# Indian Minerals Yearbook 2022

## (Part- III : Mineral Reviews)

## 61st Edition

# FLUORITE

## (ADVANCE RELEASE)

**GOVERNMENT OF INDIA**
**MINISTRY OF MINES**
**INDIAN BUREAU OF MINES**

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# 12 Fluorite

Fluorite is a very popular mineral, and it naturally occurs in all colours of the spectrum. It is one of the most varied coloured mineral in the mineral kingdom. The colours may be very intense and most electric. Pure fluorite is colourless and the colour variations are caused by various impurities. It is a mineral with veritable bouquet of brilliant colours from hallmark colour purple to blue, green, yellow, colourless, brown, pink, black and reddish orange. The rich purple colour is by far the most famous and popular colour. It is an important commercial source of fluorine. Fluorite plays a vital role in the manufacturing Industry. Major consuming industries are chemical, cement, iron & steel, electrode, etc. It is also used in the production of synthetic cryolite without which aluminium extraction is not possible.

Fluorite is commonly deposited by hydrothermal solution sourced from igneous intrusions. The mineralisation occurs as veins or replacement deposits either by the filling of cavities and fissures or by the replacement of the host rock, typically carbonates.

Mainly two grades of fluorite are involved in consumption and trade, namely, the Acid grade (acidspar) containing more than 97% $CaF_2$ and the Sub-acid grade analysing 97% or less $CaF_2$. The Sub-acid grade includes Metallurgical (60 to 85% $CaF_2$) and Ceramic (85 to 95% $CaF_2$) grades and is commonly known as Metallurgical grade (metspar).Fluorite production in the country is meagre when compared with the world production.

In addition to the natural fluorite production, synthetic fluorite is recovered as by-product during uranium processing, petroleum alkylation and stainless pickling. The by-product, fluorosilicic acid, obtained from phosphoric acid plants while processing phosphate rock also supplements fluorite as a source of fluorine.

## RESERVES/RESOURCES

As per NMI database, based on the UNFC system, the total reserves/resources of fluorite in the country as on 1.4.2020 has been estimated at 20.99 million tonnes. Out of these, 0.40 million tonnes are placed under Reserves category (of which 0.23 million tonnes are under Proved category and 0.17 million tonnes under Probable category). The Remaining Resources comprise 20.59 million tonnes.

By States, Gujarat accounts for 68% of the total reserves/resources having 14.35 million tonnes, followed by Rajasthan with 5.60 million tonnes (27%), Chhattisgarh 0.54 million tonnes (3%) and Maharashtra 0.49 million tonnes (2%). Gradewise, the resources are classified into Marketable grade which accounted for 82% of the total resources followed by low grade (15%) and Unclassified grade (2%). Other than these the Grade of around 2 % resources are not known (Table-1).

## EXPLORATION & DEVELOPMENT

The exploration and development details, if any, are covered in the Review on Exploration & Development under "General Reviews".

## PRODUCTION & STOCKS

The production of fluorite (graded) at 1,237 tonnes in 2021-22 increased by 18 % as compared to that in the previous year.

There were only one reporting mine in 2021-22 as well as in 2020-21. The entire output was reported from a Public Sector mine located in Chandrapur district of Maharashtra owned by Maharashtra State Mining Corporation Ltd.

The mine-head closing stocks of fluorite (graded) was 98,140 tonnes in 2021-22 as against 97,818 tonnes in 2020-21 (Tables-2 to 5).

The average daily labour employed in fluorite mines in 2021-22 was 42 against 46 in the previous year.

The domestic price of fluorite is furnished in the General Review on 'Prices'.

