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PHARMACY

Ethers

1a Methoxymethane

b Ethoxyethane

c Butoxybutane

d Methoxyethane

e Ethoxypropane

2. Physical states: At room temperature, ethers are colourless, neutral liquids with pleasant smell.

Solubility: Ethers are less soluble in water than are the corresponding alcohols. They are miscible with the organic solvent

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

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

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

3a Partial dehydration of Alcohols

Simple ethers are manufactured from alcohols by catalytic

dehydration. The alcohol in excess and concentrated tetraoxosulphate acid is heated at a carefully maintained temperature of 140°C. The process is know as continous etherification. If excess alcohol is not used, the temperature is as high as 170-180°C, further dehydration to yield alken occurs.

$2ROH \xrightarrow{\text{conc } H_2SO_4/140^\circ C} R-O-R + H_2O$

Eg

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

b Controlled catalytic hyderation 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

$2RX + Ag_2O \xrightarrow{\text{warm}} R-O-R + 2AgX$

$2CH_3CH_2CH_2Cl + Ag_2O \xrightarrow{\text{warm}} CH_3CH_2CH_2OCH_2CH_2CH_3 + 2AgCl$

Propoxypropane

4- Ethylene oxide is used as a gaseous sterilizing agent

- Ethylene oxide is used as an intermidiate in the hydrolytic manufacture of ethylene glycol
- Ethylene oxide is used in the preparation of nonionic emulsifying agents, plastics, plasticizers and several synthetic textiles.