# Is matter pure

True Solution
A true solution is a mixture of two or more than two substances. The solute can't be seen even with a microscope. The particles are smaller than 1 nanometer.
e.g. sugar or salt solution in water
Definition
Homogeneous Mixture
A mixture that has the same appearance and chemical composition throughout.
Example-
Air is a homogeneous mixture of gases
Salt-water solution
Definition
Heterogeneous Mixture
Heterogeneous mixture is a mixture with a non-uniform composition. When you mix two components that remain separate from each other, that mixture is called a Heterogeneous mixtur

Examples of Heterogeneous mixture -

Concrete is an example of a Heterogenous mixture. A mixture of Cement and Water.
A mixture of cold drinks and ice cube is also an example of a Heterogeneous mixture.
The salad you have with lunch and dinner is also an example of a Heterogenous mixture.
Definition
Pure Substance
A material that is composed of only one type of particle.
e.g. gold, silver, water, etc.
Definition
Chemical classification of matter
According to chemical classification matter is classified as : Element, compound , mixture. For e.g. carbon is an element, carbon dioxide is a compound.
Definition
Defination of Chemical classification of matter
Element : element is a species of atoms having the same number of protons in their atomic nuclei. Compound: when two or more element come together to form chemical bond compound is formed. Mixture : a combination of two or more pure substances in which each pure substance retains its individual chemical properties called as mixture.

Definition of a compound

A compound is a substance formed when two or more chemical elements are chemically bonded together. Two types of chemical bonds common in compounds are covalent bonds and ionic bonds. The elements in any compound are always present in fixed ratios.

Definition

Properties of Compounds

1. The properties of a compound are different from the elements that make it up.
2. They can be separated only chemically, not by physical means.
3. The mass of a compound is determined by the mass of the elements that make it.

Definition

Definition of solution with Examples

A solution is a homogeneous mixture of two or more pure substances.

e.g. Salt in water, alcohol in water, are examples of solutions because they form a homogeneous r

Definition

Properties of a Solution

The constituents exhibit individual chemical characteristics but the physical properties of a solution is different from its constituents, like, boiling and melting points.

Example

Universal solvent

A universal solvent is a substance that dissolves most chemicals. Water is called the universal solv

Definition

Suspension

A suspension is a heterogeneous mixture containing solid particles that are sufficiently large for se

e.g. mud in water

Definition

Visibility

The particles in a suspension can be seen with naked eyes or under a simple microscope.

Definition

Particle Size

In a suspension, the size of the particles is of the order of 0.1 micrometer or larger.

Definition

Separation by filtration

Filtration is use to separate the two substance which can exist any of three phases ( solid, liquid and gas). Particles of larger size  in a suspension can be separated from the liquid or air by the filtration, because their size( >10−6m) is visible to naked eye or under the microscope.

Colloidal Solution

The substaance like starch, gum, gelatin etc are non crystalline in nature and in the dissolved state they do not diffuse through the parchment membrane were given the name colloid and the solution formed by the colloids knows as colloidal solution.

e.g. Milk, Smoke, etc.

Definition

Electro-osmosis

The phenomenon of osmosis in which the molecules of the dispersion medium are allowed to move under the influence of an electric field whereas colloidal particle are not allowed, this process is known as electro-osmosis.

Definition

Electrophoresis

Electrophoresis is defined as the movement of colloidal particles towards one or the other electrode when placed under the influence of electric field.

Definition

Brownian Motion

The zig zag motion of the Colloidal particles.

Definition

Tyndall Effect

The scattering of light by the particles in a colloid.

e.g. The blue color sometimes seen in the smoke emitted by motorcycles.

Definition

True solutions, Colloidal solutions and Suspension

Evaporation is great for separating a mixture (solution) of a soluble solid and a solvent. The process involves heating the solution until the solvent evaporates (turns into gas) leaving behind the solid residue.

Method of sepration of two immiscible liquids

Two immiscible liquids are separated by using separating funnel.The mixture of oil and water forms two separate layer because they are completely insoluble in each other.oil forms upper layer while water forms lower.in separating funnel they are kept for resting , when two layers become stable by using separating funnel they are filtered one by one.

