

Chemistry: Unit 2 Review

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Equations:

Avogadro's Number (N_A) = 6×10^{23} molecules

$$n^\circ \text{ of moles} = \frac{\text{mass (g)}}{\text{molar mass (g/mol)}}$$

$$n^\circ \text{ of molecules} = (n^\circ \text{ of moles}) \times (N_A)$$

$$\% \text{ Composition} = \frac{\text{mass (g) or (g/mol)}}{\text{total mass (g) or (g/mol)}} \times 100$$

Excess Reagent = Total Moles of Xs Reagent - Amount of Xs Reagent Used

$$\% \text{ Yield} = \frac{\text{Actual Yield (experimental)}}{\text{Theoretical Yield}} \times 100$$

Definitions:

Formula Mass: Is the sum of the atomic masses in an ionic compound (μ).

Molecular Mass: It is the sum of the atomic masses in a covalent compound (μ)

Molar Mass: Refers to the sum of atomic masses in a compound expressed in g/mol.

Percentage Composition: Refers to the percent by mass of an element in a compound.

Limiting Reagent: The reactant that is totally consumed, thereby stopping the reaction.

Excess Reagent: The reactant that is not totally consumed in a reaction.

Yield: The quantity of product.

Theoretical Yield: The quantity of product that "should" be produced.

Experimental (Actual) Yield: The quantity of product produced in reality (lower due to errors)

Rules for Empirical Formula:

1. 100% = 100g
2. Calculate the number of moles of each substance
3. Divide the number of moles by the smallest number in order to obtain whole the number ratio.
4. Write the simplest (Empirical Formula)
5. Determine the molecular mass of Empirical Formula
6. To get the multiple of the molecular formula of the compound, divide the molecular weight given by the factor required (molar mass).

Rules for Stoichiometry:

1. Balance the equation
2. Grams to moles (use molar mass)
3. Moles to moles (use stoichiometric coefficients from balanced equation)
4. Moles to grams (use molar mass)