CCM Data & Business Intelligence

Fluorite Supply in China

The First Edition

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Executive summary

Fluorite has a wide range of applications and is one of the indispensable strategic resources in China.

China's fluorite reserves were generally stable. In 2018–2020, fluorite reserves in China stabilized at 42 million tonnes, ranking second in the world.

China is the largest producer of fluorite worldwide. In 2017–2021, due to strict environmental protection policies, the capacity of fluorite first dropped sharply but then climbed up steadily. On the contrary, fluorite output increased with fluctuations.

Affected by multiple factors such as the reduction of fluorite capacity and downstream demand, the price of fluorite showed an upward trend with fluctuations overall. The price of fluorite went up from USD241/t in Jan. 2017 to USD439/t in Dec. 2021.

In 2017–2021, China's fluorite import volumes rose from 162,297 tonnes to 668,049 tonnes, while export volumes dropped from 336,848 tonnes to 209,446 tonnes. In 2018, China became the net importer for the first time. Mongolia, South Africa and Mexico were the main sources of fluorite in China. And China's fluorite was mainly exported to Japan, Indonesia and South Korea.

It is predicted that the capacity of fluorite in China will go up slightly in 2022–2024.

Methodology

The report is based on data sourced by diverse methods, which are listed as follows:

- Desk research

Desk research includes access to published magazines, journals, government statistics, industry statistics, customs statistics, association seminars as well as information on the Internet. Much work has gone into the compilation and analysis of the information obtained. Where necessary, information has been checked with Chinese fluorite participants regarding intelligence related to market structure and performance characteristics as key producers, key end users, production levels, end user demand and so on.

- Survey

CCM has conducted an extensive survey using telephone interviews in order to study the market of fluorite in China. Interviewees include the following groups:

- Key producers
- Key end users
- Key traders
- Raw material suppliers
- Associations involved
- Industry experts

- Network search

CCM employs a network to contact industry participants by using B2B websites and software. CCM also obtains registration information via the network.

- Data processing and presentation

The data collected and compiled was variously sourced from:

- CCM's database
- Published articles from periodicals, magazines, journals and third party databases
- Statistics from governments and international institutes
- Telephone interviews with domestic producers, service suppliers and government agencies
- Third-party data providers
- Comments from industrial experts
- Professional databases
- Information from the Internet

The data has been combined and cross-checked to ensure that this report is as accurate and methodologically sound as possible. Throughout the process, a series of discussions were held within CCM to systematically analyse the data and draw appropriate conclusions.

Definition

Data accuracy rate of this report is about 80%. As fluorite grades differ in different minerals and relevant associations or producers don't disclose the grade of fluorite, the data of enterprise output and capacity is estimated.

Unit

RMB: currency unit in China, also called Yuan
USD: currency unit in the US, also called US dollar
t: tonne, equals to metric tonne in this report
/t: per tonne
t/a: tonne per year, tonne per annual

Table USD/CNY exchange rate, Jan. 2017–Dec. 2021

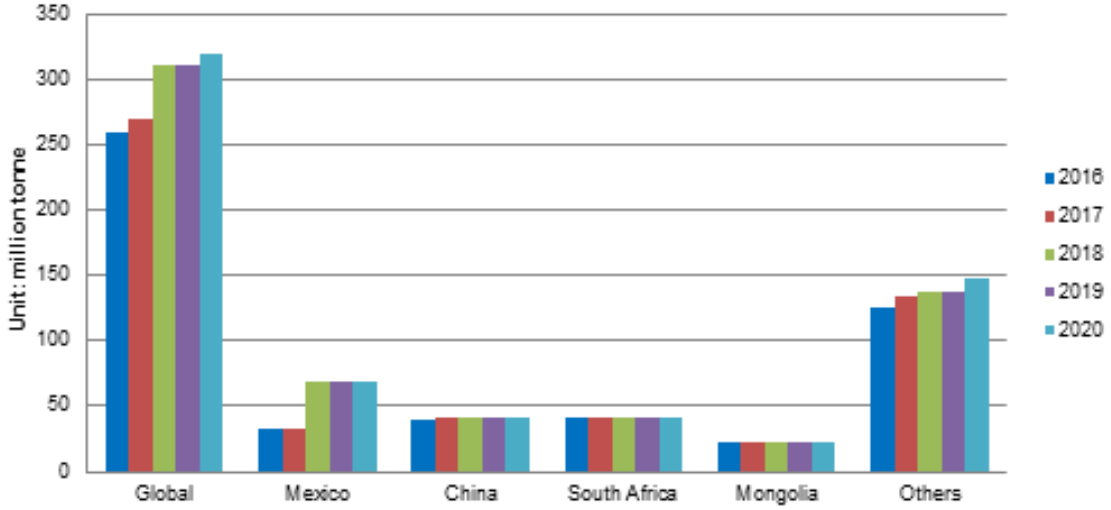
Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
2017	6.8918	6.8713	6.8932	6.8845	6.8827	6.8019	6.7772	6.7148	6.5909	6.6493	6.6300	6.6067	6.7662
2018	6.5079	6.3045	6.3352	6.2764	6.3670	6.4078	6.6157	6.8293	6.8347	6.8957	6.9670	6.9431	6.6070
2019	6.8482	6.7081	6.6957	6.7193	6.7344	6.8896	6.8716	6.8938	7.0883	7.0726	7.0437	7.0262	6.8826
2020	6.9614	6.9249	6.9811	7.0771	7.0690	7.1315	7.0710	6.9980	6.8498	6.7796	6.7050	6.5921	6.9284
2021	6.5408	6.4623	6.4754	6.5584	6.4895	6.3572	6.4709	6.4660	6.4680	6.4604	6.4192	6.3693	6.4615

