China Fluoride Materials Monthly Report 202206

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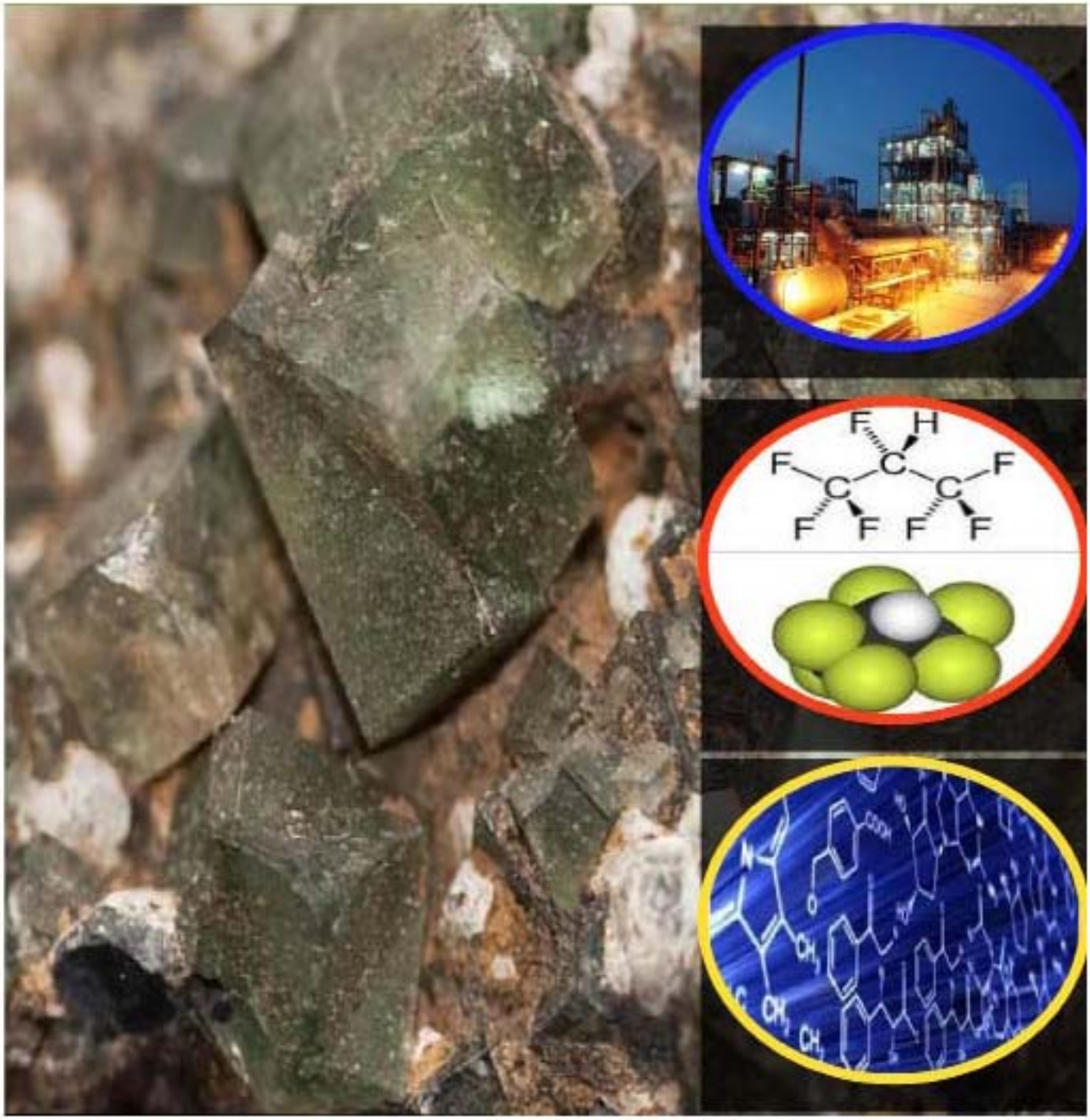

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In H1 2022, LiPF6 prices first rose and then decreased, but the prices are expected to stop decreasing and increase again in H2 2022.

Domestic PVDF prices went down in Q2 2022 as cost support weakened. PVDF prices are expected to continue to stay at a level in Q3 2022 and the prices may maintain stability while showing a tendency to decline.

In early June 2022, DFD announced to transfer 70% fluorite assets of Luoyang Lanbao and to add capital in PVDF sector.

In early June 2022, Jiangsu Nata planned to invest USD75.02 million (RMB500 million) in building a 7,200 t/a NF3 project.

NGF Chemical planned to build capacity of 54,000 t/a electronic grade hydrofluoric acid, 12,000 t/a amonium hydrogen difluoride and supporting 40,000 t/a AHF; BDX New Chemical intended to establish a 5,000 t/a LiPF6 project.

In early June 2022, Tinci Materials intended to invest in building a project of 243,000 t/a li-ion batteries and new fluorine-enriched materials.

Fluorite prices climbed within a narrow range in June 2022 as fluorite supply was tight in some regions and manufacturers showed intention to hold high their prices. Fluorite prices are anticipated to maintain stability while showing a tendency to grow.

AHF prices inched down in June 2022 as supply exceeded demand. AHF prices are expected to continue to slip in the near future.

R22 prices dropped in June 2022 due to continuously weak cost support. R22 prices are expected to display a consolidation trend in the short term.

China's AlF3 prices displayed a consolidation trend in June 2022 as costs and supply scarcely changed. AlF3 prices are predicted to keep stable and weak at a low level in the near future.

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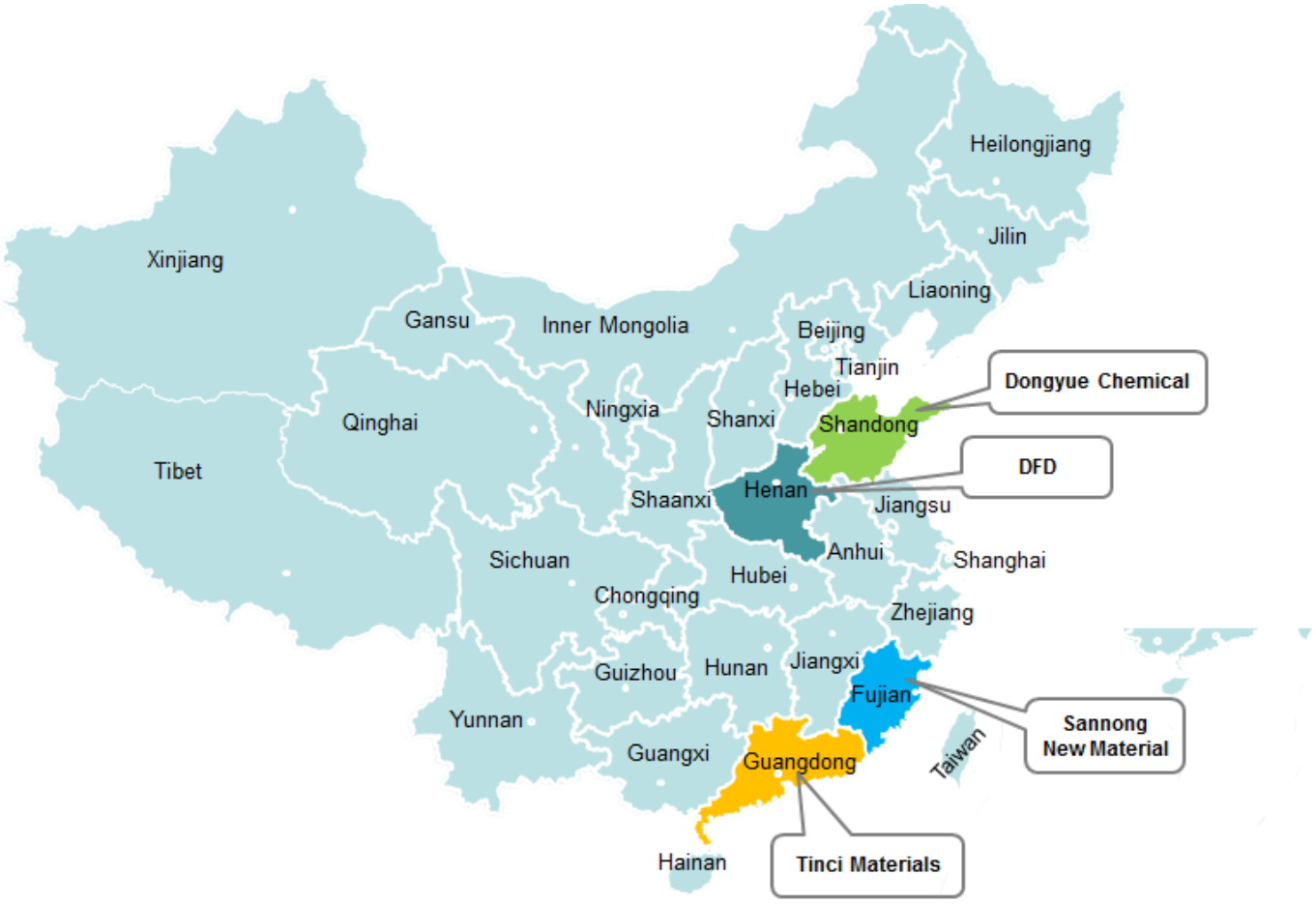

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Editor's Note

In June 2022, market performance varied between fluorochemicals and performance of refrigerants weakened. Specifically, fluorite prices continued to increase as fluorite supply was tight in some regions. AHF market supply exceeded demand and cost support weakened, leading AHF prices to slip. AlF_3 prices displayed a consolidation trend given high costs and adequate supply. Operating rates of R22 manufacturers remained at a high level; R22 market supply improved within a limited range; cost support continuously weakened; as a result, R22 prices went down and then showed a consolidation trend.

Important market dynamics in June 2022

In H1 2022, $LiPF_6$ prices first rose and then decreased; $LiPF_6$ prices fell by around 60% in June from high prices in Feb.

On 13 June, 2022, Solvay announced that its PVDF project in Changshu base was put into production and its PVDF capacity increased to 8,000 t/a.

On 7 June, 2022, Do-Fluoride New Materials Co., Ltd. announced to transfer 70% fluorite assets of Luoyang Lanbao Fluorine Industry Co., Ltd. and to add capital in PVDF sector.

On 7 June, 2022, Fujian Sannong New Material Co., Ltd.'s environmental impact assessment report of 1,500 t/a fluorine-enriched fine chemical and 10,000 t/a HFP was publicised.

On 6 June, 2022, Jiangsu Nata Opto-electronic Material Co., Ltd. announced to raise capital for its 7,200 t/a NF_3 project.

On 2 June, 2022, Guangzhou Tinci Materials Technology Co., Ltd. intended to invest in building a project of 243,000 t/a li-ion batteries and new fluorine-enriched materials.

The Import & Export data for May–June 2022 of China Customs has not come out yet. We will inform you of that once we receive it from the Customs.

