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MATRIC NO: 19/MHS01/237

COURSE: CHM 102

**ASSIGNMENT ON ETHERS**

1. i CH3OCH3- Methoxymethane

ii) CH3CH2OCH2CH3 – Ethoxyethane

iii) (CH3CH2CH2CH2)2O – Butoxybutane

iv) CH3CH2OCH3 – Methoxyethane

v) CH3CH2CH2OCH2CH3 – Ethoxypropane

2) Properties of Ethers

i) Reactivity: Ethers are inert at moderate temperature: due to this certain property of theirs they are used as reaction bases.

ii) Solubility: Lower molecular weight ethers are fairly soluble in water however as the number of hydrocarbon content of the molecules increase, their solubility decreases. Whilst they are less soluble than alcohols in water, they are miscible with organic solvents.

iii) Density: the densities of ethers increase with increasing relative molecular mass. Most simple ethers are less than water while the more complex aromatic ones are denser than water.

Chemical Property

Another property ethers possess is their ability to undergo self-oxidation to form unstable peroxides which are very liable to cause explosions. Thus they are stored with anti-oxidants and in dark bottles.

3) Manufacture of Ethers

i) Partial dehydration of alcohols: Ethers are produce by carefully heating excess alcohol and conc. Tetraoxosulphate(vi) acid at a constant temperature of 1400. The process must be done carefully as it too much heating can cause the alcohol to yield alkene.

2C2H5OH conc. H2SO4/1400C CH3CH2-O-CH2CH3 + H2O

ii) Controlled catalytic hydration of Alkenes: Alcohols can be carefully dehydrated so that instead of yielding alkenes, they produce ethers. Also, alkenes can be carefully hydrated so that instead of yielding alcohols, they produce ethers.

2CH3CH=CH2 + H2O (CH3)2CH-O-CH(CH3)2

3) Properties of ethylene oxide

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

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

iii) It is used in the preparations of plastics, plasticizers, emulsifiers, etc.

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