

Topic Page: [Hydrogen fluoride](#)

Definition: **hydrogen fluoride (HF)** from *Processing Water, Wastewater, Residuals, and Excreta for Health and Environmental Protection: An Encyclopedic Dictionary*

A colorless, fuming, toxic, corrosive gas, the anhydride of hydrofluoric acid (HF), used as a catalyst and in hydrocarbon processing.

Summary Article: **hydrogen fluoride**

From *The Columbia Encyclopedia*

chemical compound, HF, a colorless, fuming liquid or colorless gas that boils at 19.54 degrees Celsius. It is miscible with water and is soluble in benzene, toluene, and concentrated sulfuric acid. Hydrofluoric acid is a water solution of hydrogen fluoride; hydrofluoric acid containing 35.35% hydrogen fluoride by weight is an azeotrope with a constant boiling point of 120 degrees Celsius. Whether gaseous, liquid, or in solution, hydrogen fluoride is a dangerous chemical and must be handled with caution, since it attacks the skin and other tissue. Hydrogen fluoride has a number of properties that distinguish it from the other hydrogen halides. It polymerizes, forming molecules such as H_2F_2 and H_6F_6 ; this explains in part its relatively high boiling point. It is a relatively weak acid. It attacks glass, reacting with the silica, SiO_2 , to form the gas silicon tetrafluoride, SiF_4 , and water; this leaves the surface of the glass etched. Major industrial uses of hydrogen fluoride include the synthesis of fluorocarbons (e.g., Freon and teflon) and the production of aluminum fluoride and synthetic cryolite for use in aluminum refining. It is also employed in refining uranium for use as a nuclear fuel, in manufacturing various organic chemicals, in producing stainless steel, and for various other applications. Hydrogen fluoride is produced commercially by heating purified fluorspar (calcium fluoride) with concentrated sulfuric acid to produce the gas, which may be condensed by cooling or dissolved in water. Hydrogen fluoride is available commercially either in an anhydrous (water-free) state or in water solutions of various concentrations. Because it attacks glass, it is usually stored in steel tanks, cylinders, or drums, or, in small amounts, in plastic bottles.

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hydrogen fluoride. (2018). In P. Lagasse, & Columbia University, *The Columbia encyclopedia* (8th ed.). New York, NY: Columbia University Press. Retrieved from https://search.credoreference.com/content/topic/hydrogen_fluoride



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"hydrogen fluoride." *The Columbia Encyclopedia*, Paul Lagasse, and Columbia University, Columbia University Press, 8th edition, 2018. *Credo Reference*, https://search.credoreference.com/content/topic/hydrogen_fluoride. Accessed 18 Sep. 2019.