## Table – 1 : Reserves/Resources of Fluorite as on 1.4.2020 (P)
## (By Grades/States)

(In tonnes)

| Grade / State | Reserves | | | | Remaining Resources | | | | | | | | Total Resources (A+B) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proved STD111 | Probable | | Total (A) | Feasibility STD211 | Pre-feasibility | | Measured STD331 | Indicated STD332 | Inferred STD333 | Reconnaissance STD334 | Total (B) | |
| | | STD121 | STD122 | | | STD221 | STD222 | | | | | | |
| **All India : Total** | **228393** | **163860** | **11988** | **404241** | **9340556** | **771934** | **768573** | **1727945** | **6239589** | **1578067** | **161575** | **20588239** | **20992480** |
| **By Grades** | | | | | | | | | | | | | |
| Marketable | 228393 | 163860 | 11988 | 404241 | 9313407 | 586080 | 384943 | 14112 | 5778178 | 509522 | 145183 | 16731425 | 17135666 |
| Not Known | - | - | - | - | 27149 | 26544 | 218430 | - | - | 43542 | 16392 | 332057 | 332057 |
| Low | - | - | - | - | - | 3790 | 9680 | 1710348 | 445660 | 1000003 | - | 3169481 | 3169481 |
| Unclassified | - | - | - | - | - | 155520 | 155520 | 3485 | 15751 | 25000 | - | 355276 | 355276 |
| **By States** | | | | | | | | | | | | | |
| Chhattisgarh | - | - | - | - | 65889 | 153132 | 9288 | 185485 | 5573 | 126088 | - | 545455 | 545455 |
| Gujarat | - | - | - | - | 8630000 | - | - | - | 5723360 | 1920 | - | 14355280 | 14355280 |
| Maharashtra | 222282 | 163860 | - | 386142 | - | - | - | - | - | 100000 | - | 100000 | 486142 |
| Rajasthan | 6111 | - | 11988 | 18099 | 644667 | 618802 | 759285 | 1542460 | 510656 | 1350059 | 161575 | 5587504 | 5605603 |

*Figures rounded off*

**Table – 2 : Producer of Fluorite 2021-22**

| Name and address of producer | Location of mine | |
|---|---|---|
| | State | District |
| Maharashtra State Mining Corporation Ltd, Plot No. 7, Ajni Square, Wardha Road, Nagpur-440 015, Maharashtra. | Maharashtra | Chandrapur |

**Table – 3 : Production of Fluorite (Graded), 2019-20 to 2021-22 (By States)**

(Qty in tonnes;Value in ₹'000)

| State | 2019-20 | | 2020-21 (P) | | 2021-22 (P) | |
|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| **India** | **1315** | **8844** | **1052** | **8018** | **1237** | **8831** |
| Maharashtra | 1315 | 8844 | 1052 | 8018 | 1237 | 8831 |

**Table – 4 : Production of Fluorite 2020-21 & 2021-22 (By Sector/States/Districts)**

(Qty in tonnes; Value in ₹'000)

| State/District | 2020-21 | | | 2021-22 (P) | | |
|---|---|---|---|---|---|---|
| | No. of mines | Quantity | Value | No. of mines | Quantity | Value |
| **India** | **1** | **1052** | **8018** | **1** | **1237** | **8831** |
| Public Sector | 1 | 1052 | 8018 | 1 | 1237 | 8831 |
| **Maharashtra** | **1** | **1052** | **8018** | **1** | **1237** | **8831** |
| Chandrapur | 1 | 1052 | 8018 | 1 | 1237 | 8831 |

**Table – 5 : Mine-head Closing Stocks of Fluorite, 2020-21 & 2021-22 (By States)**

(In tonnes)

| State | 2020-21 | 2021-22 (P) |
|---|---|---|
| **India** | **97818** | **98140** |
| Gujarat | 84372 | 84371 |
| Maharashtra | 13446 | 13769 |

## MINING

Maharashtra State Mining Corporation (MSMC) operates Dongargaon fluorite mines in District Chandrapur, Maharashtra. Mining is carried out by semi-mechanised opencast method. The run-of-mine is hand sorted for marketing of fluorite (graded).

## BENEFICIATION

Fluorspar is beneficiated by hand sorting followed by gravity concentration methods, such as, heavy media, jigs and tables in order to separate calcite and silicate mineral impurities. Low-grade fluorite produced is used after beneficiation in the industries. GMDC has a beneficiation plant of 500 tpd capacity located at Kadipani to produce Acid grade (96% $CaF_2$) and Metallurgical grade (90% $CaF_2$) fluorite by upgrading the low-grade fluorspar ore from 23–25% $CaF_2$ by flotation method. Besides, it has facility to produce MFC & MET grade powder analysing 75 to 85% $CaF_2$ & 85 to 92.5% $CaF_2$, respectively and other products, such as, starch briquettes (81% $CaF_2$ min.) and silicate briquettes (79% $CaF_2$min.).

