

Exams Task change

19/05/2015

MBC

Chem 102

① IUPAC names of

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

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

$(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$  - Butoxyethane

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

$\text{CH}_3\text{OCH}_3$  - Methoxyethane

② Properties of ethers

- Reactivity

Ethers are inert at moderate temperature, this leads to their wide use as reaction media

- 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.

- Solubility

Ethers are less soluble in water than are the corresponding alcohols. Lower molecular weight ethers such as methoxyethane and methoxyethane are fairly soluble in water since the molecules are able to form hydrogen bonds with the water molecules but as the hydrocarbon content of the molecules increases, there is a rapid decline in solubility. They are miscible with most organic solvents.

- Physical appearance

Ethers are neutral, colourless liquids with pleasant odours. Lower aliphatic ethers are highly flammable gases or volatile liquid.

- Boiling point

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

3) Methods of preparing ethers

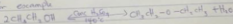
a) Partial dehydration of alcohols

Simple ethers are manufactured from alcohols by catalytic dehydration. The alcohol in excess and concentrated tetraoxo-sulphate(VI) acid is heated at a carefully maintained temperature of  $140^{\circ}\text{C}$ . The process is called continuous etherification.

If excess alcohol is not used, the temperature is as high as  $180^{\circ}\text{C}$ . Further dehydration to yield alkenes occurs.

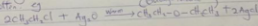


For example



b) From Haloalkanes and dry silver (I) oxide

When any haloalkane is warmed with ~~Ag<sub>2</sub>O~~  $\text{Ag}_2\text{O}$  at a regulated temperature, its corresponding ether is formed.



4) it is used as an intermediate in the hydrolytic manufacture of ethylene glycol

- Ethylene oxide is used as a gaseous sterilizing agent.
- it is used in the preparation of nonionic emulsifying agents, plastics, and several synthetic fibres.