

Synthetic Fibres and Plastics

Fibres:-

Fibres are thin, long, and flexible and hair or thread like structures. There are two types of fibre:-

1. Natural,
2. Man made

Natural Fibres:-

The fibres which are obtained from natural sources such as plants are known as natural fibres.

Example:- Cotton, wool silk etc.

Man- made fibres:-

The fibres which are manufactured in factories by humans are known as man- made or Synthetic fibres.

Example:- Nylon, Rayon, acrylic etc.

Synthetic Fibres:-

Synthetic fibres are made by humans through chemical synthesis in laboratories and factories.

Types of synthetic fibres:

Rayon-

Rayon is obtained from wood pulp. This pulp is further processed to form Rayon. Rayon is also known as artificial silk.

Properties:

- It is a semi synthetic fibre since wood pulp is used for the manufacturing.
- It has comfort providing properties.
- Rayon is smooth, soft and highly absorbent.
- They are mostly used in hot countries as it does not insulate body heat.

Uses:

They are used in the textile industry for making shirts, t-shirts etc.

Nylon-

It is manufactured in factories by the polymerization process.

Properties:

Nylon possess high tensile strength, toughness and elasticity

It has a high melting point.

Uses:

They are used in manufacturing threads, strings, ropes and textiles.

Acrylic-

It is an artificial wool. These are synthetic fibres made from polyacrylonitrile.

Properties:

They are warm, lightweight, soft and flexible.

They are moth and chemical resistant.

It gives a wool like feel but is cheaper than wool.

Uses:

They are used for making sweaters, blankets, jackets and tracksuits.

They are used in craft yarns and vehicle covers.

Plastic:-

The word plastic comes from the Greek word "plastikos" which means fit for moulding. Plastic is popular because it is cheap to produce and is easy to mould and shape into the desired form.

Types of plastics:

There are two types of plastics:- 1. Thermoplastics, 2. Thermosetting polymers

1. Thermoplastics:-

The polymers in which the intermolecular forces of attraction are intermediary to those of elastomers and fibres are called thermoplastics. Thermoplastics can be formed into any shape by heating.

Example: Polythene, PVC, Teflon etc.

Uses: They are used in making toys, combs, containers etc.

2. Thermosetting polymers:-

The polymers which on heating change irreversibly into hard, rigid and infusible materials are called thermoplastics. Once they are moulded they cannot be changed into other forms.

Example:- Bakelite, melamine.

Uses:- They are used in making switches, handles, and utensils.

Advantages of plastics:-

- Lightweight, strong, durable, easily available, easy to handle, affordable price, lighter than metals, can be moulded into different shapes and sizes and colors.
- Do not react with chemicals, water or air. Hence, they do not corrode and can be used to store chemicals.
- Poor conductors of heat and electricity. Hence, wires are covered with plastic and screwdrivers have plastic handles.
- Teflon is a special plastic used to make non-stick cookware (oil and water do not stick to it)
- Doctors gloves, syringes, suture threads, medical instruments, tablet packaging are made of plastics.
- Heating food in a microwave cooks food but does not affect plastic vessels. Hence, microwave cookware is made up of plastic.

Disadvantages of plastics:-

- Non-biodegradable, cannot be broken down by natural processes into simpler materials.
- Burning of plastic causes pollution.