

CHAPTER 7: % COMPOSITION AND CHEMICAL FORMULAS

Percent composition of a compound:

- The percent by mass of each element in a compound
- Percent composition must always equal 100

Example: percent by mass

- Number of grams of an element divided by the number of grams of a compound multiplied by 100%
- Example: percent of potassium in potassium chromate(KCrO_4)

Percent composition:

- First use chemical formula to calculate molar mass
- Divide the grams of an element in one mole of compound by the molar mass
- Multiple by 100%

Using percent as a conversion factor:

- Converting from percent composition to grams
- Must use a conversion factor based on the percent composition

Calculating Empirical Formula

Empirical formula is the lowest whole number ratio of the atoms of the element in a compound

Calculating Molecular Formulas:

- The molecular formula of a compound is either the same as its experimentally determined empirical formula, or it is a simple whole – number multiple of it

Calculating Molecular Formulas:

To determine molecular formula, you need:

- Empirical formula
 - Or Molar mass
- $EFM =$ empirical formula mass: the molar mass of the empirical formula

Calculating Molecular Formulas:

- Divide the molar mass by the empirical formula mass
- This gives you the number of empirical formula units in a molecule of the compound and is the multiplier to convert to molecular formula