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Course:chemistry 102

Department:Nursing

1) $CH_3OCH_3$ : methoxymethane

- $CH_3CH_2OCH_2CH_3$: Ethoxyethane
- $(CH_3CH_2CH_2CH_2)_2O$: Butoxymethane
- $CH_3CH_2OCH_3$: Methoxyethane
- $CH_3CH_2CH_2OCH_2CH_3$: Ethoxypropane

2) *Reactivity*: They are inert at moderate temperature.

- *Boiling point* : Low molecular mass others have a lower boiling point than corresponding alcohols but those others with alky radicals larger than four carbon atoms the reverse is te the case.
- *Density* :most simple ethers are less dense than water,although density increases with increasing relative molecular mass and some aromatic ethers are denser than water.
- *Solubility*: they are less soluble in water than the corresponding alcohols due to the molecules being able to form hydrogen bonds with water but if the hydrocarbon content of the molecules increases, solubility declines rapidly. They are miscible with most organic solvents.
- *Physical state*: they are colourless at room temperature , neutral liquids with pleasant odours, highly flammable gases or volatile liquids.

3) They can be produced from Haloalkanes and dry silver(I) oxide

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

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

Propoxypropane

ii) Partial dehydration of alcohols: simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol in excess and concentrated tetraoxosulphate (vi) acid is heated at a carefully maintained temperature of 140c . This process is known as continuous etherification,if excess alcohol is not used, the temperature is as high as 170 -180 degrees c,

further dehydration to yield alkane occurs .

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

$2CH_3CH_2OH \xrightarrow{conc H_2SO_4/140C} CH_3CH_2\text{-}O\text{-}CH_2CH_3 + H_2O$

4)Ethylene oxide is used as a gaseous sterlizing agent.

Ethylene oxide is used in the preparation of nonionic emulsifying agents,plasticizers,plastics and several synthetic textiles.

Ethylene oxide is used as an intermediate in hydrolytic manufacture of ethylene glycol.