

B.Sc-II (Hons), GROUP (C)
POLYMERS (part-2)

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Classification based on effect of temperature

- (i) Thermoplastic polymers
- (ii) Thermosetting polymers

(i) Thermoplastic polymers

Such polymers on heating become soft but on cooling they regained its original conditions

ex: Polyethylene, PVC etc

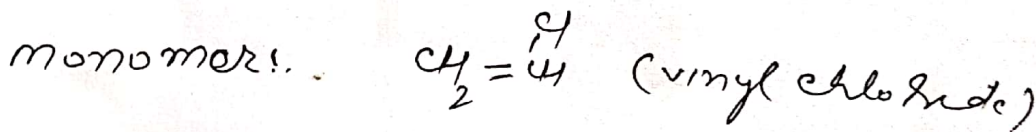
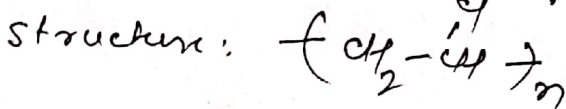
(ii) Thermosetting polymers

Such polymers on (strong heating) get decompose without softening

ex: Bakelite, Gummic acid etc

Some important polymers, and their monomers

(i) PVC (Polyvinyl chloride)



It is homopolymer and product of addition polymerisation.

It is used in Production of PVC. Pipes
Gramophone records etc.

② Teflon (Fluon)


Structure: $(CF_2 - CF_2)_n$

monomer: $CF_2 = CF_2$

It is homopolymer and product of addition
polymerisation.

uses: It is used in non-stick coating
in cooking utensils, in packaging valves etc.

③ Polystyrene

Structure: $(CH_2 - CH -)_n$


monomer: $CH_2 = CH - C_6H_5$ (Phenylethene)

It is also homopolymer and product of addition
polymerisation.

uses: It is used in Production of T.V. cabinet.
Cosmetic bottle etc.

④ Orlon (PAN)

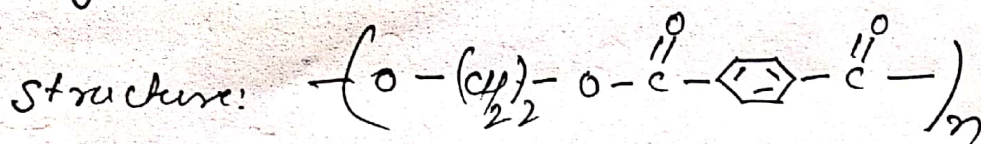
Structure: $(CH_2 - CH -)_n$


monomer: $CH_2 = CH - C_6H_5$ (Acrylonitrile)

uses: It is used in textile fibres in
product of carpeting, cloths,
artificial leather etc.

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5. Terylene (Polyester or Dacron)

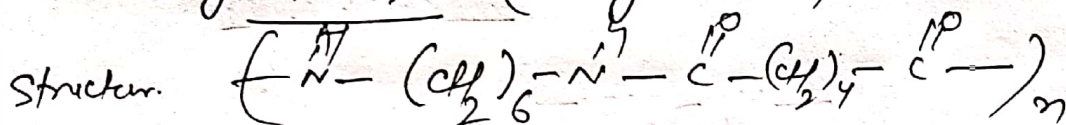


- monomers:
- (i) Ethylene glycol $\left(\text{CH}_2 \right)_2$ with OH groups
 - (ii) Terephthalic acid $\text{HOOC} - \text{C}_6\text{H}_4 - \text{COOH}$

It is copolymer and product of condensation polymerisation

uses: It is used in textile fibres, i.e. blended with cotton. (Terycotton)

6. Nylon-6,6 (Polyamide)



- monomers:
1. Hexamethylenediamine $\left(\text{CH}_2 \right)_6$ with NH₂ groups
 2. Adipic acid $\text{HOOC} - \left(\text{CH}_2 \right)_4 - \text{COOH}$

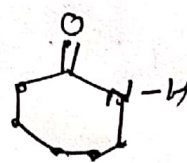
It is copolymer and product of condensation polymerisation

uses: It is used in production of ropes, fishing net, bristle of brushes etc.

7. Nylon-6 (Polyamide)



monomer: caprolactam



uses: In production of ropes, soles, etc.