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## Definition

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

$$\text{normality} = \frac{\text{gramequivalentof solute}}{\text{volumeof solutioninlitre}}$$

## Mathematical derivation

$$\text{normality} = \frac{\text{gramequivalentof solute}}{\text{volumeof solutioninlitre}}$$

$$\text{normality} = \frac{\frac{\text{weightingram}}{\text{equivalentweight}}}{\text{volumeof solutioninlitre}}$$

$$\text{normality} = \frac{\text{wt.of solutein gram}}{\text{volumeof solutioninlitre}} \times \frac{1}{\text{equivalentwt.}}$$

The expression for normality in terms of equivalent weight is:

$$\text{normality} \times \text{equivalentweight} = \frac{\text{wt.of solutein gram}}{\text{volumeof solutioninlitre}}$$

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

$$W = NEV$$

The expression expressing gram per litre with normality is:

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

The expression for normality in terms of density is:

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

## 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:

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