# ・Information on Three Types of Acids

## Hydrochloric Acid

Description: An aqueous solution※ of hydrogen chloride※ gas. When saline water is electrolyzed※, chlorine and hydrogen are produced and they are obtained to make hydrogen chlorine which can be then dissolved in water to make hydrochloric acid※.

Properties: Concentrated hydrochloric acid has a pungent smell and fumes in humid air (due to hydrogen chloride evaporation). Commercial concentrated hydrochloric acid contains 37.2% hydrogen chloride. It dissolves metals at room temperature, producing hydrogen gas. It is a monoprotic strong acid※ and a toxic substance.

Uses: Used in the production of reagents, chlorides, dyes, medicines, and seasonings.

※aqueous solution：水溶液　※hydrogen chloride：塩化水素　※saline water：食塩水

※electrolyze：電解する　※hydrochloric acid：塩酸　※monoprotic strong acid：一価の強酸

## Acetic Acid※

Description: The main component of edible vinegar. It is produced by fermenting※ ethanol with acetic acid bacteria※. Industrial production methods include adding water to acetylene※ or oxidizing※ acetaldehyde※, obtained by removing hydrogen from ethanol.

Properties: Acetic acid is a colorless liquid with a pungent odor and is classified as a monoprotic weak acid.

Uses: Used as a raw material in the production of cellulose acetate, vinyl acetate, acetone, acetic acid esters, and as a dye and food seasoning.

※acetic acid：酢酸　※ferment：発酵させる　※acetic acid bacteria：酢酸菌　※acetylene：アセチレン

※oxidize：酸化する　※acetaldehyde：アセトアルデヒド　※monoprotic weak acid：１価の弱酸

## Sulfuric Acid※

Description: Obtained by oxidizing※ sulfur dioxide※, which is produced from the combustion※ of sulfur or sulfide ores※, using vanadium pentoxide (V2O5) as a catalyst, and then absorbing it in water.

Properties: 100% sulfuric acid is a colorless, viscous liquid. It decomposes at 290°C, releasing sulfur trioxide※. Diluting※ sulfuric acid with water generates intense heat. It has strong hygroscopic※ and dehydrating※ properties, removing hydrogen and oxygen from compounds in the proportion of water. It is a diprotic strong acid※.

Uses: Widely used in the production of acids and salts, fertilizers, medicines, analytical reagents, and batteries. It is also an important industrial raw material.

※sulfuric acid：硫酸　※oxidize：酸化する　※sulfur dioxide：二酸化硫黄　※combustion：燃焼　※sulfide ores：硫化鉱石

※vanadium pentoxide：五酸化バナジウム　※catalyst：触媒　※sulfur trioxide：三酸化硫黄　※dilute：希釈する　※hygroscopic：吸湿性の

※dehydrate：脱水する　※diprotic strong acid：２価の強酸

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