

SHERIFF FATIMA

19/MHS01/398

- I CH_3OCH_3 - methoxymethane
- II $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - ethoxyethane
- III $(\text{C}_2\text{H}_5)_2\text{O}$ - Butoxymethane
- IV $\text{CH}_3\text{CH}_2\text{OCH}_3$ - methoxyethane
- V $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ - ethoxypropane

2.1 Physical state: At room temperature ethers are colourless, neutral liquids with pleasant odours. The lower aliphatic ones are highly inflammable gases or volatile liquids.

II Solubility: Lower molecular mass ethers such as ethoxymethane and methoxyethane are fairly soluble in water since the molecules are able to form hydrogen bond with H_2O molecules but as the hydrocarbon content of the molecules increases, solubility decreases. However ethers are miscible with most organic solvents.

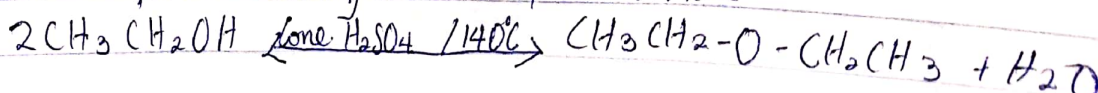
III Density: Most simple ethers are less dense than water, although density increases as RMM increases. Some aromatic ethers are denser than water.

IV Boiling Point: Lower molecular mass ethers have a lower boiling point than the corresponding alcohol but reverse is the case for ethers containing alkyl radicals larger than 4 carbon atoms. The boiling point of ethers tend to approximate those of hydrocarbons of same relative molecular mass.

V Reactivity: Ethers are inert at moderate temperature. Their inertness at moderate temperature lead to their wide use as reaction media.

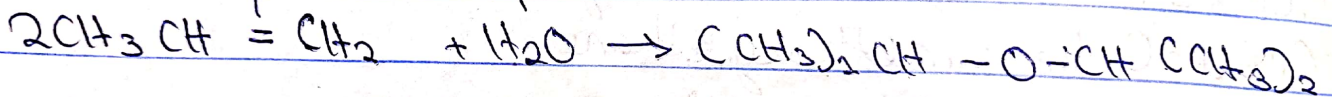
3 Partial dehydration of primary alcohols

Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol is excess and concentrated H_2SO_4 is heated at a carefully maintained temperature of 140°C , this process is known as continuous etherification. If alcohol is not used, the temperature is as high as $170-180^\circ\text{C}$. Further dehydration yields alkene.



1) Controlled catalytic hydration of olefins

These can be manufactured by (the controlled catalytic hydration (i.e. addition of water) of Alkenes -



A) Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol

ii) It is used in the preparation of nonionic emulsifying agents, plastics, plasticizers and several synthetic textiles

iii) It is used as a gaseous sterilizing agent