## CONSUMPTION

The apparent consumption of fluorite was about 2,86,295 tonnes in 2021-22, as against the 2,21,083 tonnes in 2020-21.

## SPECIFICATIONS

BIS has prescribed IS: 8587-1993 (First Revision, reaffirmed 2011) for Acid grade fluorite for use in Chemical industries, and IS: 4574-1989 (Second Revision, reaffirmed 2008) for fluorite in Metallurgical industries.

## USES

Acid grade fluorite is used as a feedstock in the manufacture of hydrofluoric acid (HF) and to produce aluminium fluoride ($AlF_3$). The major use of HF is for the production of a wide range of fluorocarbon chemicals, including hydrofluorocarbons (HFCs) hydrochlorofluorocarbons(HCFCs),and fluoropolymers. But, owing to environmental concerns, part of chlorofluorocarbons (CFCs) are replaced by HCFCs. HF is used in the manufacture of uranium tetrafluoride, an important ingredient used for producing nuclear fuel and fission explosives. It is also used in stainless pickling, petroleum alkylation, glass etching, oil & gas well treatment and as etcher/cleaner in Electronic Industry.

HF is used in the manufacture of a host of fluorine chemicals used in dielectrics, metallurgy, wood preservatives, herbicides, mouthwashes, decay-preventing dentifrices, plastics and water fluoridation.

$AlF_3$ manufactured from Acid grade fluorite is used as a flux in electrolytic recovery of aluminium. On an average, worldwide consumption of fluorides is about 21 kg for every tonne of aluminium produced. This ranged from 10 to 12 kg per tonne in a modern pre-baked aluminium smelter and about 40 kg in an old Soderberg smelter without scrubber.

Ceramic grade fluorite containing 85 to 95% $CaF_2$ is used in Ceramic Industry as a flux and as an opacifier in the production of flat glass, white or opal glass and enamels. The addition of 10–30% Ceramic grade fluorspar to glass makes it opaque, white and opalescent. It is also used in the manufacture of magnesium, some manganese chemicals and welding rod coating.

Metallurgical grade fluorite is used primarily as fluxing agent by Steel Industry. It is added to slag to make it more reactive through increased fluidity. Fluorite of different grades is used in the manufacture of aluminium, cement and glass fibres. It is also used in the melt shop by Foundry Industry.

## INDUSTRY

Many fluorine-based chemicals like hydrofluoric acid, aluminium fluoride, cryolite, sodium silicofluoride and hydrofluorosilicic acid are produced by Chemical and Fertilizer industries in the country.

In addition to material produced indigenously, substantial quantity of high-grade fluorite was also imported to meet the demand of the fluorine-based Chemical Industries.

The Tanfac Industries Ltd is a Joint Sector Company of Tami Nadu Industrial Development Corporation (TIDCO) and Aditya Birla Group at Cuddalore, Tamil Nadu. It is engaged in the manufacture of fluorine chemicals, such as, aluminium fluoride, anhydrous hydrofluoric acid, sodium silicofluoride, ammonium bifluoride, potassium fluoride, and various other fluorine-based chemicals.

Navin Fluorine International Ltd (NFIL) is an Indian manufacturers of speciality fluorochemicals. It belongs to the Padmanabh Mafatlal Group – one of India's oldest industrial houses. Established in 1967, NFIL operates one of the largest integrated fluorochemicals complexes in India with manufacturing locations at Surat and Dahej in Western India and Dewas in Central India.The Company produces a number of fluorine chemicals, namely, hydrofluoric acid, cryolite,aluminium fluoride and various other organic and inorganic fluorine-based chemicals.

Apatite and rock phosphate containing 3 to 4% $CaF_2$ was another useful source for recovery of fluorine.

## SUBSTITUTES

Olivine or dolomitic limestone can be used as substitute for fluorite in Iron & Steel industry. The by-product fluorosilicic acid from phosphoric acid production could also be used as a substitute in aluminium fluoride production.

