

STOICHIOMETRY

- Greek word "Stoichein" means "element"
- Metron means "measure"
- Study of relative amount of substances in Chemical reaction
- Literal meaning:- measure of Elements

MOLE

- Latin word meaning "huge mass"
- Symbol = "mol"
- Representation = "n"
- Atomic mass, formula mass & molecular mass in grams

AVAGADRO'S NO..

- Particles (atoms, molecules ions or formula units) in one mole
- Numerical value = 6.02×10^{23}
- Represented by = N_A

MOLAR VOLUME

- Volume of one mole of an ideal gas at STP
- Value :- 22.41 dm^3

Relation = V_m

MOLAR MASS

- The mass of one mole of a substance in grams

CHAP:1

MOLE RATIOS

Ratio of no. of moles of reactants & moles of product in reaction

COM :- Compare, Make 1, Multiply (By Six Hat)

PERCENTAGE COMPOSITION

- Relative amount of each element in compound in percentage

$$\% \text{ of element} = \frac{\text{mass of Element}}{\text{Molar mass of Compound}} \times 100$$

STOICHIOMETRY

FORMULAS

$$\text{No of moles} = \frac{\text{mass in g}}{\text{molar mass}}$$

$$\text{Percentage yield} = \frac{\text{Actual yield}}{\text{theoretical yield}} \times 100$$

$$\text{Moles} = \frac{\text{Particles}}{N_A}$$

$$\text{Particles} = \frac{\text{mass}}{\text{Molar mass}} \times N_A$$

THEORETICAL YIELD

- Calculated from balanced equation
- Paper & pen calculation
- Expected yield
- Always more than Actual yield

PERCENTAGE YIELD

- $\frac{\text{Actual yield}}{\text{theoretical yield}} \times 100$
- Shows Efficiency of reaction
- Efficiency & %age yield

LIMITING REACTANT/REAGENT

- Consumed completely in Reaction
- Produces least no. of products (index)
- Stops the reaction
- (Na kheln ga, Na khelne donga)

ACTUAL YIELD

- Actually produced in a reaction

NON-LIMITING REACTANT/REAGENT

- Left unused/unreacted
- Reactant in excess

- less than theoretical
- Practical / Experimental
- (Always given in Numerical)
- If very low → Cost is high

CALCULATIONS

- Mass to Mass (Moles act as Bridge)
- Mole to Mole
- Mole to Mass
- Mass to Volume