

## Topic Page: [Hydrogen chloride](#)

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

A colorless, water-soluble, poisonous, corrosive, phytotoxic gas with a choking odor; the anhydride of hydrochloric acid (HCl); used in the production of PVC, ferric chloride, and silicones. It is produced by burning hydrogen and chlorine together. It is also a byproduct of the chlorination of organic compounds.

### Summary Article: **hydrogen chloride**

From *The Columbia Encyclopedia*

chemical compound, HCl, a colorless, poisonous gas with an unpleasant, acrid odor. It is very soluble in water and readily soluble in alcohol and ether. It fumes in moist air. It is not flammable, and the liquid is a poor conductor of electricity. Hydrogen chloride is prepared commercially by the reaction of sulfuric acid with sodium chloride (common salt); niter cake, a mixture of sodium bisulfite and sulfuric acid that is a byproduct of nitric acid manufacture, is sometimes used in place of sulfuric acid. Hydrogen chloride is also produced as a byproduct of the manufacture of chlorinated organic chemicals. It can be prepared directly by reaction of hydrogen and chlorine gases; the reaction is very exothermic and takes place readily in sunlight or at elevated temperatures. Although anhydrous (water-free) hydrogen chloride is commercially available as a high-pressure compressed gas in steel cylinders, most of the gas produced is dissolved in water to form hydrochloric acid (see acids and bases), a commercially important chemical. Pure grades of hydrochloric acid are colorless, but technical grades, commonly called muriatic acid, are often yellow-colored because of impurities such as dissolved metals. Most hydrochloric acid produced has a concentration of 30% to 35% hydrogen chloride by weight. The major use of hydrochloric acid is in the manufacture of other chemicals. It is also used in large amounts in pickling (cleaning) metal surfaces, e.g., iron before galvanizing. It reacts with most common metals, releasing hydrogen and forming the metal chloride; with most metal oxides and hydroxides it reacts to form water and the metal chloride. Hydrochloric acid is also used in small amounts in processing glucose and other foods and for various other uses. Concentrated solutions are strong acids and highly corrosive. Hydrochloric acid is not an oxidizing agent but can be oxidized by very strong oxidizing agents, liberating chlorine gas. In dilute solutions of the acid the hydrogen chloride is almost completely dissociated into hydrogen and chloride ions. A solution containing 20.24% hydrogen chloride by weight is azeotropic, boiling at a constant temperature of 110 degrees Celsius at atmospheric pressure. Hydrogen chloride also forms monohydrates, dihydrates, and trihydrates that are liquids at room temperature.

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hydrogen chloride. (2018). In P. Lagasse, & Columbia University, *The Columbia encyclopedia* (8th ed.). New York, NY: Columbia University Press. Retrieved from



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