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Medicine and Surgery
19/MHS01/412
CHM 102 Assignment.

CH_3OCH_3 - Methoxymethane
$CH_3CH_2OCH_2CH_3$ - Ethoxyethane
$(CH_3CH_2CH_2CH_2)_2O$ - ~~Butoxymethane~~ Butoxybutane
$CH_3CH_2OCH_3$ - Methoxyethane
$CH_3CH_2CH_2OCH_2CH_3$ - Ethoxypropane

Properties of Ethers

Physical states

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

Solubility

Ethers are less soluble in water than are the corresponding alcohols. Lower molecular weight ethers are fairly soluble in water since the molecule are able to form hydrogen bonds with the water molecules. They are miscible with most organ solvents.

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 wat

Boiling point

Low molecular mass ethers have a lower boiling point than

corresponding alcohols but those ethers containing alkyl radicals longer than four carbon atoms the reverse is true.

e. Reactivity:

Ethers are inert at moderate temperature. Their inertness at moderate temperatures lead 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.

3. Methods of Preparing Ethers.

a. Partial dehydration of alcohols

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

b. Controlled catalytic hydration of olefins

$$2(CH_3)_2CH=CH_2 + H_2O \longrightarrow (CH_3)_2CH-O-CH(CH_3)_2$$

2-isopropoxypropane

4. Uses of Ethylene oxide

a. Ethylene oxide is used as a gaseous sterilizing agent.

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

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