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Matric NO:- 19/ENG04/057
Course: CHE102

1. $CH_3OCH_3 \longrightarrow$ Methoxymethane
$CH_3CH_2OCH_2CH_3 \longrightarrow$ Ethoxyethane
$(CH_3CH_2CH_2CH_2)_2O \longrightarrow$ Butoxymethane
$CH_3CH_2OCH_3 \longrightarrow$ methoxyethane
~~CH_3~~ $CH_3CH_2CH_2OCH_2CH_3 \longrightarrow$ Ethoxypropane.

2 Properties of ethers

i) Solubility: Ethers are less soluble in water than the corresponding alcoh Lower molecular weight ethers such as methoxymethane are fairly soluble in water but as the hydrocarbon content of the molecular increases, there is a rapid decline in solubility.

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

iii) Reactivity: Ethers are ~~N~~ inert at moderate temperature. Their inertness at moderate temperatures leads to their wide use as reaction media.

iv) Physical states: At room temperature, ethers are colourless, neutral liquids with ~~pro~~ pleasant odours. The lower ~~of~~ alphatic ethers are highly flammable gases or volatile liquids.

Boiling point: Low molecular mass ethers have a lower boiling point from the corresponding alcohols but those ethers containing alkyl radicals larger than four carbon atoms, the reverse is true.

3 Partial dehydra...
Simple ethers
The alcohol in exc...
carefully manufac...
continuous ether...
high as 17...
occurs.
2ROH
E.g
$2CH_3CH_2$...

ii) From Haloa...
2RX
E.g
$2CH_3C$...

4 i) Ethylene ...
of ethylene...
ii) Ethylene ...
iii) Ethylene o...
plastics, an...

3 Partial dehydration of alcohols

Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol in excess and concentrated H_2SO_4 acid and is heated at a carefully manufactured temperature of 140°C. The process is known as continuous etherification of excess alcohol is not used the temperature is so high at as 170-180°C, further dehydration to yield alkene occurs.

$$2ROH \xrightarrow[Conc\,H_2SO_4/140^\circ C]{} R.O.R + H_2O$$

E.g

$$2CH_3CH_2OH \xrightarrow[Conc\,H_2SO_4/140^\circ C]{} CH_3CH_2-O-CH_2CH_3 + H_2O$$

ii) From Haloalkanes and dry silver(I) oxides

$$2RX + Ag_2O \xrightarrow{100^\circ C} R-O-R + 2AgX$$

E.g

$$2\,CH_3CH_2CH_2Cl + Ag_2O \xrightarrow{100^\circ C} CH_3CH_2CH_2OCH_2CH_2CH_3 + 2AgCl$$

4 i) Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene

ii) Ethylene oxides is used as gaseous sterilizing agent

iii) Ethylene oxide is used in the preparation of non ionic emulsifying agents, plastics, and several synthetic textiles