

b Preparation by Williamson synthesis: This is an important method for the preparation of symmetrical & asymmetrical ethers in laboratories. In this method, an alkyl halide is reacted with sodium alkoxide which leads to the formation of ether.



4 Uses of ethylene oxide:

- a) It is used to make anti-freeze, adhesives, detergents.
- b) It is used as an intermediate in the hydrolytic manufacture of ethylene glycol.
- c) It is used as a fumigant in certain agri agricultural products.

b Density - Most of the simple ethers are less dense than water. Density increases with increasing relative molecular mass and some of the aromatic ethers are denser in water.

c Reactivity.

Ethers are inert at moderate temperature. Their inertness at moderate temperature leads to their wide use as reaction media.

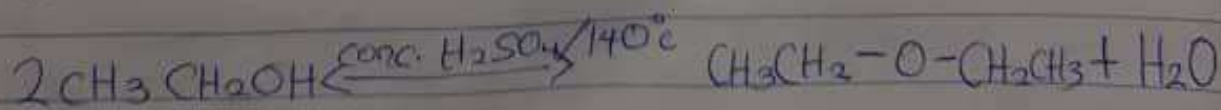
Simple ethers are not found commonly in nature.

3 Two methods of preparing ethers:

a) Partial dehydration of alcohols:

This is used to form simple ethers. The alcohol in excess and concentrated  $H_2SO_4$  is heated at a carefully maintained temperature of  $140^\circ C$ . This process is known as continuous etherification.

If excess alcohol is not used the temperature is increased to about  $170-180^\circ C$ , further dehydration to yield alkene occurs.



NAME: AMADI CHIBURUMA YVONNE .

MATRIC NO: 19/MHS01/088 .

DEPARTMENT: MEDICINE & SURGERY.

1

a  $\text{CH}_3\text{OCH}_3$  - methoxymethane

b  $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$  - ethoxyethane

c  $(\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$  - Butoxymethane

d  $\text{CH}_3\text{CH}_2\text{OCH}_3$  - methoxyethane

e  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$  - ethoxypropane

2 Properties of ethers

a) Solubility - Ethers are less soluble in water than the alcohols. Methoxymethane and methoxyethane are low molecular weights and are fairly soluble in water since the molecules are able to form hydrogen bonds with the water molecules but as the hydrocarbon content of the molecule increases, there is a rapid decline in solubility.