

Topic Page: [Hydrolysis](#)

Definition: **hydrolysis** from *Merriam-Webster's Collegiate(R) Dictionary*

 [pronunciation](#)

(1880) : a chemical process of decomposition involving the splitting of a bond and the addition of the hydrogen cation and the hydroxide anion of water

hy·dro·lyt·ic \ ■■■ hī-drə- ■■■ li-tik\ *adj*

hy·dro·lyt·i·cal·ly \-ti-k(ə-)lē\ *adv*

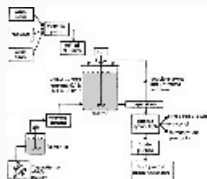


Image from: [Natick process for enzymatic... in Dictionary of Environmental Science and Technology](#)

Summary Article: **hydrolysis**

From *The Columbia Encyclopedia*

(hīdrŏl'īsīs), chemical reaction of a compound with water, usually resulting in the formation of one or more new compounds. The most common hydrolysis occurs when a salt of a weak acid or weak base (or both) is dissolved in water. Water ionizes into negative hydroxyl ions (OH⁻) and positive hydrogen ions (H⁺), which become hydrated to form positive hydronium ions (H₃O⁺). The salt also breaks up into positive and negative ions. For example, when sodium acetate is dissolved in water it readily dissociates into sodium and acetate ions. Because sodium hydroxide is a strong base, the sodium ions react only slightly with the hydroxyl ions already present in the water to form sodium hydroxide molecules. Acetic acid is a weak acid, so the acetate ions react

readily with the hydrogen ions present in the water to form neutral acetic acid molecules. The net result of these reactions is a relative excess of hydroxyl ions, causing an alkaline solution. A chemical reaction has actually taken place between the water and the dissolved salt. There are relatively few instances in which water reacts directly with organic compounds under ordinary conditions. It does react with acid halides, acid anhydrides, and organometallic compounds, e.g., Grignard reagents. The addition of strong acids or bases or the use of steam will often bring about hydrolysis where ordinary water has no effect. Some industrially important hydrolysis reactions are the synthesis of alcohols from olefins (e.g., ethanol, CH₃COOH, from ethene, CH₂CH₂) in the presence of a strong acid catalyst, the conversion of starches to sugars in the presence of a strong acid catalyst, and the conversion of animal fats or vegetable oils to glycerol and fatty acids by reaction with steam. Hydrolysis is an important reaction in plants and animals (see metabolism). The catalytic action of certain enzymes allows the hydrolysis of proteins, fats, oils, and carbohydrates.

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hydrolysis. (2018). In P. Lagasse, & Columbia University, *The Columbia encyclopedia* (8th ed.). New

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