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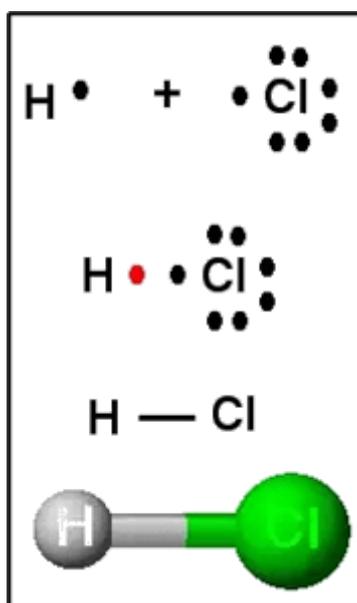
Hydrochloric Acid – HCl, Preparation, HCl Uses, Hydrochloric Acid Structure (For CBSE, ICSE, IAS, NET, NRA 2022)

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What is Hydrochloric Acid?

- Hydrochloric acid is an inorganic chemical. It is a strong corrosive acid with a chemical formula HCl. It is also known as hydrogen chloride or muriatic acid.
- When hydrogen chloride is dissolved in water HCl is formed. It is a simple diatomic molecule. The hydrogen and chlorine atom are connected with a single covalent bond. The bond between them is polar as the chlorine atom is more electronegative when compared with the hydrogen atom.
- It is strongly acidic. It is colorless and viscous. It is corrosive and has a distinctively pungent smell. It is widely used as a laboratory reagent and industry. It is used in the processing of leather, production of gelatin. The physical properties such as density, melting point, PH, boiling point depends on the molarity or concentration of HCl.

Hydrochloric Acid Structure – HCl



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Preparation of Hydrochloric Acid – HCl

- The readiest means of preparing hydrochloric acid gas consists of the application of heat to its strong aqueous solution, in other words, the spirit of salt or muriatic acid of the shops.
- This is how it was originally prepared by Priestley; the process however not being instructive as regards the composition of hydrochloric acid.

HCl Acid in Stomach

- Stomach secretions consist of hydrochloric acid, several enzymes and a mucus coating which protects your stomach lining. Hydrochloric acid helps the body break down foods such as calcium, digest and drink them.
- It also eliminates stomach bacteria and viruses, thereby protecting your body from infection. Stomach acid is composed of hydrochloric acid (HCl) , potassium chloride

(KCl) , and sodium chloride (NaCl) . Hydrochloric acid concentration in the stomach is approximately 0.5 percent, or 5,000 parts per million.

Properties of Hydrochloric Acid – HCl

- Hydrogen chloride is a highly odorous, colourless gas. Gaseous hydrogen chloride responds to the chlorides formed by active metals and their oxides, hydroxides, and carbonates. Such reactions only occur readily in the presence of humidity. Hydrogen chloride is completely dry and is very unreactive.
- Hydrochloric acid reactions are those of common strong acids, such as: metal reactions in which hydrogen gas is displaced, reactions with simple (metal) oxides and hydroxides that are neutralized with the forming of a metal chloride and water, and reactions with weak acid salts in which the heavy acid is displaced.

HCl	Hydrochloric acid
Molecular Weight/Molar Mass Appears	36.458 g/mol
Appears	Transparent liquid
Boiling Point	Depends on the concentration
Melting Point	Depends on the concentration
<i>Properties of Hydrochloric Acid – HCl</i>	

HCl Uses (Hydrochloric Acid)

- It is used in the production of chlorides
- It is used in rubber industries
- It is used the production of fertilizers
- It is used in textile industries
- It is used in the manufacture of dye
- It is used in the refining of metals
- It is used in the production of organic compounds like PVC
- It is used to regulate the PH of solutions
- It is used in the stimulation of oil production

Questions

What is the Hydrochloric Acid Used For?

Answer:

- Hydrochloric acid is an effective chemical reagent used in the manufacture of polyvinyl chloride for plastics and industrial chemical.
- Diluted hydrochloric acid is frequently used as a descaling agent in households. Hydrochloric acid is used as a food additive in the food industry, and in gelatin processing.

Is Hydrochloric Acid Flammable?

Answer:

- Hydrochloric acid is an aqueous solution of acidic water, the hydrogen chloride. Reacts to poisonous or flammable materials by producing sulfides, carbides, borides, and phosphides.
- To produce flammable hydrogen gas, reacts with several metals (including aluminum, zinc, calcium, magnesium, iron, nickel, and other alkali metals) .

What Neutralizes Hydrochloric Acid?

Answer:

- Neutralize hydrochloric acid, such as sodium bicarbonate (baking soda) , with an alkali (base) . Apply more baking soda, before it starts fizzing.
- It ensures that the hydrochloric acid is neutralized, and can now be flushed with massive quantities of water into the drain.

How is HCl Produced in the Stomach?

Answer:

- HCl is formed by the abdominal parietal cells. This channel uses ATP energy to exchange in-stomach potassium ions with parietal cell hydrogen ions.
- This leads to the presence of both hydrogen and chloride ions within the lumen of the stomach.

Is Hydrochloric Acid a Strong Acid?

Answer:

- Under water, heavy acids dissociate completely into their ions, while weak acids dissociate only partially.
- Hydrochloric acid, nitric acid, sulphuric acid, hydrobromic acid, hydroiodic acid, perchloric acid, and chloric acid are the solid acids.

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