

Laws of Chemical Combination

Chapter 3: Atoms and Molecules · Topic 1

Key Concept

These two laws laid the foundation for modern chemistry and John Dalton's atomic theory, which proposed that matter is made of indivisible atoms that combine in fixed whole-number ratios to form compounds. For example, pure water always contains hydrogen and oxygen in the same 1:8 ratio by mass, whether the water comes from a river, rain, or is produced synthetically in a laboratory — this consistency is direct evidence supporting the Law of Constant Proportions.

Quick Revision Notes

- Law of Conservation of Mass: mass is neither created nor destroyed in a chemical reaction.
- Law of Constant Proportions: a compound always has the same elements in the same fixed mass ratio.
- These laws led to Dalton's atomic theory of indivisible atoms combining in fixed ratios.
- Water always contains hydrogen and oxygen in a 1:8 mass ratio, regardless of its source.

Practice Questions

- 1 State the Law of Constant Proportions in your own words.
- 2 Explain how the Law of Conservation of Mass applies to a chemical reaction you have observed.
- 3 Why is the fixed hydrogen-oxygen ratio in water considered evidence for the Law of Constant Proportions?