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Fluorite Specification

Chemical composition	CaF ₂
Crystal structure	Unit cell for the face-centered cubic structure, each cell contains 4 calcium ions and 8 fluoride ions.
Crystalline state	Crystal
Crystal system	Equiaxed crystal system
Crystal habit	Often cube, octahedron, diamond dodecahedron and poly, can also be strip-like compact block aggregates.
Common colors	Green, blue, brown, yellow, pink, purple, colorless and so on.
Gloss	Glass luster to sub-glass luster.
Cleavage	Four complete cleavage.
Mohs hardness	4.
Density	3.18 (+ 0.07, -0.18) g / cm ³ .
Light characteristics	Homogeneous body.
Multicolor	None
Refractive index	1.434 (± 0.001).
Birefringence	None
UV fluorescence	With different varieties vary, generally with a strong fluorescence, with a phosphorescence.
Absorption spectrum	No features, changes in large, generally strong absorption.
Zoom check	ribbons, two-phase or three-phase inclusions, visible cleavage was triangular development.
Special optical effects	Discoloration effect.
Optimization	Heat treatment: often black, dark blue heat treatment blue, stable, to avoid more than 300 °C heat, easy to detect.
Filling	Fill the surface fissure with plastic or resin to ensure that the process does not crack. Irradiation treatment: colorless fluorite irradiated into purple, but see light soon fade, very unstable.

Fluorite molecular formula CaF_2 , pure fluorite calcium (Ca) accounted for 51.3%, fluoride (F) accounted for 48.7%. But fluorite minerals often mixed with chlorine, rare earth, uranium, iron, lead, zinc, asphalt and so on. Fluorite minerals are equiaxed crystal system, crystal shape mostly cube, a few diamond-shaped dodecahedron and octahedron. Multi-forming interspersed double crystal. The aggregates are compact and even-forming. Hardness of 4, brittle, cleavage complete, the specific gravity of 3.18, melting point 1360 °C. Fluorite is generally insoluble in water, and hydrochloric acid, nitric acid is weak, in the hot concentrated sulfuric acid can be completely dissolved to generate hydrogen fluoride gas and calcium sulfate.

Fluoride is a widely present element, and its compounds are fluorite (CaF_2), fluorapatite [$\text{Ca}_5(\text{PO}_4)_3\text{F}$], cryolite (Na_3AlF_6), flutheite (MgF_2), sodium fluoride (NaF) Fluorocarbonite [(Ce, La) $(\text{CO}_3)_2\text{F}$] and so on more than 150 kinds. One of the most important minerals is fluorite.

Crystallized fluorite has a variety of colors, in the X-ray, hot ultraviolet and pressure under the action of the color will change, and some fluorite in the ultraviolet or negative radiation will be issued under the effect of blue or violet blue light, and some in the heat and sunlight or ultraviolet light under the phosphorescence, and some will be issued friction fluorescence. Crystalline intact fluorite also has a very low refractive index ($n = 1.4339$) and low dispersion rate, but also isotropic material, with unusual UV transmission capacity. Fluorite fluorite often with quartz, calcite, barite, kaolinite, metal sulfide ore symbiosis.

According to the mineral assemblage, tectonic conditions, surrounding rock characteristics, combined with processing performance, fluorite deposits can be divided into single fluorite deposits and "associated" fluorite deposits. The monolithic fluorite deposit consists of fluorite and quartz, and a small amount of calcite, barite, kaolinite, pyrite, ice feldspar, potassium feldspar, trace metal sulfide and phosphate rock Material.

This type of ore is mainly used as metallurgical fluorite ore, flotation chemical grade (acid grade) fluorite concentrate, ceramic (building materials) grade fluorite powder and optical fluorite, gemstone fluorite and so on. The other is the "associated" type fluorite deposits, in these fluorite deposits in the main mineral ore lead and zinc sulfide, tungsten tin polymetallic sulphide and rare earth magnetite, fluorite as gangue minerals distributed in the Sulfurized minerals or magnetite, with the main mining and comprehensive recycling. It can only produce chemical grade (acid grade) fluorite concentrate and ceramic grade (building materials) fluorite powder ore.

