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DEPARTMENT: PHARMACY

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1. CH3OCH3- Methoxymethane

CH3CH2OCH2CH3- Ethoxyethane

(CH3CH2CH2CH2)2O- Butoxybutane

CH3CH2OCH3- Methoxyethane

CH3CH2CH2OCH2CH3- Ethoxypropane

1. PROPERTIES OF ETHERS

-At room temperature ethers are colourless, neutral liquids with pleasant odours

lower aliphatic ethers are highly flammable gases/volatile liquids.

-Most of the simple ethers are less dense than water; some aromatic ethers are denser than water due to the increase in relative molecular mass.

-Ethers are inert at moderate temperature. Simple ethers are not commonly found in nature but the ether linkage is present in natural products.

-Ethers are less soluble in water than are the corresponding alcohols; lower molecular weight ethers are fairly soluble in water since they are able to form hydrogen bonds with water. They are miscible with most organic solvents.

-Lower molecular mass ethers have a lower boiling point than the corresponding alcohols, ethers containing alkyl radicals larger than four carbon atoms have higher boiling points.

1. PREPARATION TECHNIQUES OF ETHERS

-PARTIAL DEHYDRATION OF ALCOHOLS

Simple ethers are manufactured from alcohols by **catalytic dehydration**.

The excess alcohol and concentrated tetraoxosulphate (vi) acid is heated at a carefully maintained temperature of 140⁰c, this process is known as continuous etherification.EG: 2CH3CH2OH->(conc. H2SO4/140⁰c)CH3CH2-O-CH2CH3.

-FROM HALOALKANES AND DRY SILVER (I) ACID

This uses the Willamson synthesis and heating haloalkanes with dry silver (i) acid.

The Williamson synthesis can only be carried out for primary ethers because secondary alcohols give a mixture of alkene and ether while tertiary alcohols only alkenes under similar conditions.

EG: 2CH3CH2CH2Cl+Ag2O-> CH3CH2CH2OCH2CH2CH3+2AgCl

1. USES OF ETHYLENE OXIDE

-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, plastics, etc.

-Ethylene oxide is used as a gaseous sterilizing agent.