Source: The People's Bank of China

1 Fluorite reserves in China, 2016–2020

According to statistics from the United States Geological Survey (USGS), in 2016–2020, global fluorite reserves increased. As of 2020, there had been about 320 million tonnes of fluorite reserves worldwide. Mexico, China, and South Africa are the three countries with largest fluorite reserves, with 68 million tonnes, 42 million tonnes and 41 million tonnes respectively, accounting for about 21%, 13% and 13% of the global fluorite reserves respectively.

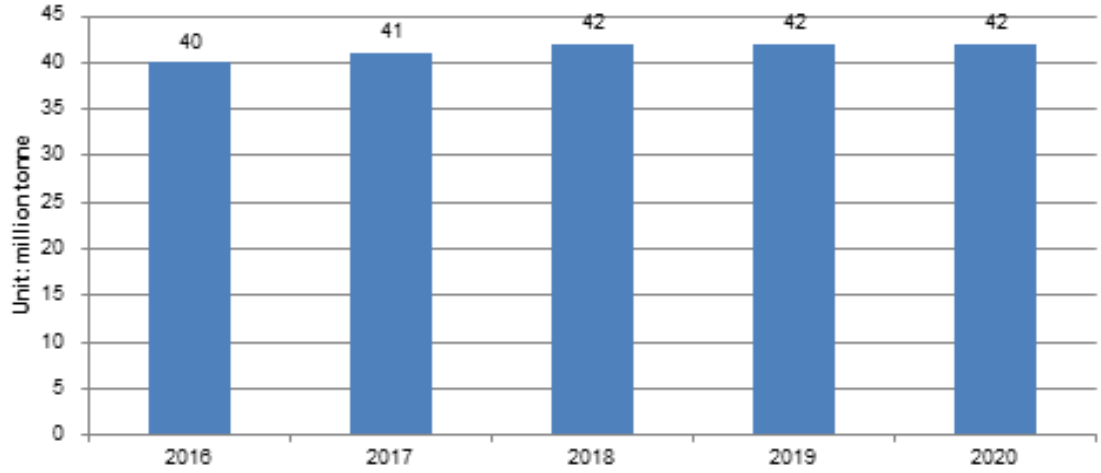
Figure 1-1 Global fluorite reserves, 2016–2020



Note: Calculated as 100% CaF_2
Source: USGS

According to USGS, fluorite reserves in China increased from 40 million tonnes in 2016 to 42 million tonnes in 2020, with a CAGR of about 1%.

