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① i. CH_3OCH_3 ⇒ Dimethyl ether or Methoxymethane
ii $CH_3CH_2OCH_2CH_3$ ⇒ Diethy ether or ethoxyethane
iii $(CH_3CH_2CH_2CH_2)_2O$ ⇒ Dibutylether
iv $CH_3CH_2OCH_3$ ⇒ Ethylmethyl ether
v $CH_3CH_2OCH_2CH_3$ ⇒ Ethyl propyl ether.

② PROPERTIES OF ETHERS

GENERAL PROPERTIES

① PHYSICAL STATES

At room temperature, ethers are colourless, neutral liquids with pleasant odors. The lower aliphatic ethers are highly flammable gases or volatile liquids.

② DENSITY

Most of the simple ethers are less than water although the density increases with increasing relative molecular mass and some of the aromatic ethers are in fact denser than water.

③ SOLUBILITY

Ethers are less soluble in water than the corresponding alcohols. Lower molecular weight ethers such as methoxymethane and methoxy ethane 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 molecules increases, there is a rapid decline in solubility. They are miscible with most organic solvents.

④ REACTIVITY.

Ethers are inert at moderate temperature. Their inertness at moderate temperatures leads to their wide use as reaction media. Simple ethers are not found commonly in

nature but the ether linkage is present in such natural products as sugars, starches

TWO METHODS OF PREPARING ETHERS
MANUFACTURE AND PREPARATION OF ETHERS

Partial dehydration of alcohols: simple ethers are manufactured by alcoholysis by catalytic dehydration. The alcohol is excess and concentrated tetra oxo sulphate (VI) acid is heated at a carefully maintained temperature of ~~140~~ 14°C. This process is known as continuous etherification. If excess alcohols is not used, the temperature is as high as 170 - 180°C further dehydration to yield alkene occurs $2ROH \xrightarrow[140^\circ C]{conc.\ H_2SO_4} R-O-R + H_2O$. Examples $2CH_3CH_2OH \xrightarrow[140^\circ C]{conc.\ H_2SO_4} CH_3CH_2-O-CH_2CH_3 + H_2O$

Controlled catalytic hydration of olefins
$2CH_3CH=CH_2 + H_2O \rightarrow (CH_3)_2CH-O-CH(CH_3)_2$
2 - isopropoxypropane from Haloalkanes and dry silver (I) oxide $2RX + Ag_2O \xrightarrow{warm} R-O-R + 2AgX$

$2CH_3CH_2CH_2Cl + Ag_2O \xrightarrow{warm} CH_3CH_2CH_2OCH_2CH_2CH_3 + 2AgCl$
1-propoxypropane

USES OF ETHYLENE OXIDE

1) Ethylene oxide is used as a gaseous sterilizing agent for medical equipments
2) It is used as an intermediate in the hydrolytic manufacture of ethylene glycol.