The USD/RMB exchange rate in this newsletter is USD1.00=RMB6.6651 on 1 June, 2022, sourced from the People's Bank of China.
All the prices mentioned in this newsletter will include the VAT, unless otherwise specified.
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Market analysis

Brief analysis of LiPF6 prices in H1 2022

Summary: In H1 2022, $LiPF_6$ prices first rose and then decreased, but the prices are expected to stop decreasing and increase again in H2 2022.

At the beginning of 2022, China's lithium hexafluorophosphate ($LiPF_6$) industry kept booming and the price of $LiPF_6$ continued to rise and reached the highest in Feb., which was USD92,796.48/t. Since March, $LiPF_6$ prices gradually fell and down to USD36,758.64/t in June, a decrease of 60% compared to the highest price in Feb.

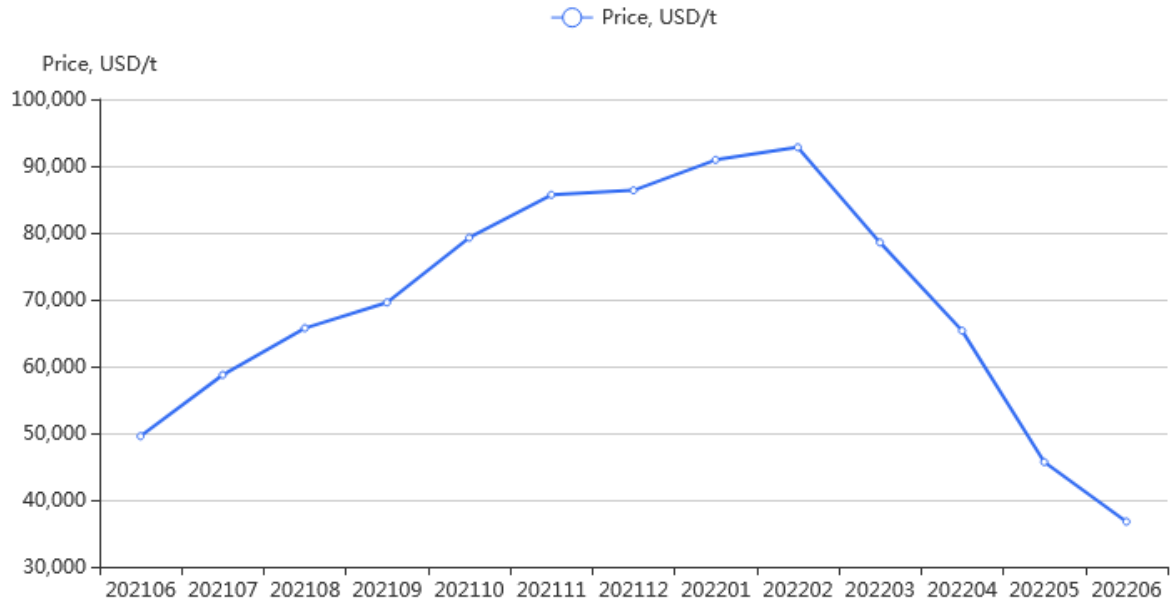
$LiPF_6$ prices peaked and fell, mainly due to the increase in supply driven by the release of new production capacity, and the suppression of downstream demand. Details are given as follows:

- Supply—As newly increased production capacity is released, $LiPF_6$ market supply increased. In terms of newly-released capacity of enterprises: Do-Fluoride New Materials Co., Ltd. (DFD) and Zhejiang Yongtai Technology Co., Ltd. (Zhejiang Yongtai) respectively released capacity of 5,000 t/a and 6,000 t/a $LiPF_6$ in the end of 2021; Tonze New Energy Technology Co., Ltd. (Tonze)'s production capacity of 10,000 t/a $LiPF_6$ entered the trial production at the end of April 2022.
- Demand—Downstream demand reduced. On the one hand, due to continuously high prices of $LiPF_6$, downstream enterprises were less motivated in purchasing, resulting in reduction in new trading volume. On the other hand, as some regions experienced multiple epidemic waves, downstream industry had lower operating rates, decreasing the consumption of $LiPF_6$.
- Cost—The main factor that contributes to the change of $LiPF_6$ prices is lithium carbonate prices, while the change in prices of raw materials like anhydrous hydrogen fluoride and phosphorus trichloride had limited influence on the cost of $LiPF_6$. Lithium carbonate prices began to fall in April this year and continued to decrease in May. However, in June, lithium carbonate prices rose again.

For top enterprises like DFD, Tonze and Zhejiang Yongtai, the change in $LiPF_6$ prices had limited influence, mainly because these enterprises signed long term orders with fixed volume and price with downstream factories. For enterprises without long term orders, with $LiPF_6$ prices decreasing, their profitability declines.

CCM predicts that new production capacity of $LiPF_6$ still will be released in H2 2022 and $LiPF_6$ market may continue to increase in supply. With downstream factories gradually resume work and production, the demand for $LiPF_6$ gradually increases. On the whole, $LiPF_6$ market has a better supply and demand structure. Upstream prices of lithium carbonate are likely to rise, which may push up $LiPF_6$ costs. $LiPF_6$ prices are expected to stop decreasing and slightly rise in H2 2022.

FIGURE 1: China's LiPF6 ex-works prices, June 2021–June 2022



Source:CCM

PVDF prices slip in Q2 2022

Summary: Domestic PVDF prices went down in Q2 2022 as cost support weakened. PVDF prices are expected to continue to stay at a level in Q3 2022 and the prices may maintain stability while showing a tendency to decline.

In April–June 2022, prices China's of polyvinylidene fluoride (PVDF) displayed a downward trend but the overall price still kept at a high level. PVDF prices dropped mainly because prices of raw material, difluorochloroethane (R142b), edged down and thus cost support for PVDF prices weakened.

- Supply—Market supply of PVDF was tight in April 2022; in May–June, PVDF supply scarcely changed. Specifically, supply of li-ion battery grade PVDF was in shortage while supply of coating grade and photovoltaic grade PVDF was adequate. In terms of new capacity, Zhonghao Chenguang Research Institute of Chemical Industry Co., Ltd. (Zhonghao Chenguang)'s 2,500 t/a li-ion battery grade PVDF project started trial production in Q1 2022; Solvay Specialty Polymers (Changshu) Co., Ltd. (Solvay Changshu)'s capacity of 4,000 t/a PVDF was launched in mid-May.
- Demand—The overall downstream demand was weak and customers were not enthusiastic about purchasing. Downstream coating and photovoltaic industries were reluctant to accept high PVDF prices, shrinking purchase demand for PVDF. Nevertheless, demand for li-ion battery grade PVDF remained strong.
- Cost—R142b prices fell from USD27,756.52/t (RMB185,000/t) to around USD18,004.23/t (RMB120,000/t), continuously undermining cost support of PVDF.

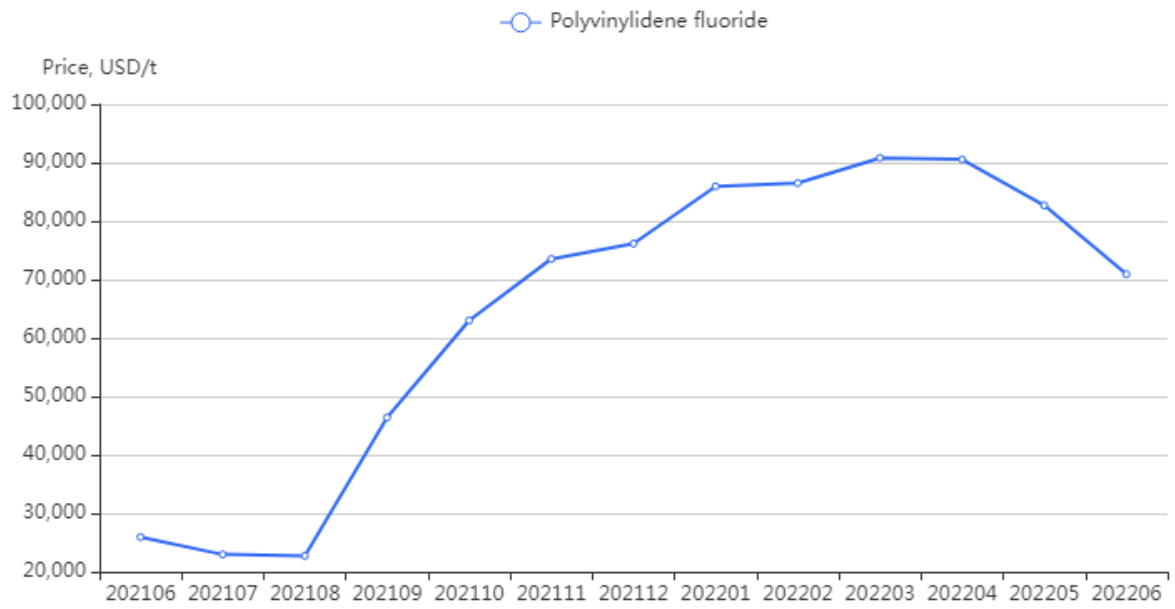
CCM analyses that the tight supply condition of PVDF will ease to some extent as market supply of PVDF increases. PVDF prices are forecast to keep at a high level and may maintain stability while showing a tendency to inch down.

- Supply—The new capacity of Solvay Changshu and Zhonghao Chenguang will be gradually released and therefore market supply is likely to mount up. Lecron Industrial Development Group Co., Ltd., Zhejiang Juhua Co., Ltd., and Hubei Fluorine New Materials Co., Ltd. also have new PVDF capacity to be released, so PVDF output is estimated to grow significantly.
- Demand—Purchase demand for PVDF from downstream sectors is anticipated to recover gradually. In addition, the new energy

automobile industry has developed rapidly and the policy of "new energy automobiles going to countryside" was introduced in late May, which means operating rates of downstream manufacturers are predicted to rise.

- Cost—PVDF manufacturers purchasing R142b from others have plans for releasing capacity of R142b within 2022; these PVDF manufacturers are all equipped with supporting R142b facilities. R142b demand is expected to decrease and R142b prices are likely to continue to edge down. As a result, more PVDF manufacturers will take wait-and-see attitudes and cost support of PVDF will weaken.

FIGURE 2: China's PVDF ex-works prices, June 2021–June 2022



Source:CCM

Fluorinated compound projects of Anhui Hengrun and Suzhou Routao in Henan

On 18 June, 2022, Anhui Hengrun Energy Co., Ltd. (Anhui Hengrun) and Suzhou Routao New Material Co., Ltd. (Suzhou Routao) signed investment projects with the People's Government of Ye County, Pingdingshan City, Henan Province.

Anhui Hengrun planned to invest USD67.52 million (RMB450 million) in building a project of 30,000 t/a phosphorus oxychloride ($POCl_3$), 50,000 t/a phosphorus pentachloride (PCl_5), and 20,000 t/a lithium hexafluorophosphate ($LiPF_6$) used to produce pharmaceutical intermediates and li-ion battery electrolyte. Suzhou Routao intended to invest USD72.02 million (RMB500 million) in setting up a project of 50,000 t/a potassium fluoride and 1,000 t/a 3,4-difluorobenzonitrile used to produce pharmaceutical intermediates and chip materials.