Figure 1-2 Fluorite reserves in China, 2016–2020



Note: Calculated as 100% CaF_2
Source: USGS

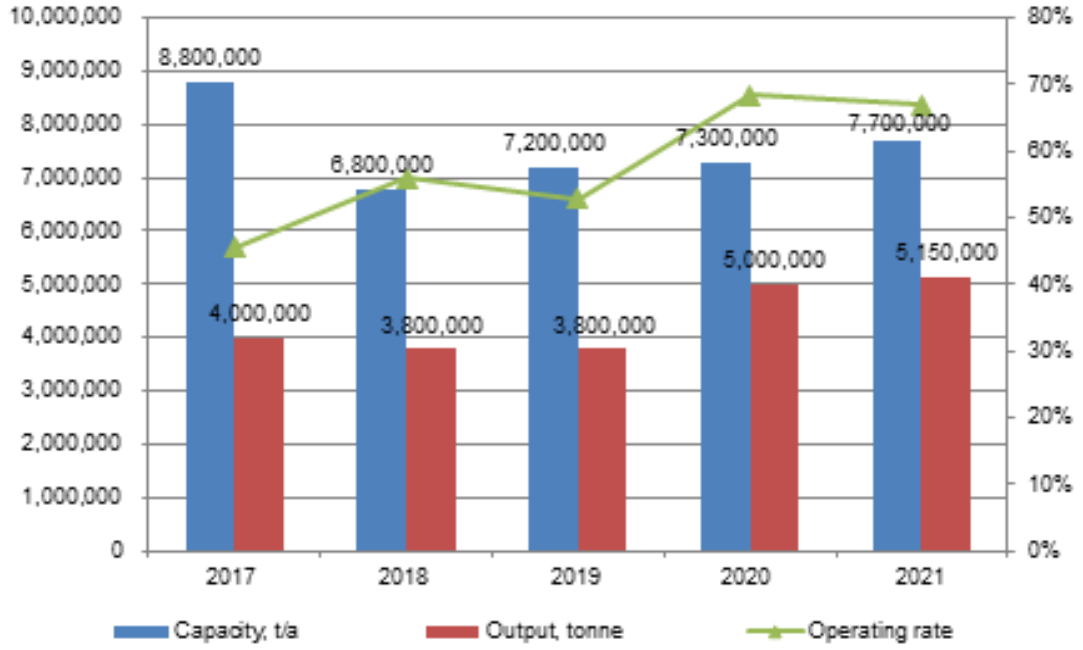
2 Production situation of fluorite

2.1 Capacity and output of fluorite in China, 2017–2021

Since the end of 2016, environmental protection policies have been tightened, and some mining companies that failed to meet environmental protection standards were forced to suspend production. Those companies lacking funds to invest in environmental protection equipment were one part of them. Another part was forced into suspension due to the government's refusal to extend their mine safety production licenses (issued every three years). Strict supervision on the industry led to a decline in the active capacity during 2017–2018. However, the trend has reversed since 2019. In 2021, the capacity of fluorite in China slightly increased to 7,700,000 t/a.

Due to the withdrawal of some manufacturers and strict industry supervision, China's fluorite output dropped from 4,000,000 tonnes in 2017 to 3,800,000 tonnes in 2019. After 2020, driven by the strong downstream demand, the output of fluorite saw an obvious growth. In 2021, the output of fluorite in China was about 5,150,000 tonnes, with an increase of about 29% compared with that in 2017.

Figure 2.1-1 Fluorite production in China, 2017–2021



Note: Calculated as 100% CaF_2
Source: China Non-Metallic Minerals Industry Association & CCM

It is worth mentioning that after the fast growth of fluorite production in China in the past years, the governments at all levels have been aware that the resources should be utilised more effectively for sustainable development of the fluoride industry. In 2016, China classified fluorite as one of the strategic mineral resources. With stricter execution of those policies, the position of fluorite industry will be further strengthened in the industry chain.

2.2 Major producers of fluorite in China, 2019–2021

Along with protection and industry integration policies, fluorite resources will be further concentrated on medium or large enterprises, which is conducive to eliminating small and less skilled mines and companies in the industry.

In China, there are only a few large-scale and influential fluorite enterprises, which are concentrated in Province with large fluorite resources, such as Zhejiang Province, Jiangxi Province, Inner Mongolia Autonomous Region and Hunan Province.

In 2019–2021, the top three fluorite manufacturers in China were China Kings Resources Group Co., Ltd., Centralfluor Industries Group, Inc. and Yizhang Hongyuan Chemical Co., Ltd.

