

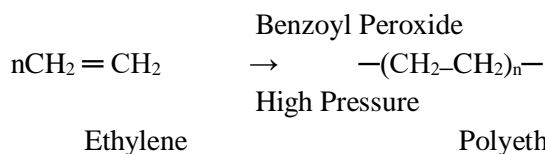


COMMERCIAL THERMOPLASTICS:

Polyethylene (PE):

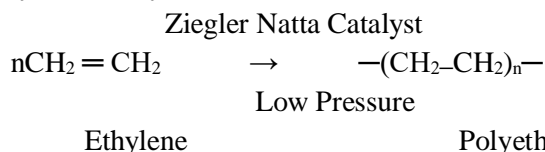
It is obtained by the polymerization of ethylene. Low Density Polyethylene (LDPE) and High Density Polyethylene (HDPE) are the homopolymers of ethylene

LDPE: It is a linear polymer with branching. It is manufactured under high pressure (1000-3000 atm) and in the temperature range of 80-350 C using benzoyl peroxide as catalyst.



Polymer molecules have lots of branching and molecules unable to pack closely

HDPE: It is a linear polymer with little or no branching. It is produced under low pressure using Ziegler-Natta catalyst (Tri ethyl aluminium & TiCl₄)



Polymer molecules have little or no branching and are able to arrange closely

Properties

Property	Density	Temp Range	Tensile Strength	Flexibility
LDPE	0.92	107-120 C	85-136	Flexible
HDPE	0.95	130-178 C	204-313	More Rigidity

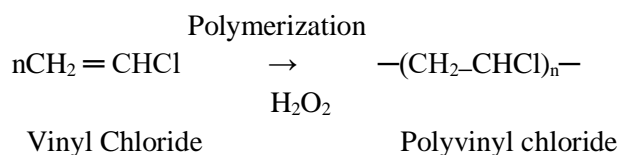
Uses:

- LDPE- Food, Garment packing, squeeze bottle, sheet, wire insulations
- HDPE- Dustbins, milk bottles, drums, containers, cable insulations



2.6.2 Polyvinyl Chloride (PVC):

It is obtained by heating a water emulsion of vinyl chloride in the presence of a small amount of benzoyl peroxide or hydrogen peroxide in an autoclave under pressure.



Properties:

- PVC is non flammable, chemically inert powder.
- It is colourless and odourless.
- It shows resistance to light and atmospheric oxygen. It undergoes degradation in the presence of heat and light.

Uses:

- It is used for making sheets which are employed for tank lining, light fitting, safety helmets, refrigerator components, mudguards etc.,
- It is used in the production of pipes, cable insulators, table covers, and rain coats etc.,