Sichuan Leishuo's 20,000 t/a electronic grade hydrofluoric acid project in Jiangsu

On 10 June, 2022, Sichuan Leishuo Chemicals Co., Ltd. (Sichuan Leishuo) signed an electronic material project cooperation agreement with the People's Government of Hongze District, Huai'an City, Jiangsu Province. Based on the agreement, Sichuan Leishuo will set up a project of electronic chemicals including 20,000 t/a electronic grade hydrofluoric acid, 50,000 t/a electronic grade hydrogen peroxide, 10,000 t/a electronic grade liquid ammonia, 10,000 t/a electronic grade nitric acid, and 40,000 t/a electronic grade sodium hydroxide in Hongze Economic Development Zone Management Committee.

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Shida Mining's fluorochemical project in Xingren

On 9 June, 2022, Southwest Guizhou Shida Mining Co., Ltd. (Shida Mining) signed a cooperation agreement on the 10,000 t/a electronic grade hydrofluoric acid, 70,000 t/a anhydrous aluminium fluoride (AlF_3) and supporting 120,000 t/a fine fluorspar with Xingren City, Qiannan Buyi and Miao Autonomous Prefecture, Guizhou Province. This project, covering an area of around 20 hectares, is located in Xingren Economic Development Zone Baling Heavy Industry Zone. With an investment of USD82.52 million (RMB550 million), this project is divided into two phases. The first phase will build capacity of 120,000 t/a fine fluorspar; the second phase will build equipment of 10,000 t/a electronic grade hydrofluoric acid and 70,000 t/a anhydrous AlF_3.

In Oct. 2021, Shida Mining obtained three mining rights in Pu'an and Qinglong counties, Qiannan Prefecture through bidding at USD21.46 million (RMB143 million), providing resource advantages and basis for this fluorochemical project.

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Company dynamics

DFD to divest fluorite assets and enter PVDF sector

Summary: In early June 2022, DFD announced to transfer 70% fluorite assets of Luoyang Lanbao and to add capital in PVDF sector.

On 7 June, 2022, Do-Fluoride New Materials Co., Ltd. (DFD) announced that the company planned to sell 70% shares of Luoyang Lanbao Fluorine Industry Co., Ltd. (Luoyang Lanbao). Luoyang Lanbao mainly engages in fluorite mining, processing and sales of fluorite powder and by-products. In 2019, DFD purchased 70% shares of Luoyang Lanbao to ensure its fluorite supply, but Luoyang Lanbao has continuously undergone net loss since the acquisition. Therefore, DFD decided to remove these assets of Luoyang Lanbao.

On 8 June, DFD announced that it intended to increase capital of USD6.75 million (RMB45 million) to Shanxi Jiafu New Material Co., Ltd. (Shanxi Jiafu). Shanxi Jiafu mainly produces and sells polyvinylidene fluoride (PVDF). CCM learned from the Shanxi Provincial Investment Projects Online Approval Regulatory Platform that Shanxi Jiafu's 10,000 t/a high-end li-ion battery PVDF resin project was granted recordation. This project, with a total investment of USD155.44 million (RMB1.04 billion), is predicted to start construction in Aug. 2022.

DFD stated that the PVDF market is likely to maintain a rising momentum driven by rapid growth of photovoltaic and li-ion battery demand. This investment will facilitate the development of the company's new material sector.

PVDF has been widely used in li-ion battery field and it can also be used in binder, dispersant, electrolyte, and membrane coating, especially in anode binder and membrane coating materials. Domestic market demand for li-ion battery grade PVDF has improved driven by new energy industry. However, domestic capacity of li-ion battery grade PVDF is limited and new capacity encounters long construction period and technical barriers. Thus market supply of li-ion battery grade PVDF is tight and prices are liable to increase. Since Sept. 2021, prices of domestic li-ion battery grade PVDF have been on the rise.

Notably, there are more than ten PVDF manufacturers domestically and some are planning to step into PVDF sector. Nevertheless, only a few of them are able to produce qualified li-ion battery grade PVDF and there is a gap between the performance of domestic products and imported products.

Jiangsu Nata to expand NF3 capacity

Summary: In early June 2022, Jiangsu Nata planned to invest USD75.02 million (RMB500 million) in building a 7,200 t/a NF_3 project.

On 6 June, 2022, Jiangsu Nata Opto-electronic Material Co., Ltd. (Jiangsu Nata) announced to issue convertible company bonds to unspecified investors to raise capital of no more than USD135.03 million (RMB900 million) for working capital supplement of USD37.51 million (RMB250 million) and the following projects:

- 45 t/a advanced semiconductor precursor product industrialisation project, with an investment of USD10.50 million (RMB70 million);
- 140 t/a high-purity phosphine, arsine capacity expansion and technical renovation project, with an investment of USD12.00 million (RMB80 million);

- 7,200 t/a electronic grade nitrogen trifluoride (NF_3) project of Ulanqab Nata Microelectronics Materials Co., Ltd., with an investment of USD75.02 million (RMB500 million).

Jiangsu Nata said that the NF_3 market has grown rapidly thanks to the rapid development of the downstream semiconductor, panel and solar cell industries. NF_3 industry will usher in broad market opportunities as the global downstream industry chain shifts to mainland China. Jiangsu Nata's NF_3 capacity expansion can not only deepen the investment layout in the field of fluorine-enriched electronic specialty gas, enhance multi-product service capabilities for downstream customers, but also expand the market share of its products and improve market competitiveness.

Jiangsu Nata's main products include NF_3, and its subsidiary, Shandong Feiyuan Gas Co., Ltd. (Shandong Feiyuan) is one of the major NF_3 manufacturers in China. Shandong Feiyuan established a 3,800 t/a NF_3 production line through technical renovation and capacity expansion, and another 1,000 t/a equipment is still under construction. This time Jiangsu Nata chose to set up 7,200 t/a NF_3 devices in Ulanqab City, Inner Mongolia Autonomous Region.

Jiangsu Nata achieved sales revenues of USD37.59 million (RMB250.54 million), USD68.94 million (RMB459.50 million), and USD30.79 million (RMB205.21 million) from NF_3 business in 2020, 2021 and Q1 2022 respectively. As of Q1 2022, the company's accumulative sales volume of NF_3 has reached 1,699 tonnes; the delivery volume was 974 tonnes, up by 49.96% compared with Q1 2021. The accumulative sales volume in Q1 2022 made up 44.71% of the current capacity and will occupy 14.16% of the total after capacity expansion.

Haohua Chemical Science & Technology Co., Ltd. said in Jan. 2021 that the market demand for NF_3 is related to the overall layout of domestic semiconductor industry. China's semiconductor R&D will speed up and domestic overall strategy will be conductive to the growth of NF_3 market demand given the international and domestic situation. The overall demand for NF_3 is estimated to increase at an average annual rate of 8%–15%. Output and sales are likely to keep even for a long term considering capacity and demand.

Apart from Jiangsu Nata, domestic major NF_3 manufacturers like Peric Speical Gases Co., Ltd. and Haohua Gas Co., Ltd. also have capacity expansion plans. With the increase of domestic market demand and the improvement of localisation rate, the share of these mainstream enterprises in the nitrogen trifluoride market will further mount up.

NGF Chemical obtains approval for two inorganic fluoride projects

Summary: NGF Chemical planned to build capacity of 54,000 t/a electronic grade hydrofluoric acid, 12,000 t/a amonium hydrogen difluoride and supporting 40,000 t/a AHF; BDX New Chemical intended to establish a 5,000 t/a $LiPF_6$ project.

On 2 June, 2022, Quzhou Municipal Bureau of Ecology and Environment, Quzhou City, Zhejiang Province disclosed the planned permission for the environmental impact assessment reports of the 54,000 t/a electronic grade hydrofluoric acid, 12,000 t/a amonium hydrogen difluoride and supporting 40,000 t/a anhydrous hydrogen fluoride (AHF) project of NGF Chemical Co., Ltd. (NGF Chemical) and the 5,000 t/a lithium hexafluorophosphate ($LiPF_6$) project of BDX New Chemical Materials Co., Ltd. (BDX New Chemical).

NGF Chemical is going to invest USD118.27 million (RMB788.28 million) in building its project, which is located in Quzhou National High-tech Industrial Development Park, Quzhou City. Covering an area of 19,315 m^2, this project is divided into three phases: the first phase includes 40,000 t/a AHF, 18,000 t/a electronic grade hydrofluoric acid, and 12,000 t/a ammonium hydrogen difluoride; the second and the third phase contains 18,000 t/a electronic grade hydrofluoric acid respectively. AHF of this project will be mainly used as raw material for the company's downstream fine fluorochemical projects. NGF Chemical mentioned that this project will replace the second phase of the approved "30,000 t/a electronic grade hydrofluoric acid project" and "65,000 t/a AHF technical renovation project". When this project is completed and put into production, NGF Chemical's capacity of AHF, ammonium hydrogen difluoride and electronic grade hydrofluoric acid will reach 70,000 t/a, 24,000 t/a, and 54,000 t/a respectively.

BDX New Chemical intended to set up its 5,000 t/a $LiPF_6$ project in Quzhou National High-tech Industrial Development Park. This project covers an area of around 17,000 m^2, around 13,500 m^2 of which is allocated by its controlling shareholder, NGF Chemical. BDX New Chemical currently owns capacity of 1,300 t/a $LiPF_6$ and the 1,300 t/a $LiPF_6$ project is still under construction. When this project is finished, BDX New Chemical's $LiPF_6$ capacity will hit 7,600 t/a.

Tinci Materials steps into fluoropolymer sector

Summary: In early June 2022, Tinci Materials intended to invest in building a project of 243,000 t/a li-ion batteries and new fluorine-enriched materials.

On 2 June, 2022, Guangzhou Tinci Materials Technology Co., Ltd. (Tinci Materials) announced to change the construction contents of the 350,000 t/a li-ion battery and fluorine-enriched material project (phase I).

Based on the announcement, Tinci Materials planned to combine the phase I and phase II of its 350,000 t/a li-ion battery and new fluorine-enriched material project and remove the ethylene sulphate of the phase I. After the alteration, this project includes capacity of 200,000 t/a li-ion battery electrolyte, 20,000 t/a lithium bis(fluorosulfonyl)imide (LiFSI), 3,000 t/a hexafluoropropylene (HFP), and 20,000 t/a fluoro-contained polymer materials. The investment of this alteration project is USD398.27 million (RMB2.65 billion), USD289.72 million (RMB1.93 billion) of which is construction investment. This project, with a construction period of 24 months, is located in Rudong Coastal Economic Development Zone, Nantong City, Jiangsu Province.