Table 2.2-1 Production of major active fluorite manufacturers in China, 2019–2021

No.	Producer	Location	Capacity, t/a			Output, tonne		
			2021	2020	2019	2021	2020	2019
1	China Kings Resources Group Co., Ltd.	Zhejiang	1,170,000	1,170,000	1,020,000	944,600	831,600	550,000
2	Centralfluor Industries Group, Inc.	Zhejiang	550,000	550,000	550,000	320,000	320,000	289,000
3	Yizhang Hongyuan Chemical Co., Ltd.	Hunan	510,000	510,000	510,000	330,000	350,000	263,000
4	Zhejiang Wuyi Shenlong Flotation Co., Ltd.	Zhejiang	420,000	420,000	420,000	330,000	325,000	184,000
5	Inner Mongolia Yonghe Fluorochemical Co., Ltd.	Inner Mongolia	400,000	400,000	400,000	215,500	262,500	235,000
6	Luoyang Fengrui Fluorine Co., Ltd.	Henan	400,000	400,000	300,000	126,200	120,000	124,500
7	Chifeng Sky-Horse Fluorite Industry Development Co., Ltd.	Inner Mongolia	300,000	300,000	300,000	175,000	200,000	113,000
8	Hunan Nonferrous Chenzhou Fluorine Chemistry Co., Ltd.	Hunan	300,000	300,000	300,000	138,400	158,000	129,000
9	Chengde Yingke Fine Chemical Co., Ltd.	Hebei	290,000	290,000	290,000	220,000	238,000	174,000
10	Hunan Wanghua Fluorite Mining Co., Ltd.	Hunan	260,000	260,000	260,000	150,000	165,000	90,500
11	China Star Fluorochemical Co., Ltd.	Jiangxi	210,000	210,000	210,000	180,000	180,000	118,600
12	Zhejiang Wuyi Sanlian Industrial Development Co., Ltd.	Zhejiang	210,000	210,000	210,000	110,000	105,000	75,000
13	Luoyang Fluoride Potassium Technology Co., Ltd.	Henan	200,000	200,000	200,000	93,100	89,000	106,500
14	Anhui Jixi County Anjiang Fluorite Fine Powder Co., Ltd.	Anhui	185,000	185,000	185,000	120,000	125,000	10,300
15	Fujian Kings Fluoride Industry Co., Ltd.	Fujian	125,000	125,000	125,000	60,000	53,600	47,600
Others			2,170,000	1,770,000	1,920,000	1,637,200	1,477,300	1,290,000
Total			**7,700,000**	**7,300,000**	**7,200,000**	**5,150,000**	**5,000,000**	**3,800,000**

Note: 1. Calculated as 100% CaF_2
2. The data of some producers is estimated.
Source: CCM

3 Monthly ex-works price of fluorite in China, 2017–2021

In 2017, from June to Aug., the price of fluorite (CaF_2＞97%, same below) decreased temporarily, mainly due to the decline in demand from downstream refrigerant manufacturers. As the inventory was consumed and strong demand from downstream sectors in H2 2017, the price rocketed rapidly from USD300/t; it landed at USD450/t in April 2018.

The price trend in 2018 can be roughly divided into three stages:

- From Jan. to mid-April, domestic market price of fluorite rose slightly. Some manufacturers stopped for overhaul or reduced production. Production areas in North China were in severe cold weather, and most of the fluorite flotation plants were shut down, so supply reduced. Yet spring is the traditional peak season for downstream refrigerant industry; demand for fluorite increased. Thus the price went further up.
- From late April to Sept., the price fell but upped again quickly. As temperature gradually climbed up, operating rate recovered in domestic fluorite enterprises. Increasing supply brought the price down a bit.
- From early Oct. to Dec., the monthly price jumped to USD499/t at last, the highest level in recent years. Main reasons for the sharp increase are as follows:
    - First, governments at multiple levels had conducted strict environmental protection investigations, so operating rates of fluorite producers reduced. In 2018, the national environmental protection team inspected the environmental protection of fluorite provinces and regions such as Inner Mongolia, Jiangxi, Fujian, and Zhejiang, which led to the phased shutdown of some mines and flotation units. As a result, the spot supply of fluorite tightened. Some merchants held the goods and waited, so the price of fluorite stayed relatively high.
    - Second, the seasonal output of fluorite in the North decreased. As temperature declined, the fluorite flotation unit in Inner Mongolia constantly stopped operation, so the supply of fluorite decreased.
    - Third, demand from downstream refrigerants did not decrease since demand from refrigeration industry was at a high level. Coupled with a booming new refrigerant market, it had brought some favorable support to the price of fluorite.

