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19/MHS01/311

CHEM 102

IUPAC NAMES

1 CH_3OCH_3 — Methoxymethane

$CH_3CH_2OCH_2CH_3$ — Ethoxyethane

$(CH_3CH_2CH_2CH_2)_2O$ — Butoxybutane

$CH_3CH_2OCH_3$ — Methoxyethane

$CH_3CH_2CH_2OCH_2CH_3$ — Ethoxypropane

2 Properties of Ethers

- Physical states

At room temperature they are colourless, neutral liquids with pleasant odours. However aliphatic ethers are highly flammable and gases volatile.

- Density

The Density of ethers increases with increase in Relative Molecular Mass. Most simple ethers are less dense than water.

- Solubility

They are less soluble in water than the corresponding alcohols. The more in hydrocarbon content of molecules ~~increase~~ decrease solubility

- Boiling point

Low molecular mass ethers have a lower boiling point than the corresponding alcohol.

- Reactivity

They are inert at moderate temperature

3 Preparation of ~~Ethers~~

(a) Partial dehydration of alcohol

Alcohols form simple ethers by catalytic dehydration. The alcohol is in excess & with the H_2SO_4 conc. It is heated carefully at ~~at~~ 140 °C

$$2CH_3CH_2OH \longrightarrow CH_3CH_2-O-CH_2CH_3 + H_2O$$

b From Haloalkanes & Dry silver (I) oxide

This is like a displacement reaction Oxygen is displaced by the halogen element. The oxygen reacts with the alkane to form an ether.

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

4 Uses of Ethylene Oxide

a It is used as a gaseous & sterilizing agent

b. It is used in the preparation of nonionic emulsifying agent, plastics etc

c It is used as an intermidiate in the hydrolytic manufacture of ethylene glycol.