## ENVIRONMENT

Fluorine attracts environmental concern. Use of fluorine in drinking water has begun to wane. Fluorine is toxic in high concentration but beneficial in low concentration. Although fluorine has been under attack ever since its use in water in 1949, the only significant health problem with which it has been linked was 'Fluorosis', a disease that involves health defects and bone lesions. This problem is caused by concentration of fluoride that is much higher than the permissible levels in municipal water supplies. As per Indian Standards, the permissible limit of fluoride in the drinking water is 1.5 mg/l. "Defluoridisation by adsorption" is a common economical and efficient method for removal of excess fluoride from drinking water. Electrolytic precipitation based on use of aluminium salts and by electrochemical route, etc. are the other few methods used for defluoridisation.

Fluorine is at the centre of controversy over chlorofluorocarbons (CFCs), which causes depletion of atmospheric ozone layer that protects the earth from ultraviolet radiation, a major cause of skin cancer. The hydrofluorocarbon (HFC) and hydrochlorofluorocarbon (HCFC) compounds, which have been developed as an alternative to CFC, require more hydrofluoric acid than CFC and are expected to boost fluorite consumption. These greenhouse gases are being phased out in stages. It is reported that even if CFC emission is stopped, the present level of these gases may take up to ten years to reach the upper atmosphere where they could persist for a century or more.

According to United Nations Environment Programme (UNEP), an international agreement to curtail illegal trade in CFC and other ozone depleting chemicals came into effect on 10$^{th}$ November 1999. The agreement, which was authorised through an amendment to the Montreal Protocol in 1997, requires nations to create licensing system for international sales of ozone depleting chemicals. Further, as a part of the Montreal Protocol, 129 nations agreed on a three-year funding package to enable developing countries to continue their efforts to phase out CFC and other ozone depleting chemicals. Accordingly, the Fund's Executive Committee approved major agreements with China and India to finance the shutdown of CFC production facilities in the two countries during the next ten years.

The United Nations Environment Programme (UNEP) has prepared a Montreal Protocol Handbook that provides additional detail and explanation of the provisions. CIESIN's Thematic Guide on Ozone Depletion and Global Environmental Change presents an in-depth look at causes, human and environmental effects, and policy responses to stratospheric ozone depletion.

The use of the low global warming Potential (GWP) hydyrofluroolefins refrigerant HFO-1234 yf is suggested as a preferred replacement of HFC- 134a by both the U.S. Environmetal protection Agency

and the EU. Daimler in Europe has opted for $CO_2$ based air conditioning refrigerant in its 2017 Mercedes E and S class cars.

# WORLD REVIEW

The world total reserves of fluorite / fluorspar were at 260 million tonnes.World reserves are concentrated mainly in Mexico (26%), China (19%), South Africa (16%), Mongolia (8%) and Spain (4%) (Table- 6).

World production of fluorite / fluorspar in 2021 decreased marginally by 6 % to 7.80 million tonnes as compared to 8.30 million tonnes in the previous year (Table-7). China (69%), Mexico (13%), South Africa (5%) Vietnam & Spain (3% each) and Mongolia (2%) were the principal producing countries of fluorite / fluorspar in 2021.

To provide generalised view of the development in various countries, the countrywise description as sourced from the latest available publication of Minerals Yearbook 'USGS 2018' is furnished below :

## Canada

In August 2018, Canada Fluorspar (NL) Inc. (St. Lawrence, Newfoundland and Labrador) made its first shipment acid-grade concentrate from its St. Lawrence Fluorspar project. The company was ramping up production using ore that had been stockpiled during open pit mine development.

## China

China is the world's leading producer and consumer of AlF3, fluorspar, fluorocarbons (feedstock and non-feedstock), and HF. Throughout the 1990s, China was the leading global fluorspar exporter. However, for the past two decades, Government policy evolved to discourage exports in favor of development of downstream consuming industries and increased vertical integration. In 2017, the Government declared fluorspar to be a strategic mineral and was prioritized for stricter controls on the use of mineral resources, establishment of key targets for financial investment, and increased monitoring to support Government initiatives. In December 2018, the Fluorite Industry Development Association of China was established in Beijing to facilitate development and standardisation within the fluorspar industry .

