



**Centurion**  
**UNIVERSITY**  
*Shaping Lives...*  
*Empowering Communities...*

# **METHODS OF EXPRESSING CONCENTRATION**

**BY, LIPSA SAMAL**

**ASST. PROF (PA & QA), SPLS, CUTM**



**Centurion**  
**UNIVERSITY**

*Shaping Lives...*  
*Empowering Communities...*

- **The methods of expressing concentration are based upon chemical formula or combining power, The word "Concentration" is frequently used as a general term referring to a quantity of substance in a defined volume of solution.**
- 1. Molarity(M) : The molarity of a solution expresses the number of moles (gram-molecular weights) of solute dissolved in 1000 ml (1 Litre) of solution.**
  - 2. Molality(m) : The molality of a solution expresses as the number of moles of a solute dissolved in 1000 gm of a solvent.**



Centurion  
UNIVERSITY

Shaping Lives  
Empowering Communities

**3. Normality (N) :** The normality of a solution expresses the number of equivalents (gram- equivalent weight) of the solute in one litre of solution.

**4. Formality (F) :** Formality may be defined as the number of gram formula weight (GFW) of the solute dissolved per litre of solution. Formality (F) =  $\text{GFW/Litres of solution}$  .



Centurion

UNIVERSITY

Shaping Lives...

Empowering Communities...

5. Percent w/w (% w/w) - (% weight in weight) expresses the number of grams of solute in 100 gm of product. e.g.  $\text{H}_2\text{SO}_4$  98.0% w/w;  $\text{CH}_3\text{COOH}$  33% w/w etc.
6. Percent w/v (% w/v) - (% weight in volume) It expresses the number of grams of solute in 100 ml of product. (i.e. 100 ml of solution). e.g.  $\text{H}_2\text{O}_2$  solution 5-7% w/v.
7. Percent v/v (% v/v) - (% volume in volume) It expresses the number of millilitres of solute in 100 ml of product. e.g. Alcohol 95% v/v.



**Centurion**  
**UNIVERSITY**

*Shaping Lives...  
Empowering Communities...*

**8. Percent v/w (%v/w) - (% volume in weight) It expresses the number of millilitres of solute in 100 gm of product.**

**9. Parts per million (ppm) - When the concentration of a solution is expressed as parts per million (ppm), it means weight in weight , unless otherwise specified. PPM- the number of grams of solute contained in 106 gm of solution. e.g. In the limit test of chloride 25 ppm of cl.**



**Centurion**  
**UNIVERSITY**

*Shaping Lives...*  
*Empowering Communities...*

**THANK YOU**