Tinci Materials said that the company implemented this project to meet future demand of customers and expand overall capacity of li-ion battery electrolyte and electrolyte materials. This project will not only improve the layout of the company's core products, strengthen supply chain safety and regional services, enhance market competitiveness of li-ion battery materials, but also expand business development in photovoltaic and wind power fields, thus providing new profit growth points for the company's development and conforming to its overall development strategy.

Solvay's PVDF project in Changshu base is put into production

On 13 June, 2022, Solvay announced that its newly-built polyvinylidene fluoride (PVDF) project in Changshu base in Jiangshu Province

has been completed in advance and was put into production in mid-May 2022.

This PVDF project was carried out by Solvay's holding subsidiary, Solvay Specialty Polymers (Changshu) Co., Ltd. and subsequently the PVDF capacity of this company increases to 8,000 t/a from 4,000 t/a.

Inner Mongolia Jinfu's fluorine-enriched new fine chemical material project

On 13 June, 2022, Inner Mongolia Jinfu New Material Co., Ltd. (Inner Mongolia Jinfu)'s fluorine-enriched new fine chemical material project was officially granted recordation by Development and Reform Commission of Urad Rear Banner, Bayan Nur City, Inner Mongolia Autonomous Region. The company planned to establish this project in Urad Rear Banner Industrial Park with an investment of USD450.11 million (RMB3 billion). This project contains the following products:

- 33,000 t/a fluorine-enriched pharmaceutical intermediates—9,000 t/a chlorotrifluoroethene (CTFE), 9,000 t/a trifluoroethanol, and 15,000 t/a trifluoroacetic acid;
- 60,000 t/a new energy battery material—30,000 t/a lithium hexafluorophosphate ($LiPF_6$), 10,000 t/a sodium hexafluorophosphate (F_6NaP), and 20,000 t/a fluoroethylene carbonate (FEC);
- 25,000 t/a electronic grade hydrogen fluoride, supporting 100,000 t/a anhydrous hydrogen fluoride (AHF), and 400,000 t/a fluorogypsum building material comprehensive utilisation.

This project is divided into two phases. Specifically, the first phase will build capacity of 9,000 t/a CTFE, 9,000 t/a trifluoroethanol, 15,000 t/a trifluoroacetic acid, and 200,000 t/a fluorogypsum building material comprehensive utilisation; the second phase includes 30,000 t/a $LiPF_6$, 10,000 t/a F_6NaP, 20,000 t/a FEC, 25,000 t/a electronic grade hydrogen fluoride, 50,000 t/a AHF, and 200,000 t/a fluorogypsum building material comprehensive utilisation. This project is predicted to start construction in Aug. 2022, with a construction period of three years.

Inner Mongolia Jinfu was founded in May 2022 with registered capital reaching USD30.01 million (RMB200 million).

Jiujiang Huaxiong to build 10,000 t/a FEC project

On 10 June, 2022, Jiujiang Huaxiong Chemical Co., Ltd. (Jiujiang Huaxiong)'s 10,000 t/a fluoroethylene carbonate (FEC) project was granted recordation through the Jiangxi Provincial Investment Projects Online Approval Regulatory Platform. This project, with an investment of USD27.46 million (RMB183.04 million), is located in Huangcun Two, Hukou County, Jiujiang City, Jiangxi Province.

Zhejiang Zhongxin Fluoride to build 1,120 t/a trifluorobenzene derivative project

On 9 June, 2022, Zhejiang Zhongxin Fluoride Materials Co., Ltd. (Zhejiang Zhongxin Fluoride) disclosed the environmental impact assessment report of the 1,120 t/a trifluorobenzene derivative project on its official website. Zhejiang Zhongxin Fluoride planned to establish this project in Shangyu Economic and Technological Development Zone, Hangzhou Bay, Shaoxing City, Zhejiang Province. This project contains capacity of 500 t/a 2,3,4,5-tetrachlorobenzoyl chloride, 100 t/a 1,2,4-trifluorobenzene, 120 t/a 2,4,5-trifluoro-3-methoxybenzoic acid, and 400 t/a 2,4,5-trifluoro-3-methoxybenzoyl chloride.

Zhonghe New Material's fluorine-enriched pharmaceutical intermediate project

On 9 June, 2022, the official website of Alxa League Administrative Office of Inner Mongolia Autonomous Region showed that the fluorine-enriched pharmaceutical intermediate project (phase I) of Inner Mongolia Zhonghe New Material Co., Ltd. (Zhonghe New Material) started trial production. This project, with an investment of USD97.52 million (RMB650 million), is divided into three phases. Specifically, the phase I project will build capacity of 200 t/a 2,4,5-trifluoro-3-methoxybenzoyl chloride (FBC), and 500 t/a 2,3,4,5-tetrafluorobenzoyl chloride (FBA) pharmaceutical intermediates, with an investment hitting USD22.51 million (RMB150 million). Zhonghe New Material introduced that FBC is used for the synthesis of the fourth generation fluoroquinolone antimicrobials and FBA is used for the synthesis of the third generation fluoroquinolone antimicrobials.

In addition, the phase II project started construction in late March 2022 and is expected to be fully put into production in late Nov. this year.

Sannong New Material's fluorine-enriched fine chemical and HFP project

On 7 June, 2022, Sanming Ecology and Environment Bureau, Hujian Province publicised the environmental impact assessment report of Fujian Sannong New Material Co., Ltd. (Sannong New Material)'s project of 1,500 t/a fluorine-enriched fine chemicals and 10,000 t/a hexafluoropropylene (HFP). Sannong New Material said that the company planned to invest USD15.75 million (RMB105 million) in building capacity of 200 t/a perfluorocyclobutane and 1,300 t/a perfluorinated products to increase its production capacity and enhance market competitiveness. Besides, the company intended to expand the existing 5,000 t/a HFP capacity to 10,000 t/a through changing equipment. This project will start construction after completing relevant approval formalities, with an estimated construction period of one year. Sannong New Material will suspend the operation of all the existing HFP and tetrafluoroethylene (TFE) devices until this project is finished.

As of June 2022, Sannong New Material possesses fluorochemical capacity of 48,000 t/a difluorochloromethane (R22), 30,000 t/a TFE, 5,000 t/a HFP, 12,500 t/a polytetrafluoroethylene (PTFE), and 2,000 t/a perfluoroalkyl ethyl acrylates.

Dongyue Chemical to set up 58,000 t/a R142b project

On 25 May, 2022, the environmental impact assessment report of the 58,000 t/a difluorochloroethane (R142b) project of Shandong Dongyue Chemical Co., Ltd. (Dongyue Chemical) was revealed. This project, with an investment of USD68.22 million (RMB454.67 million), covers an area of 72,560.04 m^2. It will establish 58,000 t/a R142b production lines and supporting facilities.

Currently, Dongyue Chemical owns capacity of 30,000 t/a R142b. This new project is aimed to provide raw material for the planned project of 30,000 t/a polyvinylidene fluoride (PVDF) and supporting 35,000 t/a vinylidene fluoride (VDF) of Shandong Huaxia Shenzhou New Material Co., Ltd. (Huaxia Shenzhou) (see "*Huaxia Shenzhou builds expansion project of 35,000 t/a VDF and 30,000 t/a PVDF*" in *China Fluoride Materials Monthly Report 202204* for more details). The R142b of this project will be directly transported by pipes to the 35,000 t/a VDF equipment of Huaxia Shenzhou; the product will not be used as refrigerant, foaming agent or other controlled use and it will be sold exclusively to Huaxia Shenzhou.

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Market Data Analysis

Fluorite prices edge up in June 2022

Summary: Fluorite prices climbed within a narrow range in June 2022 as fluorite supply was tight in some regions and manufacturers showed intention to hold high their prices. Fluorite prices are anticipated to maintain stability while showing a tendency to grow.

In June 2022, fluorite prices went up slightly due to supply shortage in some regions.

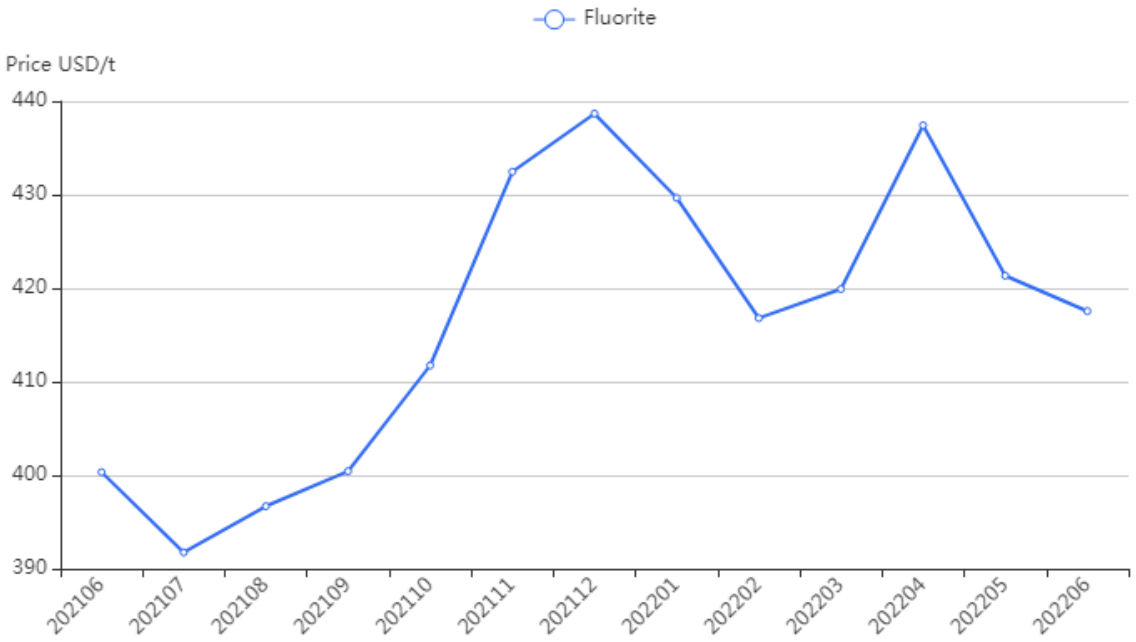
- Supply—The overall market supply of China's fluorite was tight in June. Specifically, many fluorite manufacturers in North China suspended production in early June and inventories were low; after mid-June, operating rates of fluorite mounted up, but fluorite manufacturers faced restrictions on transportation owing to COVID-19, thus shrinking market supply in North China, Shandong and Henan provinces. Fluorite supply remained stable in Zhejiang and Jiangxi provinces and South China; fluorite manufacturers maintained normal operation and therefore market supply was adequate. Manufacturers mainly delivered orders of earlier stage and only a few new orders were made.
- Demand—Operating rates of downstream anhydrous hydrogen fluoride (AHF) and aluminium fluoride (AlF_3) manufacturers scarcely changed and thus demand for fluorite stayed stable.