## Kenya

On April 1, 2018, control of Kenya Fluorspar Co.'s assets in the Kerio Valley reverted to the Government after the company opted not to renew its 20-year lease. Operations at the mine and its processing plant were idled in 2016.

## Mongolia

Increased production in Mongolia was attributed to a large increase in China's imports beginning in the second half of the year. Although Mongolia has been known to produce acid-grade fluorspar, many plants produced lower grade flotation concentrate that did not meet the specifications required by most leading acid-grade consumers.

The Government of Mongolia has encouraged investment in the mining sector to support economic growth.

## Morocco

GFL GM Fluorspar SA began production of acid-grade fluorspar from a new mine in Taourirt. The operation was established as a joint venture between Gujarat Fluorochemicals Ltd. (India) and Global Mines sarl (Morocco). Concentrate from the 40,000-t/yr operation would be exported through the Port of Nador, primarily to Gujarat's HF operations in India and fluorochemical producers in Europe.

## South Africa

Sephaku Flouride Ltd. continued to develop its Nokeng Fluorspar Mine (Nokeng) and milling project in Rust de Winter, Gauteng Province. Nokeng is in the Bushveld Complex directly south of the Minersa Group's Vergenoeg Mine, the country's only operational fluorspar mine. Open pits would be developed at two of three fluorspar-hematite deposits that compose the Nokeng Fluorspar Mine—the Outwash Fan, with an average ore grade of 22.7% CaF2, and Plattekop, with an average ore grade of 38.2% CaF2.

## Vietnam

Nui Phao Mining Co. Ltd. (Masan Resources Corp.) produced 238,702 t of acid-grade fluorspar concentrate from its Nui Phao polymetallic mine in Thai Nguyen Province, a slight increase compared with production in 2017. The company has reported increased production of fluorspar each year since the mine went into operation in 2014, which it attributed to the implementation of successive capital upgrades to increase ore throughput and enhance recovery rates, particularly in the tungsten- and fluorspar-processing circuits. Fluorspar recovery increased by 4% in 2018, despite a 2% decrease in mill feed grades.

**Table – 6 : World Reserves of Fluorspar (By Principal Countries)**

(In '000 tonnes)

| Country | Reserves |
|---|---|
| **World: Total (rounded)** | **2,60,000** |
| Canada | NA |
| China | 49,000 |
| Germany | NA |
| Iran | 3,400 |
| Mexico | 68,000 |
| Kazakhstan | NA |
| Mongolia | 22,000 |
| Morocco | NA |
| Pakistan | NA |
| South Africa | 41,000 |
| Spain | 10,000 |
| USA | 4,000 |
| Vietnam | 5000 |
| Other countries | 55,000 |

***Source:*** *USGS, Mineral Commodity Summaries,2023*

*Note : Reserves for China and Morocco were revised based on company and Govt. reports.*

**Table – 7 : World Production of Fluorite (By Principal Countries)**

(In tonnes)

| Country | 2019 | 2020 | 2021 |
|---|---|---|---|
| **World Total** | **7400000** | **8300000** | **7800000** |
| China[e] | 4300000 | 5400000 | 5400000 |
| Mexico | 1931532 | 1571269 | 1007118 |
| South Africa | 210000 | 320000 | 420000[e] |
| Vietnam | 238003 | 219920 | 215027 |
| Spain | 145185 | 185958 | 214587 |
| Mongolia | 156100 | 127300 | 118300 |
| Iran[c] | 49705 | 116159 | 116000[e] |
| Kazakhstan | 87800 | 77000 | 77000[e] |
| Morocco | 73240 | 70000[e] | 70000[e] |
| Germany | 79959 | 64933 | 56632 |
| Other countries | 91148 | 121536 | 114495 |

***Source :*** *BGS, World Mineral Production, 2017-21*

*(e) Estimated*

*c) Years ended 20 March following that stated*

# FOREIGN TRADE

## Exports

Exports of fluorite increased by 78% to 844 tonnes in 2021-22 from 474 tonnes in the previous year. Exports were mainly to Indonesia (40%), Bangladesh (32%), Saudi Arabia (6%), Brazil (5%) and Ethiopia, Kenya, Philippines & Jordan (3% each) . While, exports of aluminium fluoride decreased by 52% to 984 tonnes in 2021-22 as compared to 2,045 tonnes in the previous year. Exports were mainly to UAE (51%), Turkey (39%) and Japan (10%). Exports of hydrofluoric acid decreased by 31% to 1,325 tonnes in 2021-22 as compared to 1,931 tonnes in the preceding year (Tables- 8 to 10).

