

Atoms, Elements and Compounds

Atoms

Smallest particle of an element that has the **same chemical properties** of that element

Element

Pure substance that **cannot be broken down** into simpler substances **by chemical process**

Compound

Pure substance that are made up of **two or more** elements **chemically combined** in a **fixed ratio**

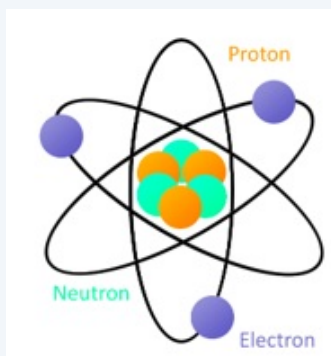
Molecule

Group of **two or more atoms** chemically bonded together

Mixture

Two or more substances that are **not chemically combined** (physical)

Atom



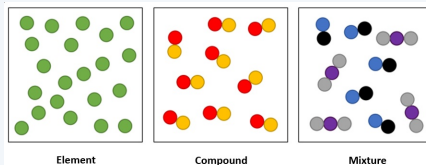
An atom consists of a nucleus (containing protons and neutrons) surrounded by electrons in different energy shells. Protons are positively charged (+1), neutrons have no charge (0), and electrons are negatively charged (-1).

Periodic Table of Elements

The image shows a standard periodic table of elements. It is organized into rows (periods) and columns (groups). Elements are color-coded: metals are in shades of blue and green, non-metals are in shades of yellow and orange, and noble gases are in purple. The table includes element symbols, atomic numbers, and names.

- An element consists of only one type of atom and cannot be broken down into simpler substances by chemical means.

Element, Compound and Mixture



Element, Compound and Mixture

Property	Compound	Mixture
Separation	Cannot be separated physically	Can be separated by physical means
Composition	Fixed ratio	Variable
Properties	Has different properties from its components	Retains properties of individual components
Example	Water (H ₂ O)	Air (O ₂ , N ₂ , CO ₂)

Active Recall

1. What is a compound? How is it different from an element?

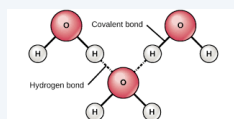
- A compound is a substance made up of two or more different elements chemically combined in a fixed ratio. Unlike elements, compounds can be broken down into simpler substances.

2. What is the difference between a molecule and a compound?

- A molecule is a group of atoms chemically combined together (can be the same two or more atoms bonded or different elements).
- A compound is a molecule that contains at least two different elements.

- Periodic table organizes elements based on their atomic number and properties.

Compound



- A compound is formed when two or more different elements chemically combined in a fixed ratio.
- Example: Water (H_2O) consists of 2 hydrogen atoms and 1 oxygen atom.
- Chemical bonds (ionic or covalent) hold the atoms together.



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