**Classification of Matter**

Matter is classifies according to makeup as elements, compounds, mixtures, or solutions.

**Pure substance**: a pure substance is made of only one kind of material has definite properties. A pure substance is the same throughout. All particles in a pyre substance are exactly the same.

**Examples of pure substances are elements and compounds.**

**Element:**

Elements are the simplest pure substance.

An element cannot be broken down into simpler substances by heating or any chemical process.

Elements are made up of atoms, which are the building blocks of matter.

**Examples include:**

Oxygen

Neon

Calcium

**Compounds:**

Are pure substances

Made of two or more elements chemically combined.

Unlike elements a compound can be broken down into simpler substances

The properties of the compound are different from the elements that make up the compound.

**Examples of compounds include:**

Water (H2O)

Salt (NaCl)

**Mixtures:**

A mixture is made of two or more substances mixed together but not chemically combined.

The substances that make up a mixture kept their separate identities and most of their properties.

The substances in a mixture can be present in any amount.

The substances in a mixture can be separated by physical means.

Heterogeneous mixtures do not appear to be the same throughout and are the “least mixed” mixture.

Homogenous mixtures appear to be the same throughout . It is a “well mixed” mixture.

**Scientists use several methods or techniques to separate a mixture. They include the following methods:**

1. Filtration- the process of separating a solid and a liquid by passing a mixture of the two substances through a mesh or filter paper.

2. Screening the process of separating large particles from a mixture by using a screen to sift the particles apart.

3. Chromatography the process used to separate different solutes from a solution by passing them through a medium. In paper chromatography, the medium is paper.

4. Evaporation / distillation the process of separating a mixture based on the boiling points of the components.

5. Magnet separating a mixture based on it metallic properties.

6. Centrifuge the process of separating the components of a mixture according to their densities.

**Solutions:**

A solution is a type of homogenous mixture formed when on substance dissolves in another. It is the “best mixed” mixture.

Dissolving is the process in which particles of a substances separate and spread evenly throughout a mixture.

**Factors that affect dissolving rates include:** particle size, temperature, and stirring.

Solutions are made up of solvent and solute.

The solute is the substance that is being dissolved in the mixture or solution.

The solvent is the substance that the solute is dissolved in .

**Example Salt water; the water is the solvent and the salt is the solute.**

Is a substance is able to dissolve in solution then it is said to be soluble.

If a substance is not able to dissolve in solution that it is said to be insoluble.

Solutions can be described as concentrated or dilute.

Concentration is the amount of solute dissolved in a solvent.

A solution that is concentrated has a large amount of solute dissolved in the solvent.

A solution that is dilute has more solvent then solute in the solution.

Types of Solutions

|  |  |
| --- | --- |
| Gas in Gas | Air ( oxygen in nitrogen) |
| Gas in Liquid | Soda ( carbon dioxide in water) |
| Liquid in Liquid | Antifreeze( alcohol in water) |
| Solid in Liquid | Salt Water ( salt in water) |
| Solid in Solid | Brass( zinc in copper) |