## Imports

Imports of fluorite increased by 30% to 2,86,224 tonnes in 2021-22 as compared to 2,20,573 tonnes in the previous year. Imports were mainly from South Africa (68%), Thailand(8%) and Luxembourg, Vietnam, China, Canada & Morocco (4% each). Imports of aluminium fluoride, however, increased substantially by 21% to 74,348 tonnes in 2021-22 from 61,225 tonnes in the previous year. Imports were mainly from Mexico (20%), China (17%), Qatar (16%), Italy (14%), UAE (11%), Bahrain & Croatia (7% each) and Lithuania &Jordan (3% each).While imports of hydrofluoric acid decreased by 46% to 1,122 tonnes in 2021-22 from 2,095 tonnes in the preceding year. Imports were mainly from Taiwan (65%), China (19%) and Sri lanka (16%) (Tables -11 to 13) .

**Table – 8 : Exports of Fluorite (By Countries)**

| Country | 2020-21 (R) | | 2021-22 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **474** | **22436** | **844** | **43463** |
| Indonesia | 249 | 13604 | 335 | 20073 |
| Bangladesh | 20 | 570 | 274 | 8932 |
| Saudi Arabia | -- | -- | 47 | 3194 |
| Brazil | 17 | 1218 | 44 | 3070 |
| Ethiopia | -- | -- | 25 | 1430 |
| Kenya | 9 | 197 | 23 | 1410 |
| Philippines | 44 | 2297 | 22 | 1231 |
| Jordan | 28 | 1069 | 25 | 1222 |
| Tanzania | 4 | 199 | 15 | 772 |
| Qatar | 21 | 1099 | 11 | 697 |
| Other countries | 82 | 2183 | 23 | 1432 |

*Figures rounded off*

**Table – 9 : Exports of Aluminium Fluoride (By Countries)**

| Country | 2020-21 (R) | | 2021-22 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **2045** | **187158** | **984** | **24720** |
| UAE | 1800 | 170576 | 500 | 9216 |
| Turkey | 100 | 1245 | 383 | 3462 |
| Japan | 120 | 13790 | 100 | 11766 |
| Germany | ++ | 9 | ++ | 128 |
| Australia | -- | -- | 1 | 84 |
| Belgium | ++ | 120 | ++ | 60 |
| Malaysia | -- | -- | ++ | 4 |
| South Africa | 24 | 1277 | -- | -- |
| UK | 1 | 135 | -- | -- |
| Kuwait | ++ | 6 | -- | -- |
| Other countries | ++ | ++ | -- | -- |

*Figures rounded off*

**Table – 10 : Exports of Hydrofluoric Acid (By Countries)**

| Country | 2020-21 (R) | | 2021-22 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **1931** | **164258** | **1325** | **132129** |
| Thailand | 489 | 56720 | 472 | 58196 |
| Saudi Arabia | 202 | 22211 | 345 | 27899 |
| USA | 544 | 36901 | 195 | 16708 |
| Japan | 87 | 6720 | 53 | 5922 |
| Indonesia | 18 | 1554 | 53 | 4507 |
| Turkey | 348 | 18792 | 54 | 4337 |
| Singapore | 36 | 7998 | 17 | 4019 |
| UAE | 8 | 596 | 30 | 3236 |
| Spain | 23 | 1918 | 22 | 1709 |
| Australia | 91 | 4186 | 38 | 1558 |
| Other countries | 85 | 6662 | 46 | 4038 |

