

Organic compounds	IUPAC names
$\text{CH}_3\text{OCH}_3$	Methoxymethane
$\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$	Ethoxyethane
$(\text{CCH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$	Butoxymethane
$\text{CH}_3\text{CH}_2\text{OCH}_2$	Methoxyethane
$\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_2$	Ethoxypropane

2. The properties of ethers are:

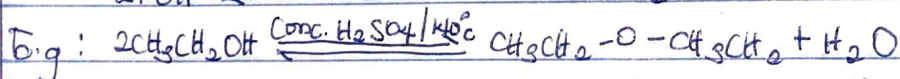
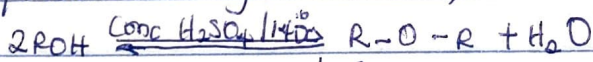
(i) Physical state: At room temperature, ethers are colourless, neutral liquids with pleasant odours. The lower aliphatic ethers are highly flammable gases or volatile liquids.

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

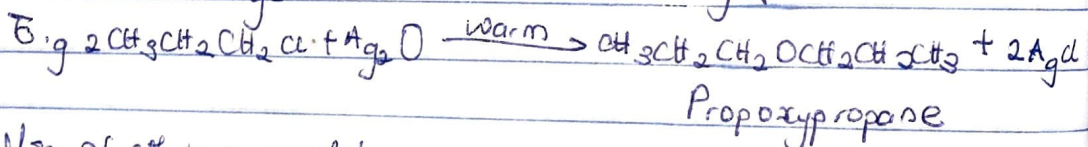
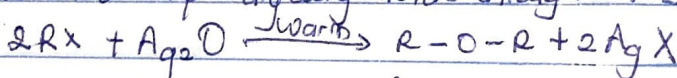
(iii) Reactivity: Ethers are inert at moderate temperature. Their inertness at moderate temperature leads to their wide use as reaction media.

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  $140^\circ\text{C}$ . The process is known as continuous etherification. If excess alcohol is not used, the temperature is as high as  $170-180^\circ\text{C}$ , further dehydration to yield occurs.



(ii) From haloalkanes and dry silver (I) oxide: It involves the reaction of an alkoxide ion with a primary alkyl halide through an  $\text{S}_\text{N}2$  reaction.



4. Uses of ethylene oxide:

- (i) It is used as an intermediate in the hydrolytic manufacture of ethylene glycol.
- (ii) It is used as a gaseous sterilizing agent.
- (iii) It is used in the preparation of non-ionic emulsifying agents, plastics and synthetic textiles.