In 2019, subjected to the Sino-US trade conflict and weak economic growth in major global economies, the demand for fluorite from downstream industries reduced. Fluorite price fell from USD499/t, the highest in Dec. 2018, to USD414/t in Dec. 2019.

Declining demand from downstream industries did affect fluorite price in 2019, yet it didn't mean that fluorite was in oversupply. In mid of harsher environmental protection regulations and frequent inspections, the price was still quite high compared with those in previous years.

Fluorite price rose in Q1 2020, but plummeted in Q2, then fluctuated slightly in Q3–Q4. The March price jumped to USD458/t. Supply of fluorite in the market was tight due to low operating rates of producers, but downstream manufacturers were active in purchasing, which drove the price up. As demand subsided, the price fell to USD369/t in May, and this situation was not improved until the end of the year.

The price curve of fluorite in 2021 showed an "up-down-up" pattern. Specifically:

- In Jan.–March: Fluorite price rose slightly, mainly because of the low operating rate, affected by the cold weather. Thus the supply of fluorite was insufficient, resulting in a price rise of fluorite.
- In April–July: Fluorite price declined. With the production resumption of fluorite enterprises, the operating rate of fluorite industry continued to increase. Supply of fluorite got sufficient, while downstream demand was still weak. Thus the price of fluorite went down.
- In Aug.–Dec.: Fluorite prices inched up. Supported by the favorable downstream market, the price of fluorite rose; as the weather got colder, the supply of fluorite declined. Therefore, the price of fluorite picked up.

Figure 3-1 Monthly ex-works price of fluorite (CaF2＞97%) in China, Jan. 2017–Dec. 2021

Source: CCM

4 Export and import of fluorite in China, 2017–2021

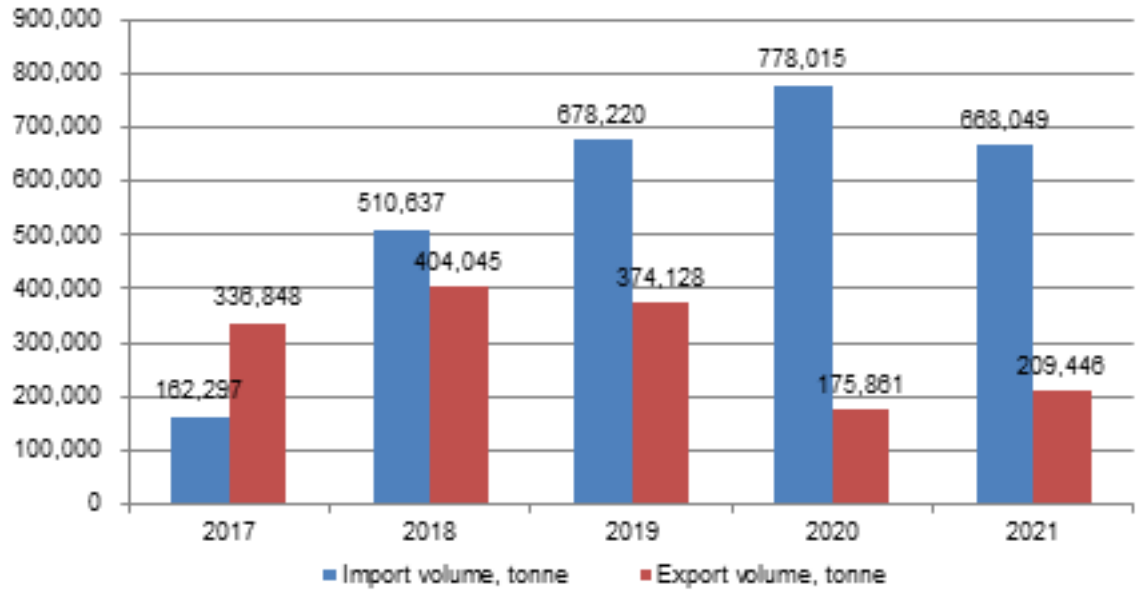
The import volumes of fluorite in China kept increasing in 2017–2020, but fell back in 2021. On the contrary, the export volumes were on a downtrend in 2018–2020, but rebounded in 2021.

In 2018, the import volume of fluorite reached 510,637 tonnes, exceeding the export volume for the first time.

The import volume of fluorite in China has increased sharply in the past five years, main reasons of which are as follows:

- Limited capacity expansion and low operating rate of fluorite resulted in tight supply in the domestic market.
- Imported fluorite was cheaper.

