

## pH of Acids And Bases And Its Importance

We know that all the acids and bases do not react with same chemical compound at the same rate. Some react very vigorously, some moderately while others show no reaction. To determine the strength of acids and bases quantitatively, we use a universal indicator which shows different colours at different concentration of hydrogen ion in solution. Generally, the value of pH of acids and bases are used to quantitatively determine their strength. pH is defined as negative logarithm of  $H^+$  ion concentration.



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The pH of a solution varies from 0 to 14. Solutions having value of pH ranging 0 to 7 on pH scale are termed as acidic and for the value of pH ranging 7 to 14 on pH scale are known as basic solutions. Solutions having value of pH equal to 7 on pH scale are known as neutral solutions. Solutions having value of pH equal to 0 are known to be strongly acidic solutions. Further, the acidity decreases as value of pH increases from 0 to 7 whereas, solutions with the value of pH equal to 14 are termed as strongly basic solutions. The basicity decreases as the value of pH decreases from 14 to 7. Strength of acids and bases depends on number of  $H^+$  and  $OH^-$  ions produced. Acids furnishing more number of  $H^+$  ions are known to be strong acids and vice versa.

### Importance of pH:

- Only a narrow range of pH change can be sustained by living organism, any further change in pH can make the living difficult. For example: in case of acid rain, the pH of water is less than 7. As it flows into river, it lowers pH of river water which makes the survival of aquatic life difficult.
- We know that our stomach contains hydrochloric acid which helps in the digestion of food. When stomach produces too much of hydrochloric acid during indigestion, we feel a lot of pain and irritation. Hence, we generally use antacids or a mild base which increases the pH of the acidic stomach and thus decreases the pain.
- Bacteria present in our mouth sometimes lower the pH of our mouth by producing acids through degradation of food particle. Hence, we are instructed to clean our mouth with toothpaste's (which are generally basic) to prevent the decay by maintaining the pH.
- We experience a lot of pain in case of bee-sting as the bee injects the methanoic acid through its sting. Hence, we are generally advised to apply baking soda or other mild bases on the surface as it helps in maintaining the pH of the surface.