On 24 June, domestic fluorite market prices averaged USD399.24/t (RMB2,661/t). Mainstream tax-included delivery prices of fluorite in different regions are shown as below:

- East China: USD390.09/t–USD435.10/t (RMB2,600/t–RMB2,900/t);
- South China: USD375.09/t–USD390.09/t (RMB2,500/t–RMB2,600/t);
- Central China: USD435.10/t–USD450.11/t (RMB2,900/t–RMB3,000/t);
- North China: USD382.59/t–USD450.11/t (RMB2,550/t–RMB3,000/t).

CCM expects that fluorite prices will continue to vary among regions in the near future and fluorite prices are likely to maintain stability while displaying a slight upward trend. Fluorite supply is predicted to keep tight in North China and manufacturers still have eagerness to support their prices; however, the downstream market is depressed, giving little support to fluorite price rise. Market supply in East China and South China is estimated to be adequate and prices of fluorite powder are forecast to be weak with fluctuations under weak market performance of downstream sectors.

FIGURE 3: China's fluorite (CaF2>97%) price, June 2021–June 2022



Source:CCM

AHF prices slipped in June 2022

Summary: AHF prices inched down in June 2022 as supply exceeded demand. AHF prices are expected to continue to slip in the near future.

In June 2022, prices of China's anhydrous hydrogen fluoride (AHF) dropped slightly mainly because supply exceeded demand and cost support weakened.

- Supply—In June, operating rates of AHF manufacturers increased compared with the previous month; most AHF manufacturers had no maintenance plans in this month and thus inventories went up significantly. Oversupply of AHF was seen in northern China; downstream demand declined in Shandong Province and spot products in Zhejiang and Jiangsu provinces rose; supply glut also occurred in Jiangsu and Zhejiang provinces and South China given the influence of oversupply in North China and Shandong Province. Generally, market supply of AHF exceeded demand.
- Demand—Downstream demand improved as operating rates of downstream manufacturers climbed. Specifically, some downstream manufacturers in Shandong Province suspended production and consequently demand for AHF narrowed; some downstream manufacturers in Zhejiang Province and South China maintained normal operation and thus demand scarcely fluctuated.
- Cost—Prices of sulphuric acid fell; fluorite prices edged up slightly. The overall cost support of AHF manufacturers weakened.

As of 24 June, the average quotation of AHF enterprises was USD1,773.42/t (RMB11,820/t); market transaction prices averaged USD1,749.41/t (RMB11,660/t).

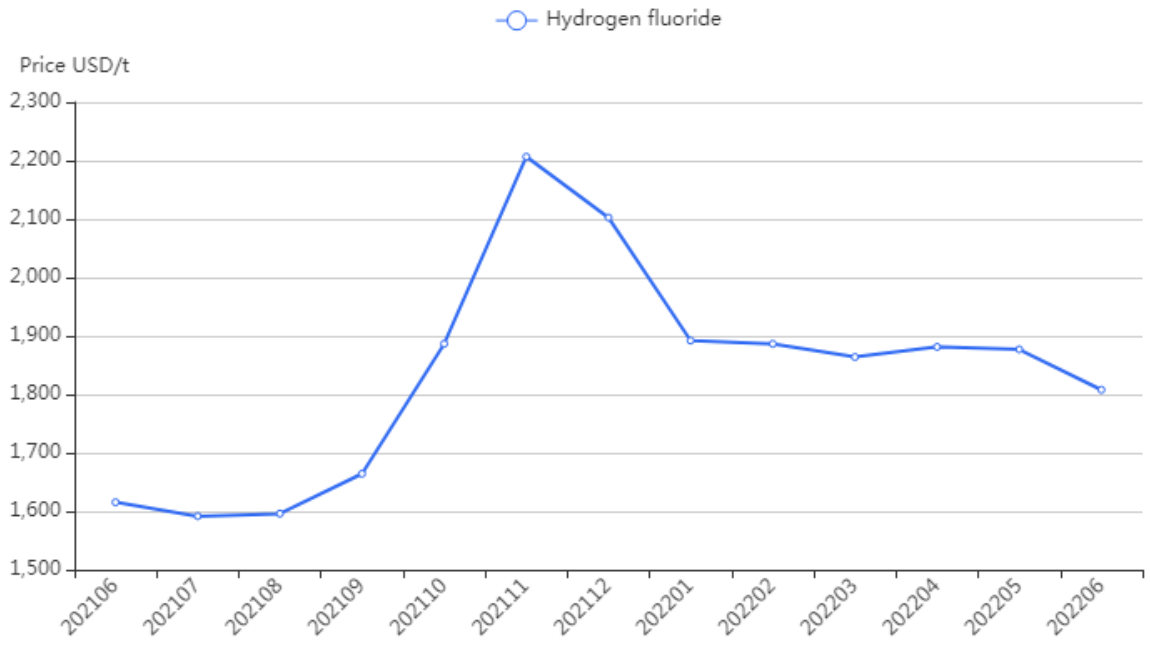
- East China:
- Mainstream delivery prices: USD1,620.38/t–USD1,800.42/t (RMB10,800/t–RMB12,000/t);
- Shandong Province:
- Mainstream delivery prices: USD1,650.39/t–USD1,695.00/t (RMB11,000/t–RMB11,300/t);
- Central China:

- Mainstream delivery prices: USD1,800.42/t–USD2,100.49/t (RMB12,000/t–RMB14,000/t).

CCM analyses that AHF prices will continue to inch down in the next month because AHF market supply will continue to exceed demand and cost support is likely to weaken.

- Supply—Most AHF producers have no overhaul plans in late June. Inventories of AHF manufacturers are at a high level. Market supply of AHF is predicted to exceed demand as market consumption is likely to be limited in July.
- Demand—Downstream demand is expected to barely increase. Downstream manufacturers in Shandong Province intend to restart their devices in July and subsequently purchase demand for AHF will grow compared with June. Production of downstream factories in Zhejiang and Jiangsu provinces remain stable and demand will maintain stability. Overall, AHF prices will receive limited support from the demand side.
- Cost—Prices of sulphuric acid are anticipated to keep slipping given lack of rising momentum; fluorite prices are forecast to remain stable. The overall cost support is predicted to weaken.

FIGURE 4: China's AHF price, June 2021–June 2022



Source:CCM

R22 prices inch down in June 2022

Summary: R22 prices dropped in June 2022 due to continuously weak cost support. R22 prices are expected to display a consolidation trend in the short term.

In June 2022, domestic difluorochloromethane (R22) prices slipped first and then displayed a consolidation trend at a low level. The overall R22 price showed a downward trend.

- Supply—Operating rates of R22 manufacturers edged up slightly and some said that their inventories were high. The overall market supply kept stable.
- Demand—Downstream demand improved. End-market demand increased in some regions as the temperature went up and transportation gradually recovered; more market transactions were made; however, the overall demand was weaker compared with the same period last year. Operating rates of downstream polytetrafluoroethylene (PTFE) maintained stability while showing a

tendency to decline, shrinking demand for R22. The export market gradually improved and delivery of backlogged orders was accelerated.

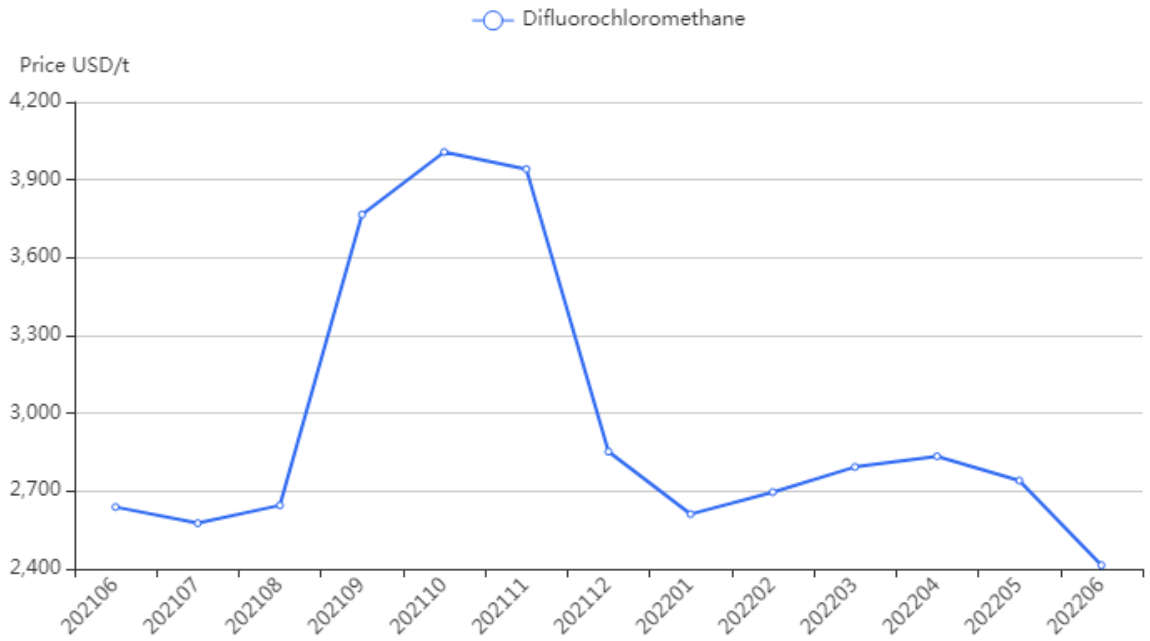
- Cost—Prices of raw materials, trichloromethane and anhydrous hydrogen fluoride (AHF) continued to descend, weakening cost support for R22.

On 27 June, quotations of major manufacturers reached USD2,475.58/t–USD2,550.60/t (RMB16,500/t–RMB17,000/t); specifically, delivery prices in East China hit USD2,325.55/t–USD2,400.56/t (RMB15,500/t–RMB16,000/t).

CCM analyses that R22 prices may maintain a consolidation trend at a low level in the near future.

- Supply—Operating rates of R22 manufacturers are predicted to keep stable and therefore the overall market supply will be adequate.
- Demand—Demand in domestic end-market and export market shows a tendency to improve but within a limited range; R22 demand from PTFE sector scarcely changes.
- Cost—Prices of trichloromethane and AHF may maintain a downward trend, weakening cost support for R22.

FIGURE 5: China's R22 price, June 2021–June 2022



Source:CCM

China's AlF3 prices maintain stability in June 2022

Summary: China's AlF_3 prices displayed a consolidation trend in June 2022 as costs and supply scarcely changed. AlF_3 prices are predicted to keep stable and weak at a low level in the near future.

In June 2022, aluminium fluoride (AlF_3) demand scarcely changed and AlF_3 prices mainly showed a consolidation trend.

- Supply—operating rates of AlF_3 manufacturers kept stable and they faced little overstock pressure; market supply of AlF_3 was adequate.
- Demand—Operating rates of downstream industries maintained stability while showing a tendency to mount up and customers mainly purchased AlF_3 based on demand. The overall demand remained stable.

- Cost—Fluorite prices climbed; prices of anhydrous hydrogen fluoride (AHF) slipped; prices of sulphuric acid maintained stability while showing a downward trend. The overall cost scarcely changed but still stayed at a high level, giving support to AlF_3 prices to some extent.

