

## Ch-3: Synthetic fibre and plastic

Introduction:- Fabrics are made from fibres. We get fibres from natural or artificial sources. Natural fibres like cotton, jute, wool and silk come from plants or animals. Synthetic fibres, on the other hand are made by human beings like plastic and nylon.

### Synthetic fibres:-

A synthetic fibre is made of small units called monomers. These monomers join together to form a large single unit called a polymer. Polymer is made of many repeating monomers just like beads in a necklace.

### Polymerisation:-

The process of joining together of monomers to form a polymer is known as polymerisation.

### Common synthetic fibres:-

The main synthetic fibres are nylon, rayon, polyester and acrylic.

1- Nylon:- Nylon is a synthetic polyamide fibre. Nylon resembles with silk and wool which are also natural polyamide fibres.

2- Rayon:- Rayon is made from cellulose. Cellulose is obtained from wood pulp. Rayon is the first synthetic fibre. It is also known as artificial silk.

3. Polyester! - It is another synthetic fibre. It is actually petroleum products which contain a large number of esters. Terylene, dacron and terene are examples of poly-ester fibres.

4. Acrylic :- Acrylic fibre is obtained by polymerization of acrylonitrile monomer. It resembles closely with wool in its property.

Some of well known acrylic fibres are orlon acrilan and cashmilon.

### Distinction between various types of fibre:-

Fibre	Results of burning test
Cotton	Burns vigorously, with a characteristic smell of burning paper. No beads produced.
Wool and silk	Burns slowly with a smell of burning feathers or hairs. No bead formation.
Rayon	Burns readily with a smell of burning paper.
Nylon	Burns slowly, fabric shrinks from flame, forms a bead.
Polyester	Burns slowly, forms a bead.
Acrylic	Shrinks from flame, forms a black bead and a sooty flame.

### Advantages of synthetic fibres:-

- ① They are strong and cheaper.
- ② They are crease resistant.
- ③ They are not attacked by moths and moulds.
- ④ They are easy to wash and dry up quickly.
- ⑤ They are light durable and are easy to maintain.

## Disadvantages of synthetic fibres:-

③

- (i) They do not absorb sweat as natural fibre.
- (ii) They get damaged by high temperature when ironed.
- (iii) They are non biodegradable.
- (iv) They can cause skin problems like rashes or allergies.

## ASSIGNMENT

Q1 Fill in the blanks.

(i) --- is the first synthetic fibre.

(ii) Silk, wool and cotton are --- polymers.

(iii) Terylene, dacron and terene are examples of --- fibres.

(iv) Synthetic fabrics are easy to --- and ---.

Q2 Write true or false.

(i) Silk and wool are natural fibres ---.

(ii) Cellulose comes from pulp ---.

(iii) Plastic can be recycled ---.

(iv) Rayon can be prepared from coal, water and air ---.

Q3 Answer the following questions.

(i) Define polymerization?

(ii) What are synthetic fibres? How are they prepared?

(iii) What is tensile strength of a fibre?