

- TEACHER ORIENTATION:

Class 12

Topic: polymer

Sub topic :Natural and synthetic polymer like polythene , nylon , polyester , bakelite and rubber.

Polymer:- Polymer are the substances which are formed by combination of a large no. of monomer units through covalent bonds in a regular fashion

Examples:- Buna-s, Buna-N, polyesters-polyethene, Butadiene.

STUDENT ORIENTATION:

Topic: polymer

Concept: natural and synthetic polymer

Classification based upon source :-

1. **Natural Polymers**:- polymers which are found in nature, in animals and plants are Called natural polymers.

Example:-Proteins, rubber, cellulose.

2. **Semi synthetic polymers**:-These are mostly derived by naturally occurring polymers by the chemical modifications.

Example:-Cellulose, Vulcanized rubber.

3. **Synthetic polymers**:-A large no. of man made polymers are extensively used in dail life. Which are called synthetic polymers.

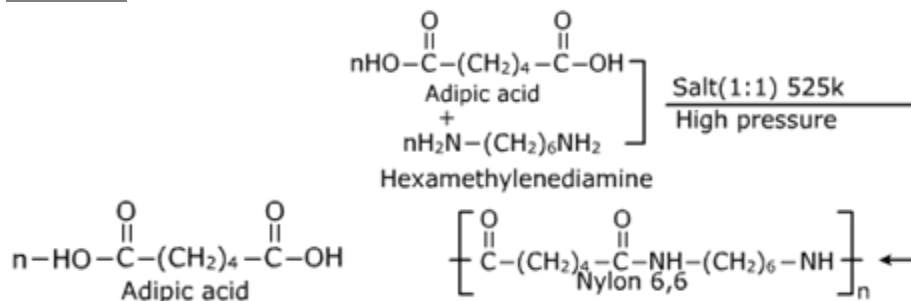
Example:-Fibres, plastics rubbers etc

CONCEPT DETAILS

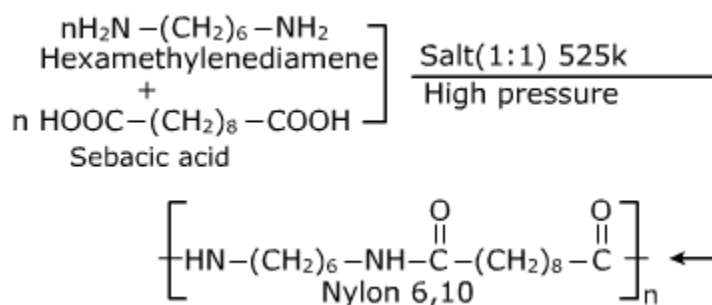
Polymers having the amide linkage are called as polyamides these are prepared by condensation reaction of the dibasic acids. These polymers are normally called nylon

Nylon6,6

Reaction



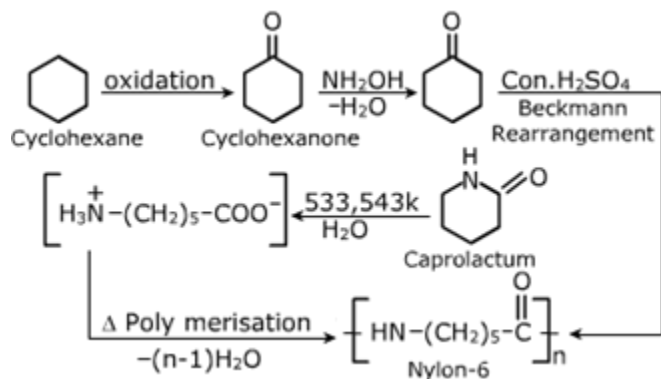
Reaction for nylon 6, 10:-



Uses:-

- These are used in manufactured of carpets, textile Fibres, bristles and brushes.
- Being tough nylon is used a substitute for metals in bearings and gears.

When caprolactum is heated with a trace of water, it is hydrolyses to aminocaproic acid (6-aminohexanoic acid) which on continues heating give nylon-6.



ACTIVITY:

Pop Bead Demonstration:

A polymer is a huge molecule (macromolecule) made up of many smaller repeating units. These smaller units, or monomers, are molecules containing mostly carbon and hydrogen.

However, other atoms such as O, N, Cl, F, Si, and S may also be present.

A polymer can be thought of as resembling numerous beads on a string. Each monomer, or bead, is linked (polymerized) to the next to form chains composed of thousands of atoms in a row. It is the huge size of polymer chains that gives the molecules many of their special properties. Polymers may be natural or synthetic. DNA, cellulose, and proteins are examples of biological polymers.

Instant Diagnosis Questions

- What are polymers?
- What is polymerisation?
- **What is the monomer of natural rubber?**
- Define vulcanization.
- Write two examples of biodegradable polymer?
- Give two uses each.

[1] polythene

[2] PVC

Diagnosis (Formative Assignments)

- 1) What does PVC stand for?
- 2) Name a synthetic polymer which is an ester?
- 3) Write the monomer units of Bakelite.
- 4) The process of heating natural rubber in presence of sulphur is known as _____

Level wise Assignments

Level 1

- 1) Define thermoplastics.
- 2) Write an equation for the preparation of Teflon.
- 4) What are the monomer units of Nylon 6,6.
- 5) What is a copolymer?
- 6) Why is Bakelite a thermosetting polymer?

Level 2

- 1) Write a short note on biodegradable polymer with the help of an example.
- 2) Write the monomeric structures of Melamine resin and Nylon 6.
- 3) Differentiate between addition and condensation polymerization.

Level 3

- 1) How are the polymer classified on the basis of structure?
- 2.) Differentiate between LDPE and HDPE.
- 3.) Write the names and structure of the monomers of the following polymers:

Buna S, Buna N, Neoprene and Dacron

Project

Ask students to visit nearest Hospital in group and identify different Polymers being used there extensively.