

IGWE KAMSOCHI

19/MH501/196

MEDICINE AND SURGERY

CHM102 : ETHER ASSIGNMENT

1. CH_3OCH_3 - Methoxy methane

$\text{CH}_3\text{CH}_2\text{OCH}_2$ - Ethoxyethane

$(\text{CH}_3\text{CH}_2\text{CH}_2)_2\text{O}$ CH_3

$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxypropane

2. Physical states : At room temperature, ethers are colourless, neutral liquids with pleasant odours. The lower ethers are highly flammable gases and liquids.

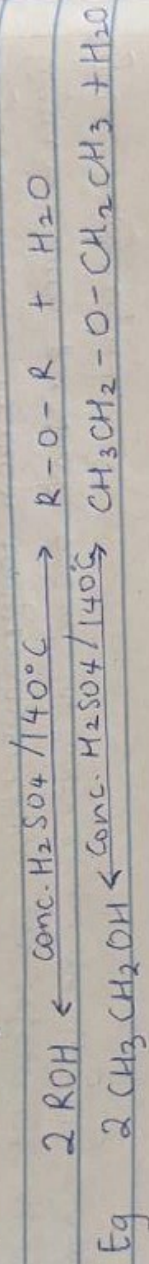
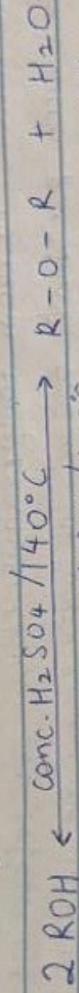
Solubility : They are less soluble in water than their corresponding alcohols. Lower molecular weight ethers are fairly soluble in water as the molecules are able to form hydrogen bond with the water molecule but as the hydrocarbon content increases there is a rapid decline in solubility. They are miscible in other organic solvents.

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

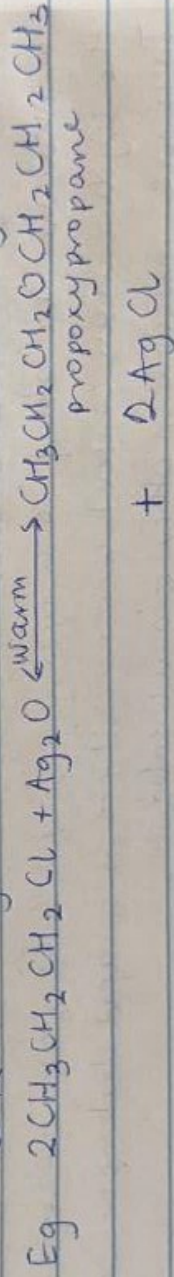
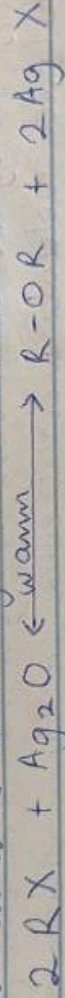
Boiling point : Lower molecular mass ethers have a lower boiling point than corresponding alcohols but those ethers containing alkyl radicals larger than four carbon atoms, the reverse is true. The boiling point of ethers tend to approximate those of hydrocarbons of same relative molecular mass from which it can be that the molecules are not associated in the liquid phase as there are no suitably available hydrogen for association through to hydrogen bonds.

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

3. Partial dehydration of alcohols: Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol is in excess and concentrated tetraoxosulphate (VI) acid is heated at a carefully maintained temp. of 140°C . This process is known as continuous etherification. If excess alcohol is not used, the temp is as high as $170^{\circ}\text{C} - 180^{\circ}\text{C}$, further dehydration to yield alkene occurs.



b. From Halo alkanes and dry silver (I) oxide



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

Ethylene oxide is used in the preparation of non ionic emulsifying agents such as plastics, plasticizers and several synthetic textiles

Ethylene oxide is used as a gaseous sterilizing agent.