Method of separating a mixture of two miscible liquids

Fractional Distillation is a process by which two miscible liquids are separated from one other. In this process two miscible liquids are taken in flask which is attached to separating column which is further attached to condensation column .On heating liquids, one which has lower boiling point boils first and its vapors start collecting in fractionating column to condensation column where they are cooled and collected in different flask.Second liquid remain in flask itself.

Separation of two liquids by the method of separating funnel
A separating funnel is funnel that is used to separate immiscible liquids. Liquids that do not mix with each other are said to be immiscible. Two immiscible liquids, such as oil and water, can be separated by using a separating funnel.

Later the mixture is placed in a separating funnel or colloquially sep funnel and allowed to stand. The oil and water form two separate layers, with the less dense liquid being on top. The stopper is removed and the tap opened. The bottom layer is run off and collected in a container placed under the tap. The top layer remains and can be collected in a separate container.
Definition
Method of separation of heterogeneous mixture
Methods of separation of heterogeneous mixtures are:
1. Decanting
2. Filtration
3. Centrifugation
Definition
Separation of two solids by the method of sublimation
If a mixture of two solids contain a solid which can sublime on heating then sublimation is used. The mixture is heated and the solid which sublimes is collected in inverted flask and is scratched out. e.g. ammonium chloride and iron
Definition
Evaporation of coloured components from blue/black ink
Colored component of ink is separated from ink by evaporation.Ink is a colloid. It is a heterogeneous mixture of dye and water. Evaporation of water leaves behind the dye and water evaporates into atmosphere.
Definition
Separation of a solid and a liquid by the method of chromatography
A sample is dissolved in a mobile phase it is then forced through an immobile, immiscible stationary phase. The component which is more soluble will travel longer on stationary phase, and we will get components separated based on solubility.
Definition
Separation by chromatography
Chromatography is a method in which solids can be separated from liquid by using different methods like paper, thin layer adsorption chromatography. Separating dye form an ink, because dye in ink is a solid and a liquid solution is a example of separation of solid and liquid by chromatography method.
Definition
Distillation
Process involving the conversion of a liquid into vapour that is subsequently condensed back to liquid form.
e.g. extraction of pure water form salt water, extraction of gasoline from crude oil, etc.
Definition
Separation of a solid and a liquid by the method of distillation
In distillation the mixture (e.g. salt water) is heated in a distillation flask clamped to the stand and then the vapors are condensed and collected in another flask.

Examples of Fractional Distillation

1. Separating a mixture of alcohol and water
2. Heating of the crude oil to get gasoline

Definition

Fractional Distillation

It takes advantage of different boiling points (BP) of two liquids. The mixture is heated at the BP of the liquid having lower BP and that evaporated liquid is then passed through a condenser and is collected in a separate flask.

Definition

Preparation of oxygen from fractional distillation of liquid air

The liquefied air is passed into the bottom of a fractionating column. Just as in the columns used to separate oil fractions, the column is warmer at the bottom than it is at the top.The liquid nitrogen boils at the bottom of the column. Gaseous nitrogen rises to the top, where it is piped off and stored. Liquid oxygen collects at the bottom of the column. The boiling point of argon - the noble gas that forms 0.9% of the air - is close to the boiling point of oxygen, so a second fractionating column is often used to separate the argon from the oxygen.

Sepration of two liquids by method of fractional distillation

The process of fractional distillation involves distillation flask in which the solutions are to be taken with thermometer, a few pieces of of broken porcelain are added to flask.The flask is heated on water-bath, when temperature of mixture reaches 329K , the liquid which is more volatile or which have less boiling point distills out first and is collected in receiver.The remaining solution in beaker contain second liquid.

Definition

Fractional Distillation

First cool and compress the air to form liquid, and then use fractional distillation.

Definition

Centrifugation

Centrifugation is the process where a mixture is separated through spinning. Centrifugation uses a centrifuge.

Definition

Working of a Centrifuge

Centrifugation is sedimentation of particles under the influence of the centrifugal force and it is used for separation of superfine suspensions.The centrifuge holds the top of the tubes(in which a mixture is put), and the bottom is allowed to angle out. As it spins, the larger particles would get flung out further, and smaller particles would stay closer to the center.

Definition

Applications of Centrifugation

Separation of cream from milk.

Extraction of a pure sample of blood serum from blood, for testing purpose.