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DEPARTMENT: MLS

MATRIC NO: 19/MHS06/028

	Organic compounds	IUPAC names
1.	CH_3OCH_3	Methoxymethane
	$CH_3CH_3OCH_2CH_3$	Ethoxyethane
	$(CH_3CH_2CH_2CH_2)_2O$	Butoxymethane
	$CH_3CH_2OCH_3$	Methoxyethane
	$CH_3CH_2CH_2OCH_2CH_2$	Tethoxypropane

2. The properties of ethers are:

(i) Physical state: At room temperature, ethers are colourless, neutral liquids with pleasant odours. The lower aliphatic ethers are highly flammable gases or volatile liquids.

ii Density: Most simple ethers are less denser than water, although the density increases with increasing relative molecule mass and some aromatic ethers are denser than water.

(ii) Reactivity: Ethers are inert at moderate temperature. Their inertness at moderate temperature leads to their wide use as reaction media.

3. Methods of preparing ethers:

(i) 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 140°C. The process is known as continuous etherification. If excess alcohol is not used the temperature is as high as 170–180°C, further dehydration to yield occurs.

$$2ROH \xrightleftharpoons{\text{Conc } H_2SO_4/140^\circ} R-O-R + H_2O$$

E.g.: $2CH_3CH_2OH \xrightleftharpoons{\text{Conc. } H_2SO_4/140^\circ C} CH_3CH_2-O-CH_3CH_2 + H_2O$

(ii) From haloalkanes and dry silver(I) oxide: It involves the reaction of an alkoxide ion with a primary alkyl halide through an S_N2 reaction.

$$2RX + Ag_2O \xrightarrow{\text{warm}} R-O-R + 2AgX$$

E.g. $2CH_3CH_2CH_2Cl + Ag_2O \xrightarrow{\text{warm}} CH_3CH_2CH_2OCH_2CH_2CH_3 + 2AgCl$

Propoxypropane

4. Uses of ethylene oxide:

i) It is used as an intermediate in the hydrolytic manufacture of ethyleneglycol.

ii) It is used as a gaseous sterilizing agent.

iii) It is used in the preparation of non-ionic emulsifying agent, plastics and synthetic textiles.