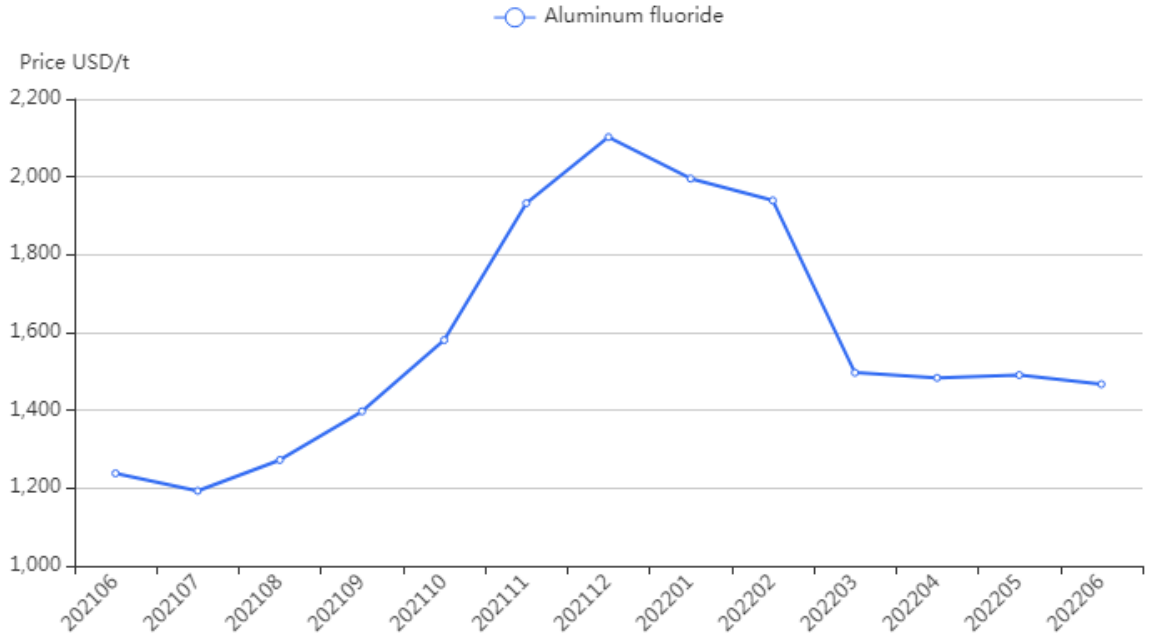
As of 27 June, market prices of domestic AlF_3 averaged USD1,661.64/t (RMB11,075/t). Mainstream tax-included delivery prices of AlF_3 in different regions are shown as below:

- Shandong Province: USD1,425.33/t–USD1,650.39/t (RMB9,500/t–RMB11,000/t);
- Henan Province: USD1,425.33/t–USD1,650.39/t (RMB9,500/t–RMB11,000/t);
- Gansu Province & Ningxia Hui Autonomous Region: USD1,470.35/t–USD1,500.35/t (RMB9,800/t–RMB10,000/t).

CCM analyses that AlF_3 prices may continue to show a consolidation trend in the short term.

- Supply—AlF_3 manufacturers continuously maintain stable operation and the market supply is still expected to increase.
- Demand—Operating rates of downstream electrolytic aluminium enterprises keep stable while displaying a tendency to edge up and consumption of electrolytic aluminium scarcely changes; downstream customers mainly buy AlF_3 based on demand, which has a limited impact on the future market.
- Cost—Prices of raw materials like fluorite powder and sulphuric acid remain high, offering cost support to AlF_3 prices to some extent.

FIGURE 6: China's AlF3 price, June 2021–June 2022



Source:CCM

Import and export

Import and export of major fluorochemicals in China in April 2022

TABLE 1: Export volume of China's major fluorochemicals, April 2022, tonne

Product	April 2022	March 2022	April 2021	MoM change	YoY change
Fluorite (CaF_2>97%)	9,068	887	735	+922.63%	+1,134.25%
Fluorite (CaF_2≤97%)	12,671	5,158	7,751	+145.63%	+63.48%
HF	19,193	6,899	20,375	+178.21%	-5.80%
AlF_3	15,619	7,880	4,588	+98.22%	+240.46%
HCFC-22	6,323	5,130	6,977	+23.26%	-9.37%
PTFE	2,764	2,831	4,717	-2.38%	-41.41%
$LiPF_6$	1,072	1,328	1,564	-19.26%	-31.42%

Source:CCM & China Customs

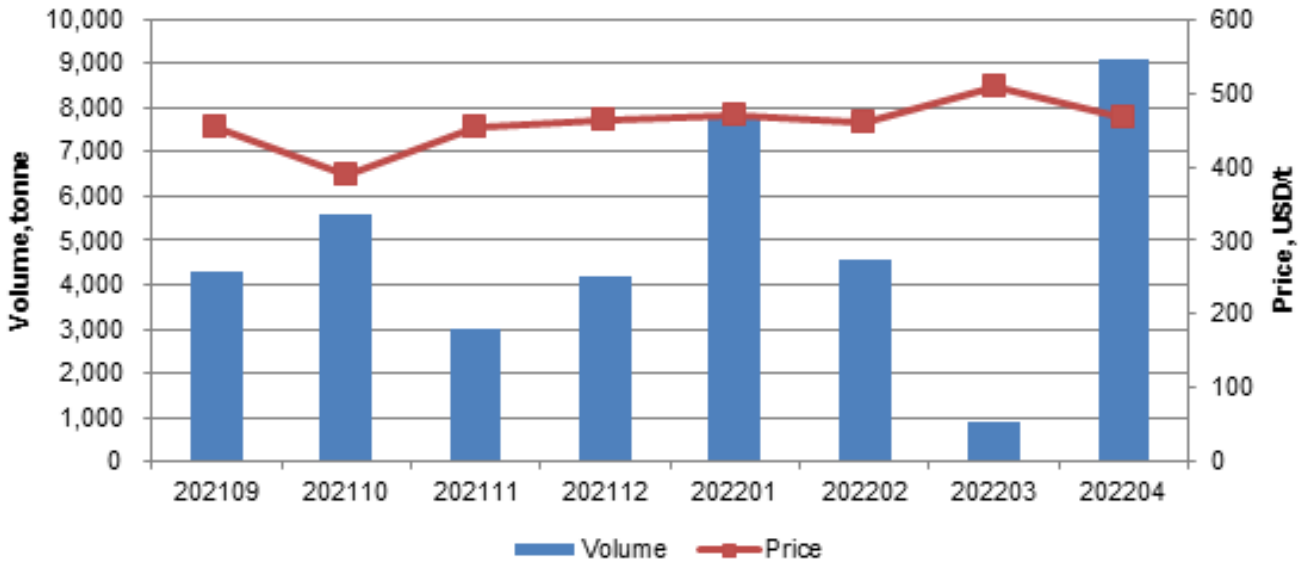
TABLE 2: Average FOB price of China's major fluorochemicals, April 2022, USD/t

Product	April 2022	March 2022	April 2021	MoM change	YoY change
Fluorite (CaF_2>97%)	465	509	499	-8.55%	-6.74%
Fluorite (CaF_2≤97%)	395	457	350	-13.70%	+12.87%
HF	1,751	1,883	1,529	-7.00%	+14.56%
AlF_3	1,556	1,698	1,246	-8.32%	+24.94%
HCFC-22	2,610	2,476	1,938	+5.42%	+34.67%
PTFE	9,845	9,353	6,604	+5.25%	+49.07%
$LiPF_6$	27,440	25,667	12,421	+6.91%	+120.91%