Figure 4-1 Imports and exports of fluorite in China, 2017–2021



Note: Fluorite (CaF_2＞97%) and fluorite (CaF_2≤97%) are included.
Source: China Customs & CCM

Table 4-1 Imports and exports of fluorite (CaF_2＞97%) in China, 2017–2021

Year	Import			Export		
	Volume, tonne	Value, USD	Annual average price, USD/t	Volume, tonne	Value, USD	Annual average price, USD/t
2017	22,069.877	8,355,028	378.57	152,815.423	40,746,923	266.64
2018	90,949.761	27,299,068	300.16	201,947.853	80,380,612	398.03
2019	109,785.012	32,715,939	298.00	190,592.968	78,077,186	409.65
2020	170,312.719	46,655,533	273.94	70,702.351	29,890,894	422.77
2021	116,066.062	32,489,317	279.92	47,358.169	20,430,990	431.41

Note: CaF_2>97%: containing more than 97% calcium fluoride by weight
Source: China Customs & CCM

Table 4-2 Imports and exports of fluorite (CaF_2≤97%) in China, 2017–2021

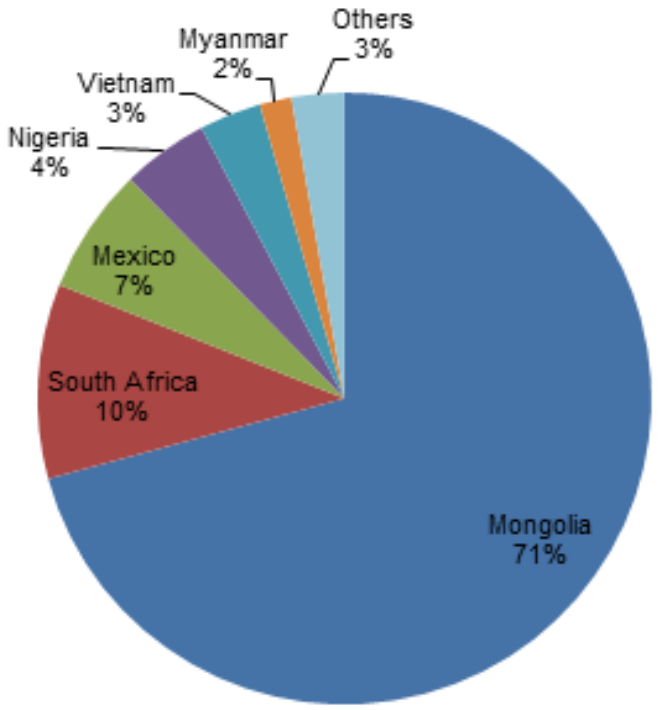
Year	Import			Export		
	Volume, tonne	Value, USD	Annual average price, USD/t	Volume, tonne	Value, USD	Annual average price, USD/t
2017	140,227.505	20,552,586	146.57	184,032.101	42,321,812	229.97
2018	419,687.127	67,842,349	161.65	202,097.341	58,090,803	287.44
2019	568,434.808	87,655,452	154.20	183,534.724	56,534,300	308.03
2020	607,702.266	79,097,141	130.16	105,158.152	34,634,560	329.36
2021	551,982.744	77,888,876	141.11	162,087.722	67,154,280	414.31

Note: CaF_2≤97%: containing no more than 97% calcium fluoride by weight
Source: China Customs & CCM

In 2021, China's fluorite imports mainly came from countries or regions with rich fluorite reserves worldwide, such as Mongolia, South Africa, Mexico, Nigeria, Vietnam, etc. Thereinto, the largest volume of fluorite was imported from Mongolia, amounting to 472,821 tonnes, 71% of the total.

