


CHEMISTRY
PERCENT COMPOSITION
The Law of Definite Proportions

The elements in a chemical compound are always present in the same proportions by mass.

Meaning:

Based on this law, one can calculate the percentage by mass of any atom compared to the whole molecule.

Ex: Percent Composition of H₂O

	H_2O	$2 H$	O
Mass (g/mol)			
% Composition			

In terms of mass, hydrogen is 11.1% and oxygen is 88.9% of the water molecule.

The law of definite proportions tells us that these percentages will hold true regardless of how much water we have.



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Examples:

Ex 1: Determine the percent composition of Calcium Oxide

Ex 2: Cinnamaldehyde, C_9H_8O , is responsible for the odour of cinnamon. Determine the percent composition of cinnamaldehyde.

**CHEMISTRY****PERCENT COMPOSITION**APPLICATION - Using Percent Comp. to Find Individual Mass

Now that you can calculate percent composition, you can use that percentage to figure out how heavy each of the constituent atoms are in a total mass.

Example:

You have a tank of water that weighs 50 kg. What is the mass of oxygen in the tank?

**CHEMISTRY****PERCENT COMPOSITION****HOMEWORK****Pg. 260 #1-10****Pg. 264 #11-20****Pg. 266 #21-30****Answers to Practice Problem Questions**

- 22.27%
- 69.55%
- 7.8%
- 53.28%
- 25.6%
- 27%
- $\text{H}_2\text{Cr}_2\text{O}_7(\text{aq})$
- $\text{H}_2\text{SO}_3(\text{aq})$
- 63.89% Cl
- ZnS(s), $\text{Cu}_2\text{S}(\text{s})$, PbS(s)
- 82% N; 18% H
- 68.4% Cr; 31.6% O
- 40.0% C; 6.7% H; 53.3% O
- 48% Ni; 17% P; 35% O
- 37.0% C; 2.20% H; 18.5% N; 42.3% O
- 67.10% Zn; 32.90% S
- 127.8 g Cu; 32.2 g S
- 24.74% K; 34.76% Mn; 40.50% O
- 10.1% C; 0.80% H; 89.1% Cl
- No, the percentage composition of carbon in the sample is 64.8%. If the sample was were ethanol, the percentage composition of carbon would be 52.1%.
- 63.14% Mn, 36.86% S
- 93.10% Ag, 6.90% O
- 2.06% H, 32.69% S, 65.25% O
- 34.59% Al, 61.53% O, 3.88% H
- 41.40% Sr, 13.24% N, 45.36% O
- 73.27% C, 3.85% H, 10.68% N, 12.20% O
- 205 kg
- 127 kg
- 17.1 g
- 248 kg