Source:CCM & China Customs

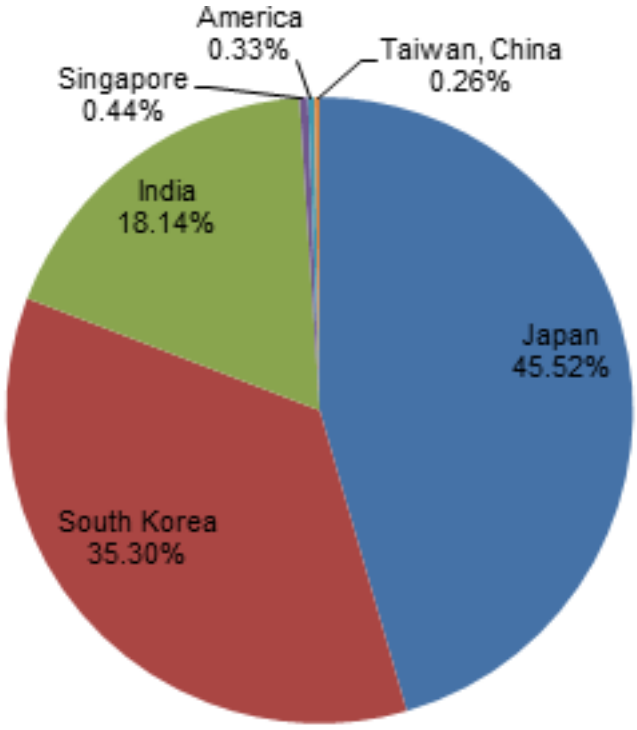
Fluorite

FIGURE 7: China's fluorite (CaF2>97%) exports, Sept. 2021–April 2022



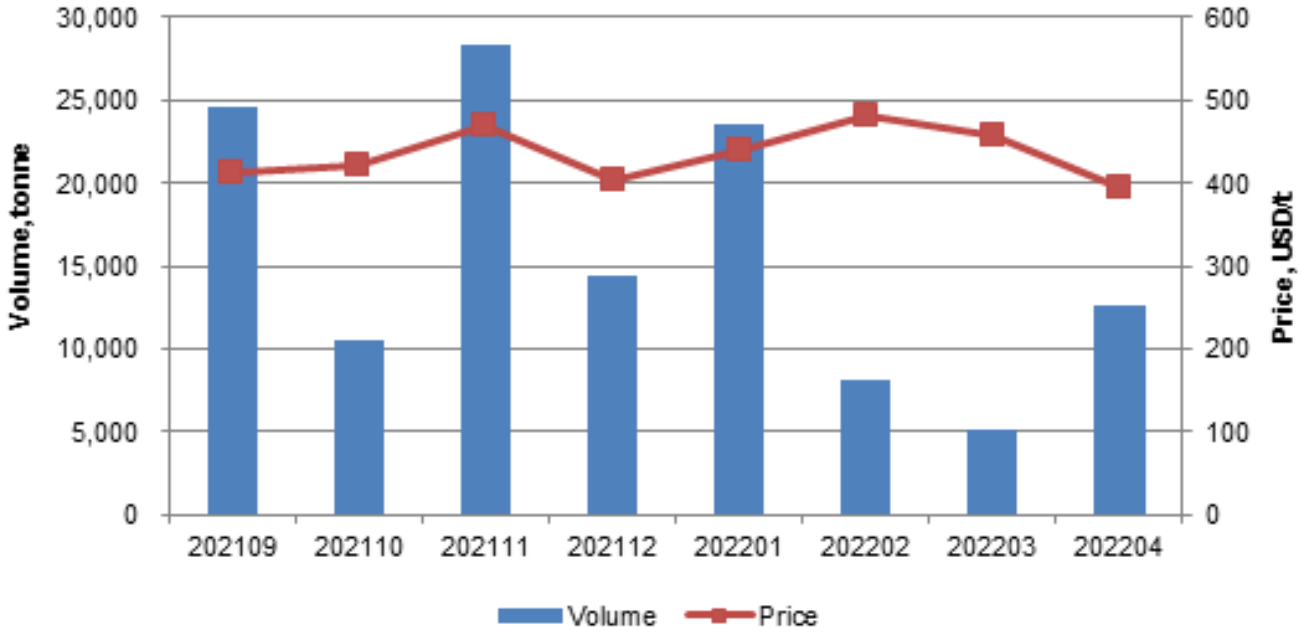
Source:CCM & China Customs

FIGURE 8: China's fluorite (CaF2>97%) export destinations by volume, April 2022



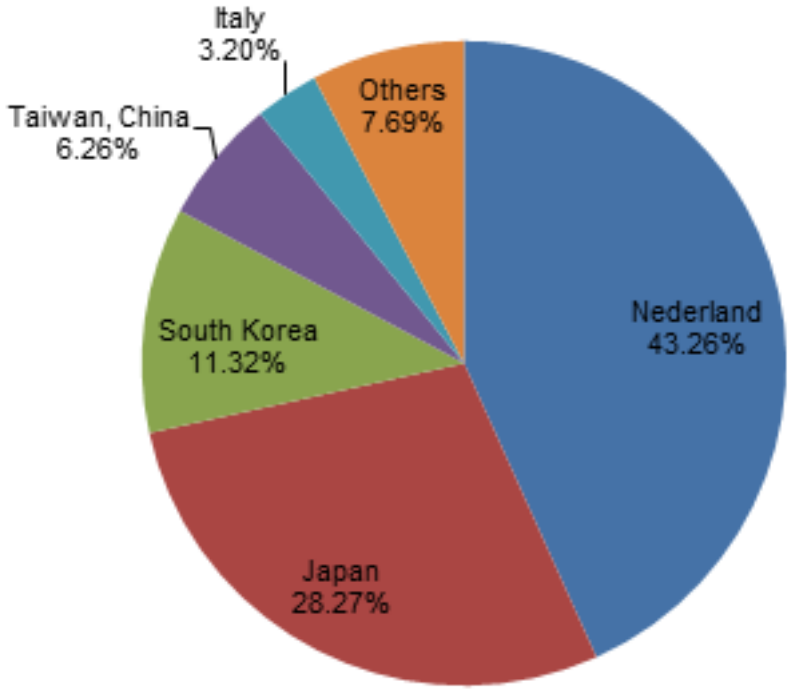
Source:CCM & China Customs

FIGURE 9: China's fluorite (CaF2≤97%) exports, Sept. 2021–April 2022



Source:CCM & China Customs

FIGURE 10: China's fluorite (CaF2≤97%) export destinations by volume, April 2022



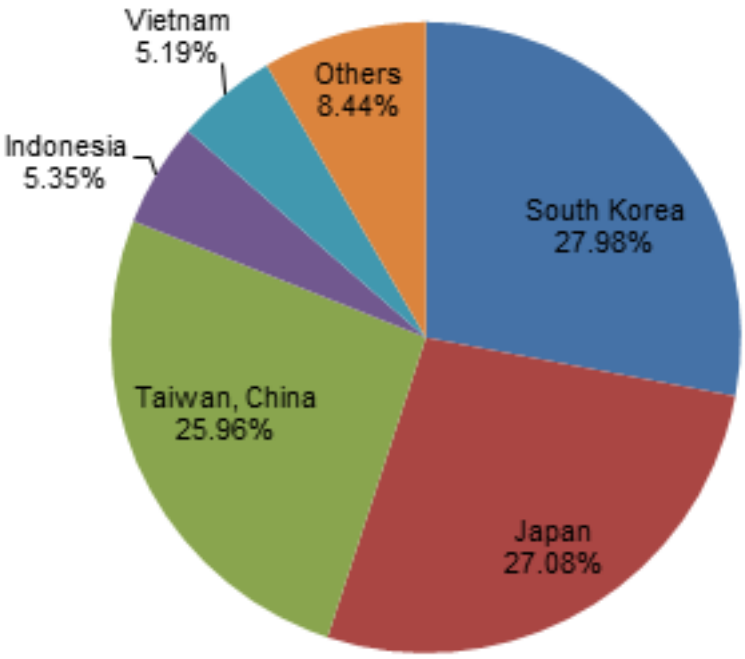
Source:CCM & China Customs

HF & AlF_3

FIGURE 11: China's HF exports, Sept. 2021–April 2022

Source:CCM & China Customs

FIGURE 12: China's HF exports, April 2022



Source:CCM & China Customs

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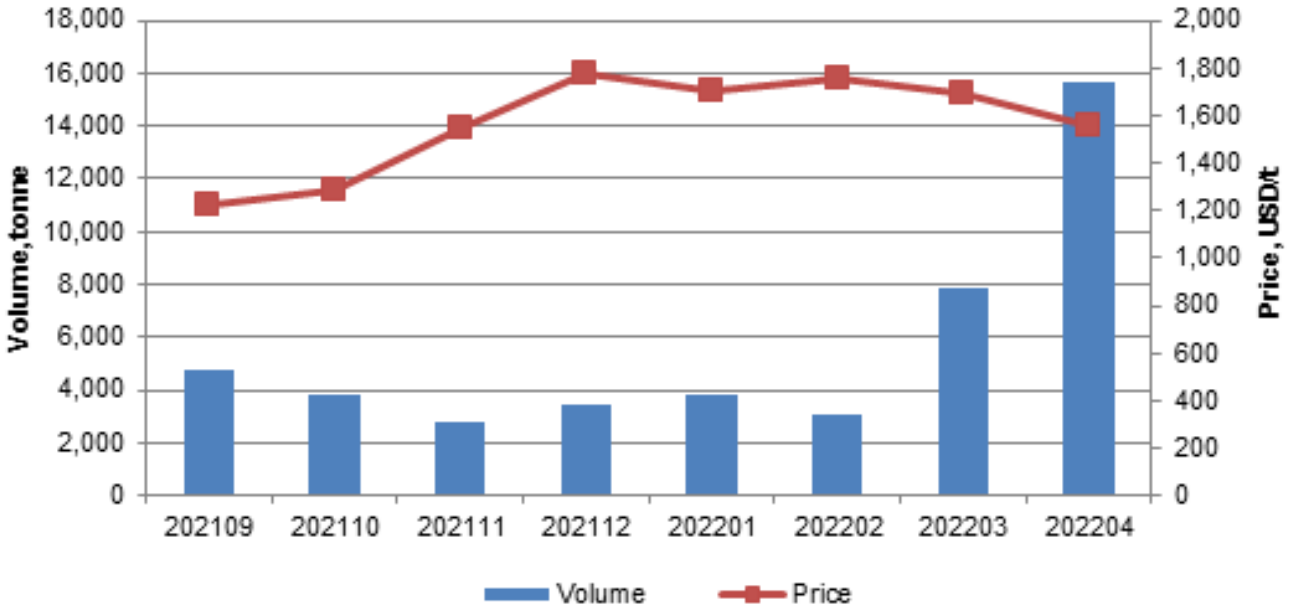
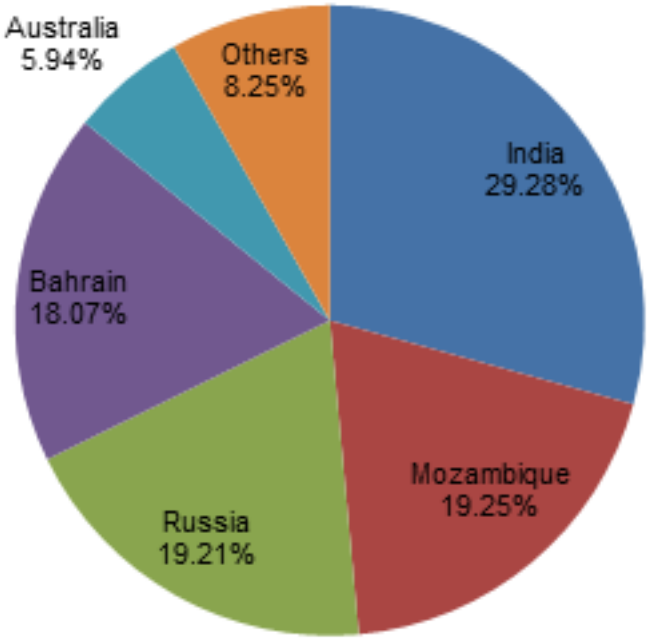
FIGURE 13: China's AlF3 exports, Sept. 2021–April 2022



Source:CCM & China Customs

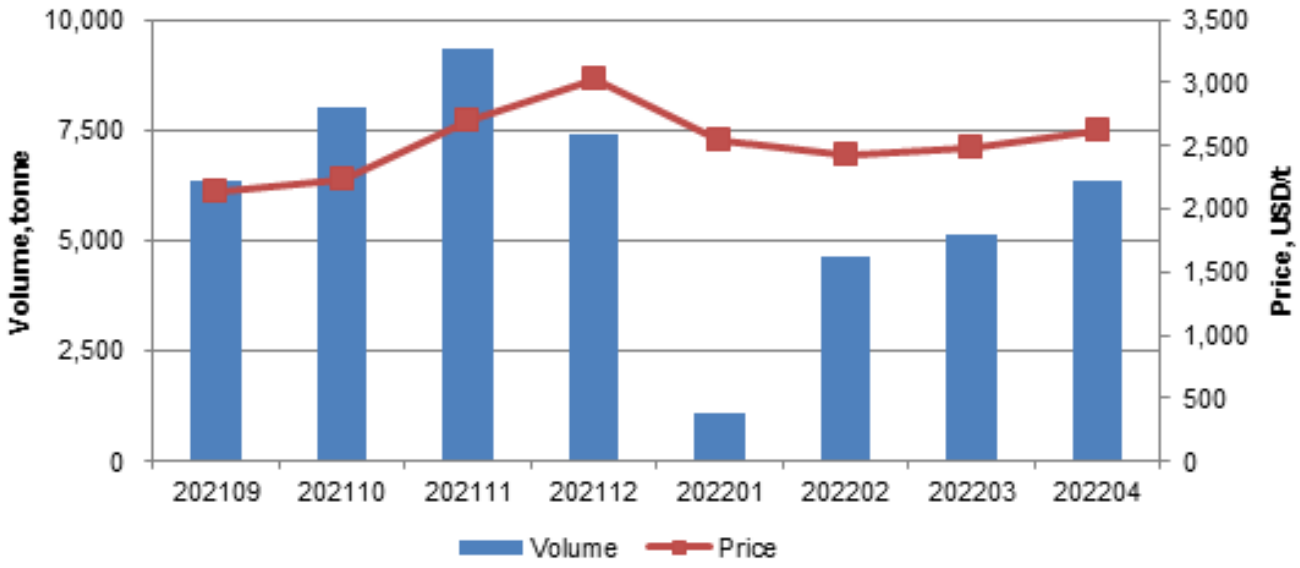
FIGURE 14: China's AlF3 export destinations by volume, April 2022



