450	400–450	380–450
Mexican, f.o.b. Tampico, arsenic <5 parts per million	NA	NA	NA	NA	NA
South Africa, f.o.b. Durban, filtercake	450–490	440–490	440–490	440–490	400–450
Metallurgical grade, minimum 85% calcium fluoride, Mexican, f.o.b. Tampico	300–320	280–320	280–320	280–320	280–320

NA Not available.

¹As 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).