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Head title

Title 

Important 

General information

Just read

Make sure to understand why 

Matter is

- what all things are made of; whatever occupies space, has mass, and is perceptible to the senses in some way.

Law of conservation:

- matter cannot be created or destroyed, but it is possible to change its physical state.

* Example: liquid gasoline vaporizes and mixes with air, and then burns.

- All matter is made up of

- atoms with different physical attributes (name, mass and size).

- Atom is the

- smallest unit of matter that establishes the unique characteristics of a substance.

- Elements: varied and unique kinds of matter. (They cannot be further broken down into simpler substances without losing their unique identity).

An atom has a nucleus within the nucleus are subatomic particles.

Basic parts:

1- Protons - positively charged particles.

2- Neutrons - no electrical charge.

3- Electrons - negatively charge particles

Elements are assigned an atomic number according to

- how many protons are found at the nucleus of their atoms.

- When atoms bond to form molecules:

- they share electrons.

- The outer most orbital shell of any atom's electrons is called

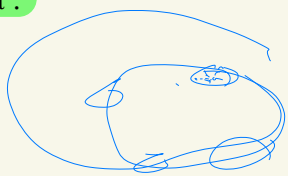
- valence shell.

- The number of electrons in valence shell determines

- the chemical bonding properties of the material
- other characteristics such as conductivity.

To know what is the capacity of each shell use the following formula :

- $2n^2$



- When valence shell has the maximum number of electrons

- It is complete.
- Electrons bond strongly to the nucleus.
- Chemically stable.
- Takes a large amount of force to move the electrons. (Electric current: movement of electrons).
- Good insulators because they resist the flow of electrons (electricity).

Atoms without maximum number of electrons in valence shell

- It is incomplete.
- Electrons bond less strongly to the nucleus.
- The material is chemically disposed to combine with other material or other identical atom to fill in the unstable valence
- configuration and bring the number of electrons in the valence shell to maximum.

Electrons in incomplete valence shells may also

- move freely from valence shell to valence shell of different atoms or compounds

these are known as

- free electrons.

When electrons move freely from atom to atom or compound to compound:

- the substance is known as a conductor

ISOTOPES

When atoms of the same element have different numbers of neutrons:

- they are called isotopes

Because of the differing numbers of neutrons, various isotopes of the same element have

- different masses

CHEMICAL COMPOUNDS

Materials made up of two or more elements that have chemically bonded are known as
- compounds.

Mixtures are atoms and molecules that are
- physically mixed together but are not chemically bonded.

The properties and characteristics of a mixture are closely related or dependent on the
- properties of the individual constituents.

Mixtures can usually be separated by
- filtering,
- evaporation
- some other mechanical means

STATES OF MATTER

1, solid
2, liquid
3, gas
4, plasma

CHANGES BETWEEN STATES of mater

- Matter can change between the states by adding or removing energy.

1, latent heat:

When a substance changes state, such as when a liquid changes into a vapor, heat energy is absorbed This is called :
- latent heat
- All energy absorbed or given off, the latent heat, is used for the change process

2, boiling point:

The temperature at which a substance changes from a liquid into a vapor when heat is added is known as its boiling point

CATALYST

catalyst is a substance that

- causes or accelerates a chemical reaction without itself being affected

inhibitor

- Inhibitors slow down reactions