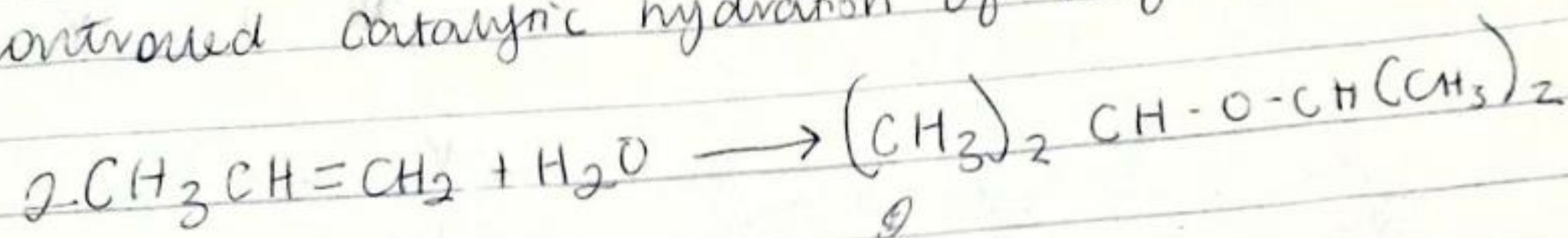


They are miscible with most organic solvents.

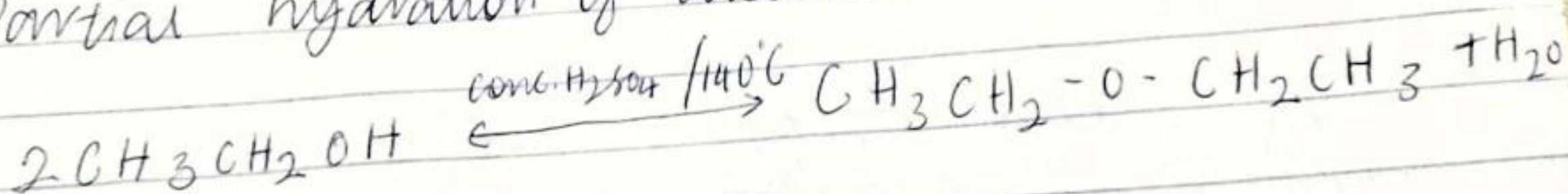
### 2. Boiling point

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

### 3. 1. Controlled catalytic hydration of olefins.



### II. Partial hydration of alcohols



7. 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. Ethylene oxide is used in the preparation of nonionic emulsifying agents, plastics, plasticizers and several synthetic textiles.



1. Give the IUPAC names of the following organic compounds

-  $\text{CH}_3\text{OCH}_3$  - Methoxy methane

-  $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$  - Diethyl ether / ethoxyethane

-  $\text{CH}_3\text{CH}_2\text{OCH}_3$  - methoxyethane

-  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OCH}_2\text{CH}_3$  - Ethoxypropane

-  $(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2)_2\text{O}$  - Butoxybutane

2. > Physical states

- at room temperature, ethers are colourless, neutral liquids with a pleasant smell. The lower aliphatic ethers are highly flammable gases or volatile liquids.

> Reactivity

- Ethers are inert at moderate temperatures. Their inertness at moderate temperatures leads to their wide use as reaction media.

> Density

- most simple ethers are less dense than water, although the density increases with increasing relative molecular mass and some aromatic ethers are in fact denser than water.

> Solubility

- Ethers are less soluble in water than their corresponding alcohols. Lower molecular weight ethers such as methoxy methane is fairly soluble in water since the molecules are able to form hydrogen bonds with the water molecules but as the hydrocarbon content of the molecule increases, there is rapid decline in solubility.