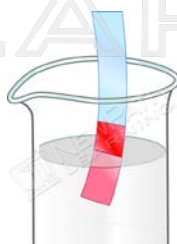


ACIDS, BASES AND SALTS

Acids

An **acid** is a compound that is defined by its physical and chemical properties. Acids taste sour and react with metals and polyatomic ions called carbonates. A carbonate is a charged cluster of Carbon and Oxygen atoms. In addition, when tested with blue **litmus paper**, acids turn the paper red.



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What are the names for the substances that turn red litmus paper blue?

Common Uses of Acids and Bases

Acids and bases have many uses.

Acids can be used to clean brick and metal and are an important ingredient in fertilizers. H_2SO_4 or sulfuric acid is used in car batteries.

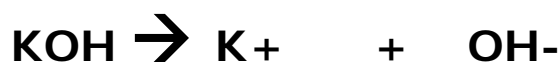
Bases are used in the construction industry to make cement and are used around the home in drain cleaners and glass cleaners. In the baking industry, the base, baking soda, is used to create the gas bubbles that make dough rise.

In Solutions

In water solutions, **acids** break down into ions or charged atoms. In the example below, Hydrochloric acid in water has broken down into a Hydrogen ion and a Chlorine ion. It is the Hydrogen ion that gives acids their chemical properties.



Bases in solution behave the same as acids. In the example below Potassium hydroxide has broken down into a potassium ion and a **hydroxide** ion.



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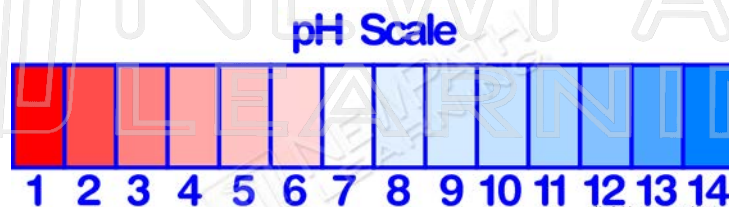
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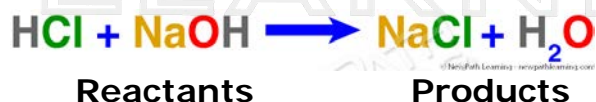
The strength of an acid or base can be measured on the **pH scale**. On this scale, numbers 1-7 indicate acids, 7 is considered neutral and 7-14 indicate a base.

On the scale below, hydrochloric acid, with the lowest pH, is the strongest acid and drain cleaner, with a very high pH, is the strongest base.



In our bodies, pH is important for the digestion of food. Low pH numbers in the stomach help the body break down proteins. When food gets to the small intestine, pH levels are raised above 7 to complete another phase of digestion.

When an acid combines with a base a double replacement reaction takes place. In this type of reaction, called **neutralization**, an acid and a base become salt and water. See this reaction below.



In this reaction, HCl, hydrochloric acid, is reacting with sodium hydroxide, NaOH, sodium hydroxide, is the salt formed from the reaction.



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