

Fibre

- The clothes, which we wear are made of fabrics.
- Fabrics are made from fibres obtained from natural or artificial sources.
- Fibres are also used for making a large variety of household articles.

Polymer

- The word 'polymer' comes from two Greek words; poly meaning many and mer meaning part/unit.
- A polymer is a substance composed of many repeated similar subunits.

Synthetic Fibre

- Fibres that are made or created by humans are known as synthetic or man-made fibres.
- Humans have been able to make a variety of synthetic fibres. Eg: rayon, nylon etc.



Synthetic fibre

Natural Fibres -The naturally occurring fibres that humans derive from plants or animals are known as natural fibres. Eg: cotton, wool, silk, etc.



Natural fibres

Silk

- Silk fibre is obtained from the cocoon of a silkworm. It takes 10 kg of the cocoon material to create 1kg of silk.
- The process was discovered in China where it was kept as a closely guarded secret for a long time.
- Silk is costly due to the material quality and production process involved. It is used in making sarees, ties, etc.



Silk Fabric

Rayon

- Rayon is made from purified cellulose, which is chemically converted into a soluble compound.
- Rayon comes from natural sources such as wood pulp but is considered as a man-made fiber. This is because rayon can be treated chemically.

- When rayon is compared with silk, it is inexpensive but can be woven like silk fibres.



Closeup of Rayon Fabric

Nylon

- Nylon is a synthetic fibre obtained from coal, water and air.
- The first fully synthetic fibre obtained was nylon.
- The characteristic properties are that it is light, strong, and elastic.
- Nylon finds application in the manufacturing of socks, ropes, tents, car seat belts, sleeping bags, curtains etc.

Polyester

- Polyester is made of repeating units of a chemical called an ester.
- It is a crease free synthetic fibre.
- It is best suited for the making of dress materials as it is crisp and is easy to wash.
- A popular polyester is Terylene.



Polyester material

Plastic

- Plastic is also a polymer like the synthetic fibre.
- All plastics do not have the same type of arrangement of units. In some, it is linear whereas in others it is cross-linked.
- Plastic can be recycled, reused, coloured, melted, rolled into sheets or made into wires. That is why it finds such a variety of uses.

Thermoplastics

Plastic, which gets deformed easily on heating and can be bent easily are known as thermoplastics. Eg: polythene and PVC

Thermosetting Plastics

Plastics, which when moulded once, can not be softened by heating. Eg: bakelite and melamine.

Characteristics of Plastics

- Plastic is non-reactive
- Plastic is light, strong and durable
- Plastic is a poor conductor

Biodegradable and Non-Biodegradable Materials

A material that decomposes through natural process is biodegradable and materials that are not easily decomposed by natural processes is termed as non-biodegradable.

Eg: Biodegradable – fruits, paper

Non Biodegradable – plastic, tin.

Environmental Effects on Plastic

- Plastic takes several years to decompose, it is not environmental friendly.
- It causes pollution.
- The burning process in the synthetic material is quite slow and it does not get completely burnt easily.
- It releases lots of poisonous fumes into the atmosphere causing air pollution in the process.