Source:CCM & China Customs

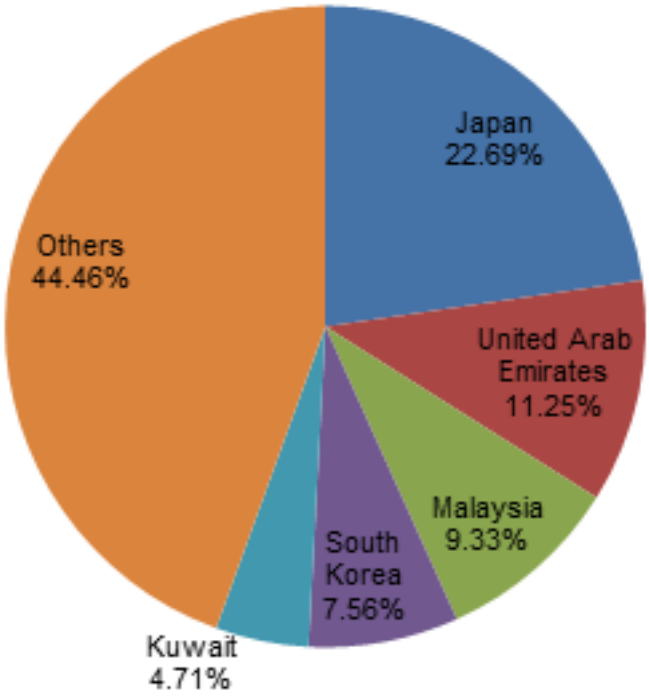
HCFC-22

FIGURE 15: China's HCFC-22 exports, Sept. 2021–April 2022



Source:CCM & China Customs

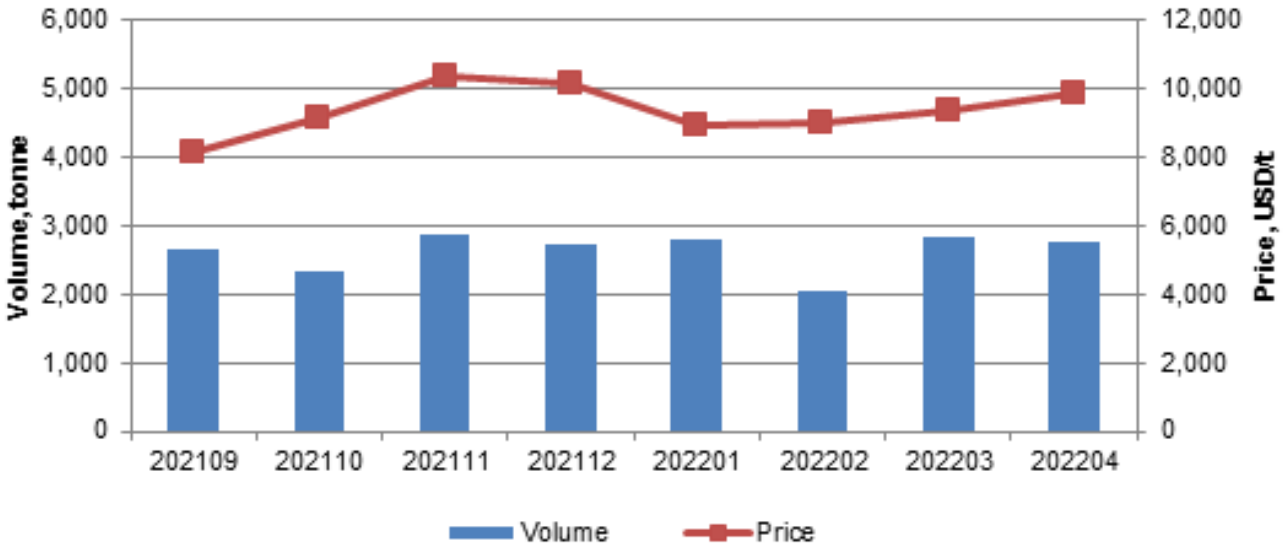
FIGURE 16: China's HCFC-22 export destinations by volume, April 2022



Source:CCM & China Customs

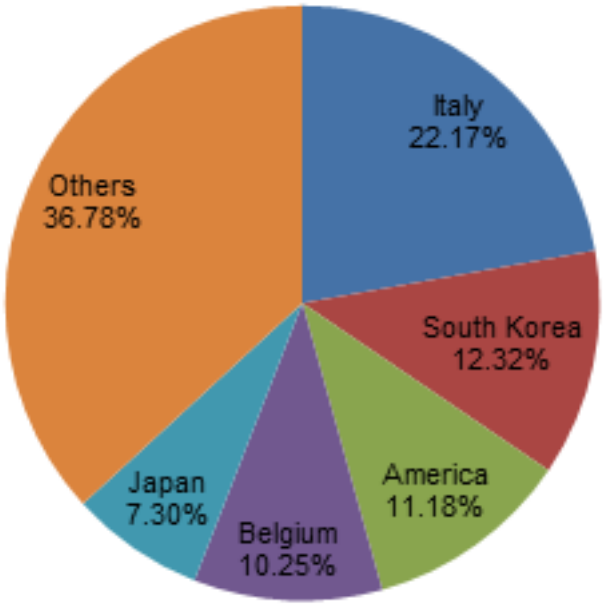
PTFE

FIGURE 17: China's PTFE exports, Sept. 2021–April 2022



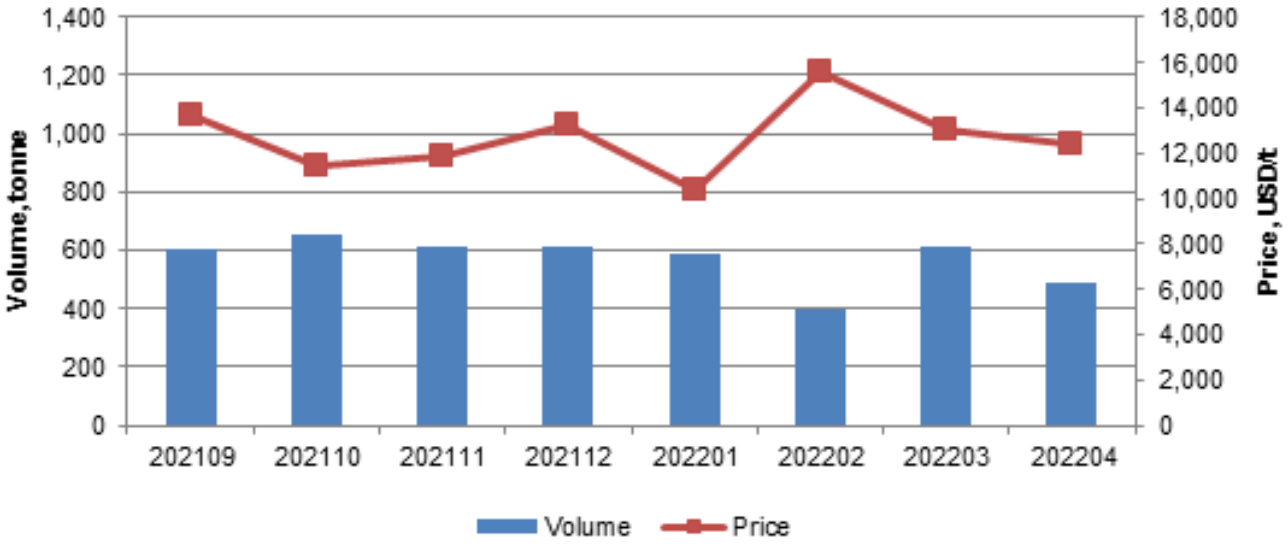
Source:CCM & China Customs

FIGURE 18: China's PTFE export destinations by volume, April 2022



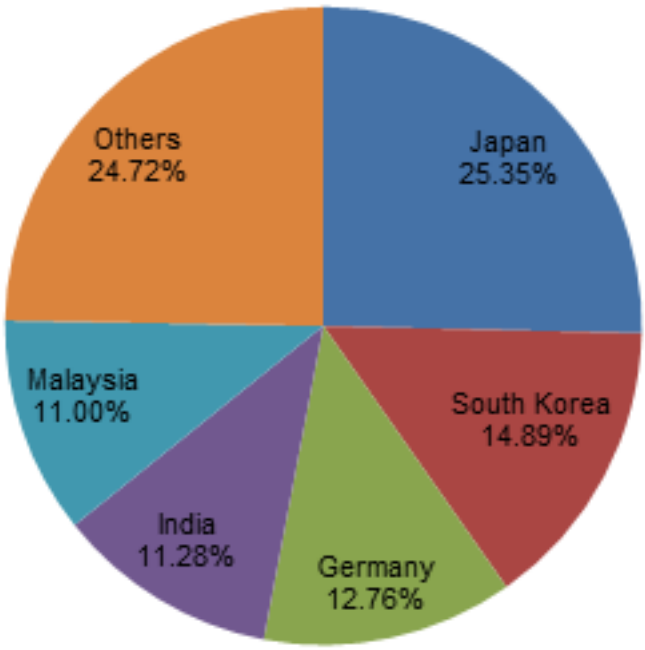
Source:CCM & China Customs

FIGURE 19: China's PTFE imports, Sept. 2021–April 2022



Source:CCM & China Customs

FIGURE 20: China's PTFE import origins by volume, April 2022



Source:CCM & China Customs

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Price Update

Ex-works prices of major fluorochemicals in China in June 2022

TABLE 3: Ex-works prices of major fluorochemicals in China in June 2022

Product	Jun/22		May/22		MoM change (RMB)
	USD/t	RMB/t	USD/t	RMB/t	
Fluorite (CaF_2>97%)	418	2,783	421	2,767	0.58%
AHF (99.95%)	1,808	12,050	1,877	12,327	-2.25%
HCFC-22	2,415	16,093	2,741	18,000	-10.59%
HFC-134a	2,864	19,092	3,175	20,848	-8.42%
HFC-32	2,124	14,157	2,111	13,866	2.10%
HFC-125	5,623	37,476	5,639	37,031	1.20%
R410a	3,636	24,234	3,693	24,250	-0.07%
AlF_3	1,467	9,778	1,491	9,789	-0.11%
Cryolite CH-2	1,077	7,180	1,081	7,100	1.13%
PTFE dispersion resin	9,227	61,500	9,820	64,492	-4.64%
PTFE medium size particle resin	8,024	53,480	8,224	54,011	-0.98%

Note:Ex-works price including VAT
USD/RMB exchange rates: 6.6651 for June 2022 and 6.5672 for May 2022.
Source:CCM

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