Fluorite, also known as calcium fluoride, is a common halide mineral, it is a compound, its composition is calcium fluoride, is an important mineral to extract fluoride. Fluorite has a lot of colors, it can be transparent and colorless. Transparent colorless fluorite can be used to make special optical lenses. Fluorite has many uses, such as as steel, aluminum production with the flux, used to make opal glass, enamel products, high octane fuel production in the catalyst and so on. Fluorite is generally granular or massive, with a glass luster, green or purple for more. Fluorite in the ultraviolet or cathode ray irradiation often issued blue-green fluorescence, its name is based on this feature.

Fluorite, also known as fluorite, is the main source of fluorine in industry, is the world's 20 kinds of important non-metallic mineral raw materials. Pure and colorless transparent fluorite can be used as optical materials, bright color fluorite can also be used as gem and craft art carving raw materials.

Fluorite is the basic raw material of fluorine chemical industry, its products are widely used in aerospace, aviation, refrigeration, medicine, pesticides, anti-corrosion, fire, electronics, electricity, machinery and atomic energy and other fields. With the continuous development of science and technology and the national economy, fluorite has become an important mineral raw material in modern industry, many developed countries to it as an important strategic material reserves.

China fluorite is rich in resources, widely distributed, the type of deposits, resource reserves, production and export volume ranks first in the world. Fluorite ancient Indian people found that there is a small hill on the Cobra particularly, they are always wandering around a large stone. One of the natural phenomena has caused people to explore the mystery of interest.

It turned out that whenever the night fell, where the big stones will flash the blue light, many of the light of the insects will have to fly over the bright stone, frogs jump out to catch the insects, hiding not far from the Cobra also came Predry the frog. So, people called this stone "snake eye stone". Later learned that snake stone is fluorite.

Fluorite is composed of calcium fluoride, also known as fluorite, stone, etc., due to contain a variety of rare elements and often purple, green, light blue, colorless transparent fluorite rare and precious. Crystals have cube, octahedron or rhombic dodecahedron. If the fluorite into the UV fluorescent light according to a photo, it will send a beautiful fluorescence.

Fluorite and its use of processed products has been involved in more than 30 industrial sectors. Iron and steel to join fluorite, can improve the melt flow, remove harmful impurities sulfur and phosphorus.

Half of the world's fluorite production for the manufacture of hydrofluoric acid, and thus the development of manufacturing cryolite, for the aluminum industry. Fridge in the refrigerator (freon) to use fluorite; 1986, China's first generation of artificial blood also use fluorite. Scientists are developing fluoride glass, it is possible to make a new type of optical fiber communication materials, can pass the 20,000-km wide Pacific without re-station.

There are outputs around the world. Fluorite fluorite, also known as fluorite, chemical composition of CaF_2 , crystal is equiaxed crystal halide minerals. In the ultraviolet, cathode ray irradiation or heating when the blue or purple fluorescent, and hence the name. Crystals often cube, octahedron or cube interspersed twin crystals, aggregates were granular or massive.

Light green, light purple or colorless and transparent, sometimes rosy red, streak white, glass luster, transparent to opaque. Octahedral cleavage complete. Mohs hardness 4, the proportion of 3.18. Fluorite is mainly produced in hydrothermal veins. Colorless transparent fluorite crystals are produced in the crystal pot of granite or fluorite veins. China's fluorite total reserves of about 1 billion tons, China is the world's largest fluorite mineral one of the countries, and accounting for 35% of the world's reserves.

According to archaeological excavations that seven thousand years ago, Zhejiang Yuyao Hemu people have chosen firefly Stone for decorations. There is a fluorite mine in the south of Hemudu. Mainly produced in Zhejiang, Hunan, Fujian and other places.

The world's other major producing areas are South Africa, Mexico, Mongolia, Russia, the United States, Thailand, Spain and other places. Fluorite in the metallurgical industry can be used as flux, in the chemical industry is the manufacture of hydrofluoric acid raw materials.

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Appendix .1





