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Definition

- Normality is the number of gram equivalent of solute dissolved per litre of solution.
- The symbol for normality is N .

$$\text{normality} = \frac{\text{gramequivalent of solute}}{\text{volume of solution in litre}}$$

Mathematical derivation

$$\begin{aligned}\text{normality} &= \frac{\text{gramequivalent of solute}}{\text{volume of solution in litre}} \\ \text{normality} &= \frac{\frac{\text{weight in gram}}{\text{equivalent weight}}}{\text{volume of solution in litre}} \\ \text{normality} &= \frac{\text{wt. of solute in gram}}{\text{volume of solution in litre}} \times \frac{1}{\text{equivalent wt.}}\end{aligned}$$

The expression for normality in terms of equivalent weight is:

$$\text{normality} \times \text{equivalent weight} = \frac{\text{wt. of solute in gram}}{\text{volume of solution in litre}}$$

The expression for weight in terms of equivalent weight normality and volume is:

$$W = NEV$$

The expression expressing gram per litre with normality is:

$$\text{gm} \times \text{lit}^{-1} = N \times E$$

The expression for normality in terms of density is:

$$N = \frac{\% \frac{W}{V} \times \rho 10}{E}$$

Types of Normal Solution

Normal Solution

- A solution is said to be normal solution if:
 - one gram equivalent weight of substance is dissolved in one litre of solution.

The expression for normal solution is given by:

$$1N$$

Semi Normal Solution

- A solution is said to be semi normal if:
 - half gram equivalent of weight of a substance is dissolved in one liter of solution.

The expression for semi normal solution is given by:

$$\frac{N}{2}$$

Deci normal solution

- A solution is said to be deci normal solution if:
 - $\frac{1}{10^{th}}$ gram equivalent of substance is dissolved in one litre of solution.

The expression for deci normal solution is:

$$\frac{N}{10}$$

Centi normal solution

- A solution is said to be centi normal solution if:
 - $\frac{1}{100^{th}}$ gram equivalent weight of substance is dissolved in one litre of solution.

The expression for centi normal solution is:

$$\frac{N}{100}$$