*Figures rounded off*

**Table – 11 : Imports of Fluorite**
**(By Countries)**

| Country | 2020-21 (R) | | 2021-22 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **220573** | **6090596** | **286224** | **7792038** |
| South Africa | 141117 | 3858569 | 194063 | 4875662 |
| Thailand | 27492 | 696512 | 23585 | 601868 |
| Luxembourg | 492 | 14479 | 12502 | 429968 |
| Vietnam | 16980 | 540087 | 11659 | 420973 |
| China | 14089 | 433550 | 10271 | 419020 |
| Canada | 4015 | 119504 | 10333 | 334965 |
| Morocco | 3127 | 94265 | 10455 | 313367 |
| Netherlands | 1100 | 33761 | 3654 | 118161 |
| Belgium | 598 | 15495 | 2764 | 90498 |
| Hong Kong | 3680 | 102833 | 2347 | 74673 |
| Other countries | 7883 | 181541 | 4591 | 112883 |

*Figures rounded off*

**Table – 12 : Imports of Hydrofluoric Acid**
**(By Countries)**

| Country | 2020-21 (R) | | 2021-22 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **2095** | **177923** | **1122** | **133130** |
| Taiwan | 167 | 12173 | 724 | 68597 |
| China | 1016 | 86508 | 211 | 33726 |
| Sri Lanka | 487 | 38386 | 178 | 22473 |
| UK | -- | -- | 5 | 5037 |
| Germany | 424 | 40235 | 4 | 2746 |
| Spain | ++ | 134 | ++ | 252 |
| USA | ++ | 307 | ++ | 136 |
| Sweden | -- | -- | ++ | 97 |
| France | -- | -- | ++ | 34 |
| Belgium | ++ | 78 | ++ | 32 |
| Other countries | 1 | 102 | -- | -- |

*Figures rounded off*

**Table – 13 : Imports of Aluminium Fluoride (By Countries)**

| Country | 2020-21 (R) | | 2021-22 (P) | |
|---|---|---|---|---|
| | Qty (t) | Value (₹'000) | Qty (t) | Value (₹'000) |
| **All Countries** | **61225** | **4805867** | **74348** | **5287781** |
| Mexico | 7000 | 576887 | 14625 | 1273267 |
| China | 22846 | 2014359 | 12793 | 1317137 |
| Qatar | 7496 | 94853 | 12084 | 139754 |
| Italy | 13284 | 1156118 | 10638 | 1101739 |
| UAE | 5324 | 494244 | 8343 | 904470 |
| Bahrain | -- | -- | 5276 | 61767 |
| Croatia | -- | -- | 5022 | 60796 |
| Lithuania | 600 | 42817 | 2500 | 188104 |
| Jordan | 1020 | 74328 | 2051 | 167209 |
| Indonesia | 1140 | 103653 | 560 | 46715 |
| Other countries | 2515 | 248608 | 456 | 26823 |

*Figures rounded off*

## FUTURE OUTLOOK

The major driving factors for fluorite market are the growing Chemical Industry and increasing use of fluorite in Cement, Iron & Steel, Glass Industries. The Chemical Industry and Glass Industry account for the major share of the fluorite demand globally. As per TANFAC Annual Report 2021-22,Global Fluorochemical market is estimated around US$ 20 billion and expected to grow at a CAGR of 5.2% and reach USD 26 billion by 2026 with Asia Pacific region expected to account for significant share of the global market. In India, the market growth of fluorochemicals is driven by downstream sectors like Automobile, Air Conditioning, Refrigeration, Construction, Cold Storage and Pharma / Life Science segments. Life Science segment has emerged one of the key drivers over the years. India is expected to become 4th largest chemical producer in the world by 2030, benefitting from rising export opportunities, stability of prices, faster end user industry growth and low penetration of specialty chemicals.The chemical industry of India is a major industry in the Indian economy and as of 2022, contributes 7% of the country's Gross Domestic Product (GDP). India is the world's sixth largest producer of chemicals and the third largest in Asia, as of 2022. As on 01.04.2020, the resources of fluorite in India are 20.99 million tonnes which is considered to be limited. Hence, to meet the requirements, the domestic Chemical Industry will have to depend (both qualitatively and quantitatively) on imported fluorite in the coming years, both for direct use and for blending with the domestic Acid grade fluorite.