

Elements, Compounds, Mixtures (1)

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MATTER

Matter is anything that occupies space and mass. Matter can be broadly divided into two categories:
Pure and Impure substances

Pure Substances

- Homogeneous material
- Has particles of one kind
- Has definite set of properties
- Pure substances can be further subdivided into Elements and Compounds

Elements

- Pure substances
- Cannot be broken down into simpler substances

Compounds

- It's a Pure substances that is composed of two or more elements
- Can be broken down into its elements by chemical means

Impure Substances

- Two or more substances
- Mixed in any proportion
- Substances retain their properties

Matter is made up of atoms, molecules and ions

Atom – It is the smallest particle of an element which can take part in a chemical reaction. Examples – O, N, Na

Molecules – It is made up of two or more atoms. Example – O₂, N₂

Ion – It's an atom or a group of atoms with some charge. Example – O²⁻, H⁺

ELEMENT

An element is a pure substance which cannot be converted or broken down into – two or more simpler substances by any physical or chemical means

An element is made up of only one type of atoms. Elements can be categorized into metals, non – metals, metalloids and noble gases.

Metals

- They have characteristics lustre.
- They are good conductors of heat and electricity.
- They are malleable and ductile.
- They contain one type of atoms and are monoatomic (K, Na, Mg, etc.)
- Exceptions
 - Mercury is liquid at room temperature.
 - Zinc is non – ductile and non – malleable.
 - Tungsten is a poor conductor of electricity.

Non – Metals

- They do not have lustre.
- They are bad conductors of heat and electricity.
- They are not malleable or ductile.
- They can be diatomic. (Cl_2 , H_2 , N_2)
- Exceptions.
 - Iodine and graphite have lustre.
 - Graphite is a good conductor of electricity.

Metalloids

- These are the elements which have properties in between that of metals and non – metals.
- Examples – Ge, As, Sb, Bi

Noble Gases

- These occur in free gaseous state in traces in atmosphere.
- They are chemically inert.
- Examples – He, Ar, Ne

COMPOUNDS

- A compound is a pure substance composed of two or more elements, combined chemically in a fixed proportion
- Particles in a compound are one kind only.
- They have a definite set of properties.
- They do not retain their original properties and can be separated by chemical means only.
- Examples – H_2O , NaCl

MIXTURES

- A mixture contains two or more substances mixed in any proportion.
- They have no definite set of properties
- Components in a mixture retain their original properties and can be separated by physical means.
- Mixtures can be Homogeneous or Heterogeneous

Homogeneous Mixtures

- A mixture is said to be homogeneous if it has the same composition and properties throughout.
- Examples – Alloys , sugar solution

Heterogeneous Mixture.

- A mixture is said to be heterogeneous if it has different compositions and properties.
- Example Gunpowder.

MBT