4. Butyl rubber, PMMA

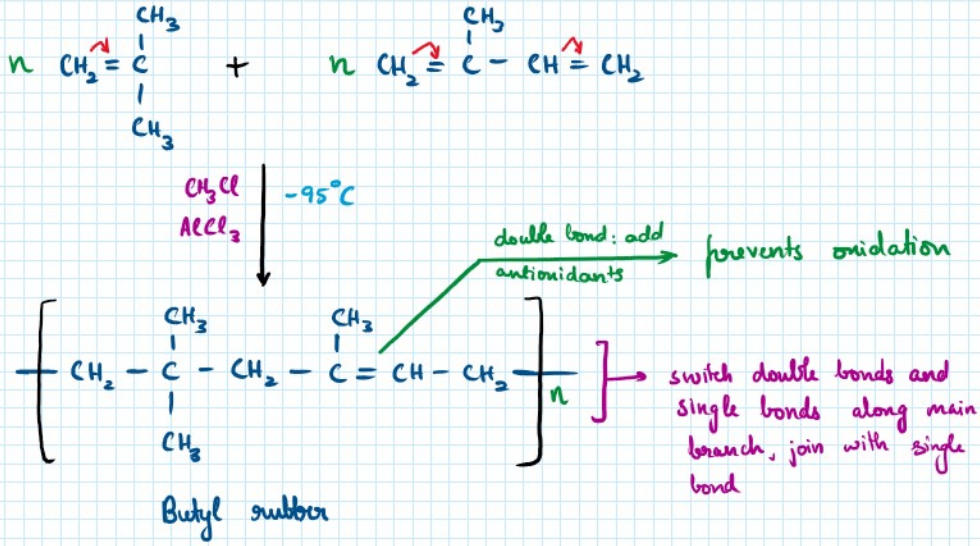
04 December 2023 10:47

① Butyl Rubber

- Co-polymerisation
- Thermal stability
- Chemical resistivity

Monomers	Conditions
Isobutene : 90-95%	-95°C
Isoprene : 5-10%	CH_3Cl, $AlCl_3$

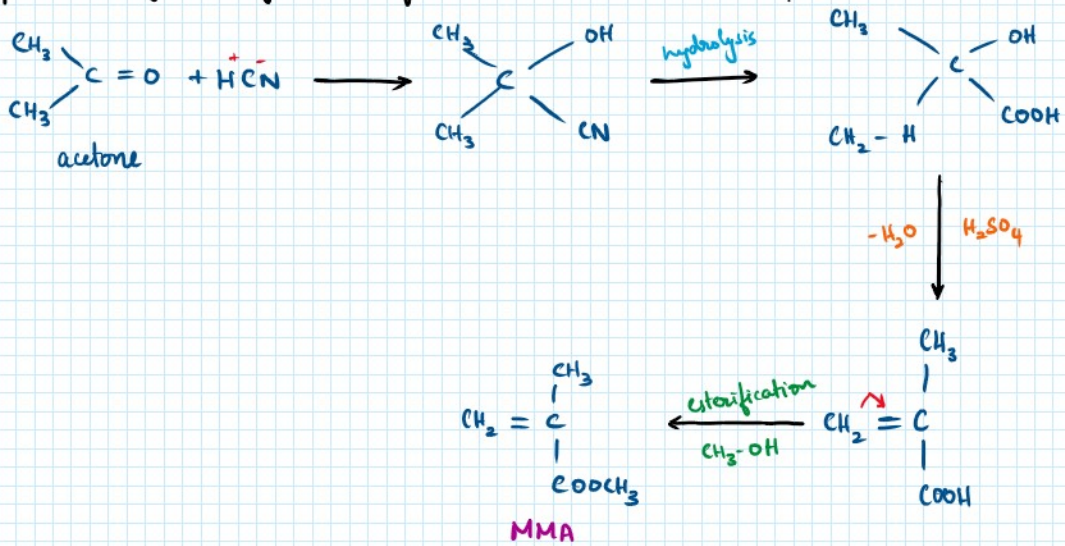
Isobutene + Isoprene [or] 2-methyl-1,3-butadiene → Butyl rubber



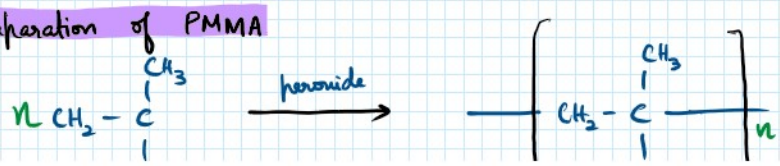
Butyl rubber

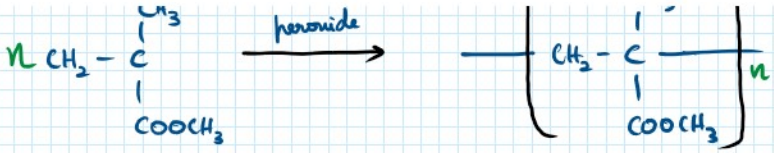
② PMMA: Poly Methyl Methacrylate (Plexiglass)

