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1

- CH_3OCH_3 -methoxymethane.
- $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ - Ethoxyethane.
- $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$ -Butoxymethane
- $\text{CH}_3\text{CH}_2\text{OCH}_3$ -methoxyethane.
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$ -ethoxypropane.

2. PROPERTIES OF ETHERS

Physical state: At the room temperature, ether are colourless, neutral liquid with pleasant odours. The lower Aliphatic ethers are highly flammable gases or volatile liquids.

Solubility: ethers are highly soluble in nature than are the corresponding alcohols. Lower molecular weight ethers such as methoxymethane and methoxyethane are fairly soluble in water since the molecules are able to form hydrogen bonds with water molecules but as the hydrocarbon content of the molecules increases, there is a rapid decline in solubility density.

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.

Boiling point: low molecular mass ethers have a lower boiling point than the corresponding alcohols but those ethers containing alkyl radicals larger than four carbon atoms, the reverse is the reactivity.

Reactivity: ethers are inert at moderate temperature their inertness at moderate temperature leads 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 sugar, starches and cellulose.

3a. Partial dehydration alcohol

These are manufactured from alcohol by catalytic dehydration. The alcohol is excess and concentrated tetraoxosulphate(VI) acid is heated at a carefully maintained temperature of 140°C . This process is called continuous etherification. If excess alcohol is used, the temperature is as high as 170°C - 180°C . Dehydration can yield to the occurrence of alkenes.

$2\text{CH}_3\text{CHOH} \xrightarrow[\text{140}^\circ\text{C}]{\text{conc. H}_2\text{SO}_4} \text{CH}_3\text{-O-CH}_2\text{CH}_3 + \text{H}_2\text{O}$.

Ethers are produced when carboxylic acids are heated with alcohols in the presence of an acid catalyst. The catalyst is usually concentrated sulphuric acid. Dry hydrogen chloride gas is used in some cases, but tends to involve aromatic esters. The esterification reaction is both slow and reversible.

3b. Ethylene oxide is used as an intermediate in the hydrolytic manufacture of ethylene glycol.

Ethylene oxide is used in the production of non-ionic emulsifying agents, plastics, plasticizers and several synthetic textiles.

Ethylene oxide is used as a gaseous sterilizing agent.