

Compounds are not mixtures - in mixtures every component retains its own properties; a compound is a new

# COMPOUNDS

Compounds are not mixtures - they cannot be separated into elements by physical means such as filtration

What are they?

A compound is any substance composed of two or more elements formed when the elements are joined by chemical bonds.

Each compound has a definite arrangement of elements represented by its chemical formula (e.g.  $H_2O$  or  $C_6H_{12}O_6$ )

Properties of each compound are different from the properties of the elements from which they are made .

Each compound has its own unique properties, such as weight, freezing melting or boiling points, and plays a unique biological role.

## Types of Compounds

**Ionic compounds**

- made up of electrically charged ions
- arranged in a regular geometric pattern; held together by [ionic bonds](#)
- are not linked into molecules

**Molecular compounds**

- made up of electrically neutral molecules
- contain a fixed number of atoms
- atoms in a compound are held together by [chemical bonds](#)

## In Biology

In living organisms, **ions** such as  $H^+$ ,  $OH^-$ ,  $Na^+$ ,  $K^+$ ,  $Ca^{++}$ ,  $Mg^{++}$ ,  $Fe^{++}$ ,  $CO_3^{--}$  and  $PO_4^{--}$  regulate water and salt balance, control osmotic pressure and help catalyze chemical reactions

Organic **molecular compounds** are produced or decomposed by cells and their energy can be stored or released. Life is based on a combination of such interconnected reactions called metabolism.

## Biologically most important compounds

**Proteins**  
Formed by reactions combining amino acids into polymer chains

**Carbohydrates**  
Formed by glucose and other sugars from  $CO_2$  and  $H_2O$  in photosynthesis

**DNA and RNA**  
Formed by nucleotides joined into polymer chains

**Lipids**  
Formed from fatty acids and other