Preparation of Methyl Methacrylate (MMA)



Preparation of PMMA





MMA → PMMA

Properties

- Thermoplastic
- Transparent
- Good optical clarity
- Not affected by light

Applications

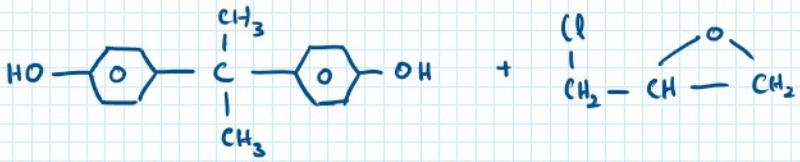
- Artificial teeth
- Aeroplane windows

ADHESIVES

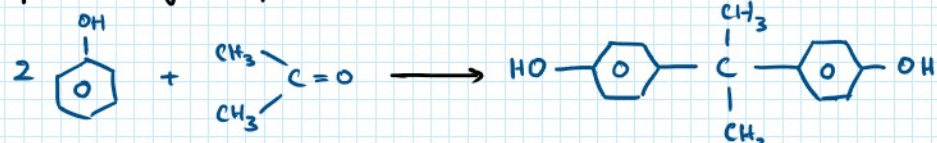
- **Natural adhesives**
  Eg: starch, cellulose
- **Synthetic adhesives**
  Eg: epoxy resin, phenol-formaldehyde resin

EPOXY RESIN (araldite or EPM)

Bis-phenol-A + Epichlorohydrin ⟶ Epoxy resin

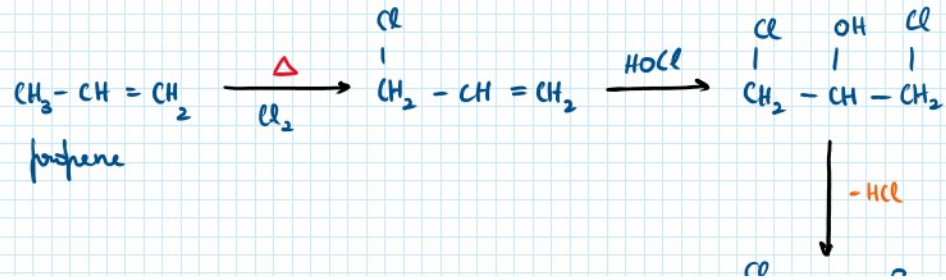


Preparation of bis-phenol-A

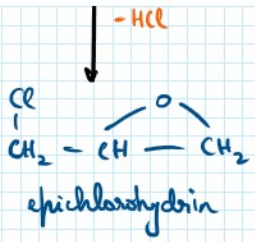


phenol + acetone ⟶ bis-phenol-A

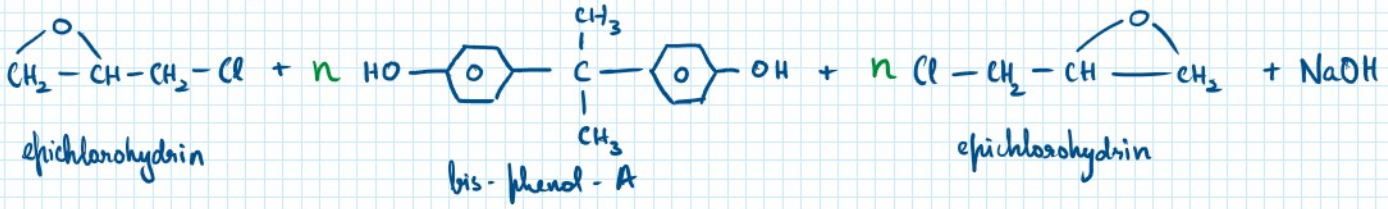
Preparation of epichlorohydrin

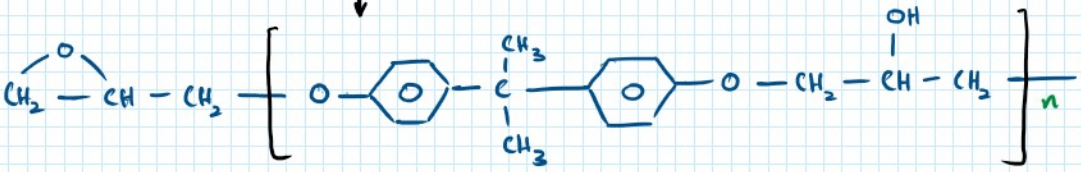


propene



Preparation of epoxy resin





Curing Agents

Adding curing agents

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Immediate formation of 3D crosslinked structure

Eg: Diamines, dicarboxylic acids or acid anhydrides

Applications

- Aerospace & defence
- Bind glass, metal, wood etc.
- Antiskid layer on flooring
- Laminating materials
- Grease resistant and shrinkage resistant fabrics

Properties

- Excellent adhesion
- Resistance to water, alkali, acids & other corrosive agents
- High mechanical strength
- Absorbs less moisture
- Good insulation properties