Material

Material is a physical or chemical substance of which things can be made.

Fibres

A fibre is a piece of fabric that is long, thin and flexible. Plant fibres are the basis of fabric such as cotton, silk and wool fibres come from animals. Many artificial fibres have also been invented such as rayon, nylon, polyester, acrylic etc.

- Nylon is entirely made of chemicals. It is very strong, elastic, light and water-resistant fibre. It is lustrous in appearance. It is used in making ropes, tents, fishing nets and parachutes.
- Polyester is made from 'petroleum'. It is very strong, crease resistant, light, elastic and absorbs very little water. It is used in making pants, shirts, suits, jackets, etc.
- **Rayon** is also known as "artificial silk7. Cellulose which is obtained from wood pulp is the raw material to prepare rayon. It is used in home furnishings, suits, ties, blouses, sportswear, etc.
- Acrylic is made from a chemical called 'acrylonitrile'. Due to its wool like feel, acrylic fibre is often used as a substitute for wool. It is used for making sweaters, shawls, blankets, sportswear, socks, carpets, etc.

Plastics

A plastic is a synthetic material which can be moulded into desired shape when it is soft and then hardened to produce a durable article. For example, polyethene, PVC, Bakelite, Melamine and Teflon.

Types of Plastics:

- * Thermosetting plastics which cannot be moulded by heating. For example, Bakelite and Melamine.
- * **Thermoplastics** which can be moulded into different shapes again and again by heating. For example, Polyethene, PVC.

Metals

Metals are defined as elements which form positive ions by losing electrons. For example, sodium, potassium etc.

Chemical Properties

- ✤ Usually have 1-3 electrons in their outer shell.
- Lose their valence electrons easily.
- Form oxides that are basic.
- Are good reducing agents.
- Have lower electronegativity's.

Physical Properties

- ✤ Good electrical conductors and heat conductors.
- They are malleable i.e.can be beaten into thin sheets.
- They are ductile i.e.can be stretched into wires.
- Possess metallic lustre.
- Opaque in nature.
- Solid at room temperature (except Hg).

Nonmetals:

Nonmetals are defined as elements which form negative ions by gaining electrons. For example, chlorine, oxygen, carbon, etc.

Chemical Properties

Have higher electronegativity's.

- ✤ Are good oxidizing agents.
- ✤ Usually have 4-8 electrons in their outer shell.
- ✤ Gain or share valence electrons easily.
- ✤ Form oxides that are acidic.

Physical Properties

- Solids, liquids or gases at room temperature.
- ✤ They are non-ductile.
- Poor conductors of heat and electricity.
- Transparent as a thin sheet.
 Do not possess metallic lustre.
- ✤ They are brittle.