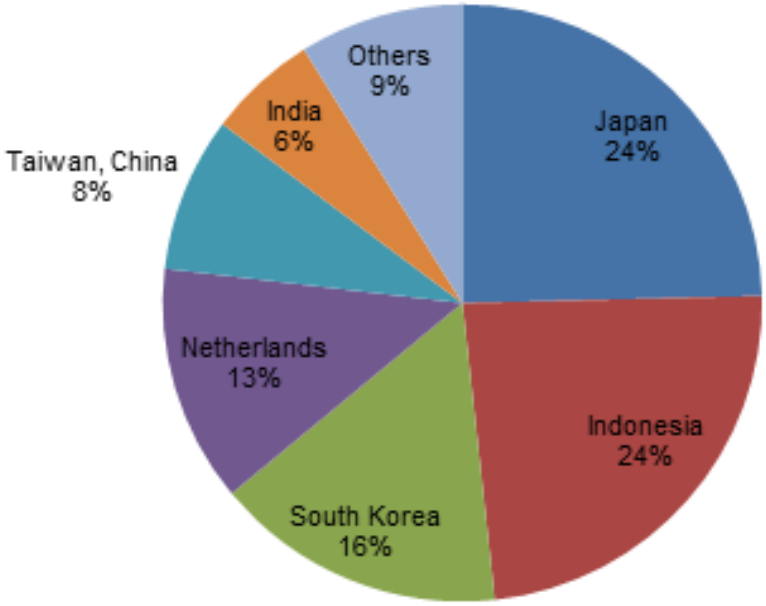
China's fluorite was mainly exported to Japan, Indonesia, South Korea and other Southeast Asian countries and regions. Among them, the export volume to Japan was 51,580 tonnes, occupying about 24% of the total.

Figure 4-2 Volume share of imported fluorite in China by origin, 2021



Note: Fluorite (CaF_2＞97%) and fluorite (CaF_2≤97%) are included.
Source: China Customs & CCM

Figure 4-3 Volume share of exported fluorite in China by destination, 2021

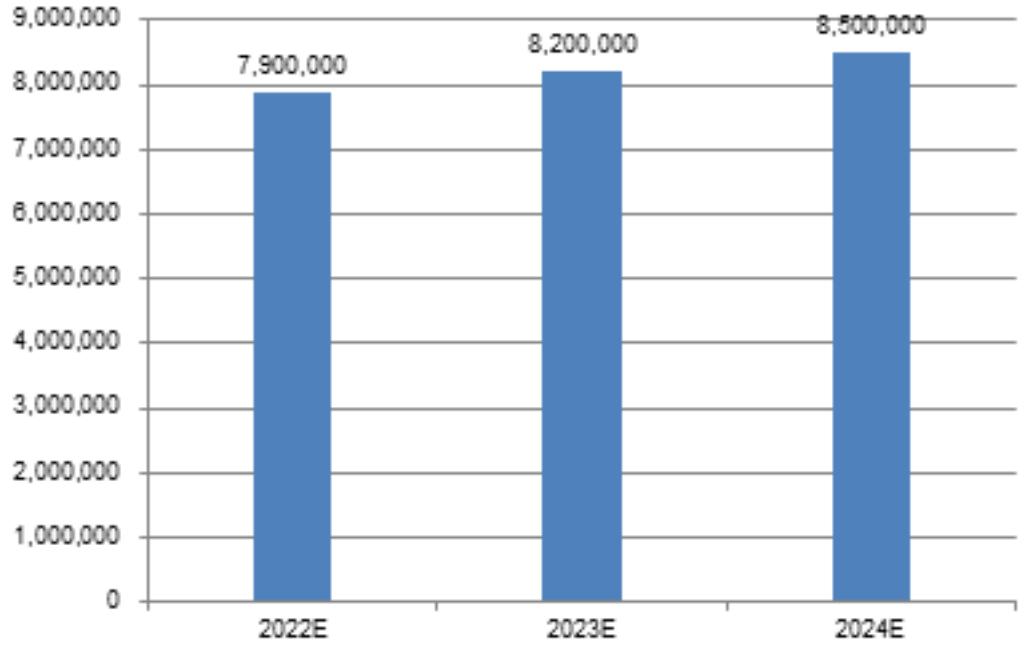


Note: Fluorite (CaF_2>97%) and fluorite (CaF_2≤97%) are included.
Source: China Customs & CCM

5 Forecast on capacity of fluorite in China, 2022–2024

Under the pressures of strict environmental protection supervision and policies, it is expected that standards, regulations of fluorite industry will continue to be tightened in future, and the enforcement will become more stringent, which will limit the expansion of fluorite capacity. However, according to CCM research, some manufacturers such as China Kings Resources Group Co., Ltd. have plans or projects to expand fluorite capacity. Therefore, China's fluorite capacity is estimated to continue to grow slightly in 2022–2024.

Figure 5-1 Forecast on capacity of fluorite in China, 2022–2024, t/a



Source: CCM

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