

Fluorine

[Environment](#), [Water](#)



The Element Fluorine Fluorine is an element that appears in the periodic table. It is apart from the halogen series. It appears in group 17 and period 2. It is important to understand its structure , physical , and chemical properties. Fluorine is the 13th most abundant element on earth and is very important to earth today. Fluorines mysterious structure reacts vigorously with itself and other elements making things that impacted our technology, history, and daily lives. Fluorine is the chemical element of atomic number 9, a poisonous pale yellow part from the halogen series.

It is the most reactive element and is composed of diatomic molecule F_2 . Fluorine was discovered in 1886 by Joseph Henri Moissan, who also produced the first artificial diamond. The element Fluorine has nine protons and electrons and ten neutrons. Fluorines atomic mass is 18.998404 amu. Fluorines atomic number is 9. Fluorines density at 293 K is 1.696 g/cm. That makes fluorine about 1.3 times as dense as air. The electron configuration of Fluorine is $[He] 2s^2 2p^5$. Its crystal structure is cubic. To continue Fluorines name origin came from the latin word fluo (flow).

Fluorine went through a long process before being discovered. Georgius Agricola german mineralogist in the 1530s described the use of the mineral fluorspar in metal refinal. " Fluor" in fluorspar is where fluorine got its name. Although Agricola didn't realize fluorspar was a mineral of Fluorine. During that time Fluorspar became an intense subject to chemist. Around the 1800s chemist carried out experiments on fluorspar in attempts to isolate fluorine. However they failed to do so , instead produced what we call now hydrofluoric acid, a deadly acid.

Carl Wilhelm Scheele studied and set off intense work to the acid and its composition. All chemist knew already that there had been a never before seen element. However little did they know the element they were searching for was dangerous. In attempts to isolate fluorine led to bindings and many fatalities. A chemist named Belgian Paulin Louie died from exposure to the chemical. Finally in 1888 fluorine was isolated. Moissan made a solution of hydrofluoric acid by putting it in potassium hydrogen fluoride. He cooled the solution to 23 and passed it through an electric current.

And then finally the gas they been searching for, for decades appeared. Henri Moissan received the 1906 Nobel prize in chemistry for his great achievement. Fluorine has any different complicated physical properties. Did you know that glass, ceramics, carbon, finely divided metals, and even water burn in fluoride. Fluorine has a boiling point of 188. 14 c and a melting point of 219. 62 c. When not pale white, yellow, or colorless Fluorine is fluorescent. " Most common substances like fluorine exist as states of matter as solids, liquids, gases, and plasma" (fluorine properties).

Fluorine has a pungent sharp strong smell that can be detected in very small amounts, as low as 20 parts per billion. In liquid form fluorine is freely soluble in liquid oxygen and ozone. Fluorine is the most chemically reactive element and the most electronegative. Fluorine's chemical element is F. Fluorine is highly poisonous and explosive. That is why it took 74 years of continuous efforts to isolate the dangerous and corrosive element. When fluorine is mixed with water it reacts explosively on the contrary fluorine cannot mix with oxygen. To continue fluorine is heat resistant however very flammable.

Fluorine's electronegativity according to Pauling is 4. Fluorine's 1st ionization energy is 1680.6 kJ mol⁻¹. The second is 3134 kJ mol⁻¹ and the third is 6050 kJ mol⁻¹. It combines easily with every other element except helium, neon, oxygen, and argon. That is why the element must be handled with extreme care. Furthermore, fluorine may be a pale yellow highly destructive element, however, it is very useful to the world and important to economy and technology. It has many commercial, industrial, and medical uses. Did you know that fluorine is used in rocket fuel, it helps the oxidizer in rocket fuel to burn.

To continue, isotopically fractionated uranium is created with the help of fluorinated compounds, which is a very important step in uranium purification in enrichment plants. Fluorine is also used in melting metals to make lenses for focussing infrared radiation. Without fluorine, teens and children of our era would always be bored. Fluorine is also used in the production of computer chips, micro electronic sensors, and television screens. One of the most common uses of fluorine is that it is found in toothpaste and mouthwash. It helps prevent tooth cavities and dental decay.

Fluorinated compounds help in the production of polymers in plastics. It's used to make polytetrafluorethylene and manufacture retractable roofs. Fluorinated compounds are found in refrigerators, air conditioners, and spray cans. They are used to replace chlorofluorocarbons or CFCs, which are very dangerous for the ozone layer. Furthermore, fluorine is used for glass etching, meaning creating art on the surface of glass. It is also used to obtain pure aluminum. When going into surgery and being put to sleep, fluorine is needed. It is used in inhalation anesthetics.

Furthermore fluorine is also used to mark light bulbs and in the purification of water supplies. Fluorine is a huge importance to nature and humans. It keeps our water safe to drink and shower with. Imagine without fluorine our teeth would be rotten and water supplies would be polluted. Traces of fluorine are present in bones, teeth, thyroid gland and skin. Fluorine is also said to prevents diseases from decaying the body. " It is a germicide, and acts as an antidote to poison, sickness, and disease" (fluorine and importance of nutrition). fluorine is found in a great variety of foods and provides nutrients.