

Alcohols

Homologous series of organic compounds with general formula $C_NH_{2N+1}OH$ with a functional group (OH)

Physical properties of alcohols:

Alcohols are volatile liquids at room temperature and pressure.

Alcohols are soluble in water.

Uses of alcohols:

1. Use as a solvent.
2. Use as a fuel (consider as a cleaner fuel than petrol as it produces less pollutants)

Manufacturing of Alcohol (ethanol):



Addition of steam:

Reaction Conditions

1) Phosphoric (V) acid catalyst H_3PO_4

2) $300\text{ }^\circ\text{C}$

3) 60 atmospheric pressure



Fermentation

- 1) *Glucose dissolved in H₂O, yeast added and mixture put in fermentation jar*
- 2) *Temp set 37C for optimum enzyme activity*

Comparing methods

We can produce ethanol by fermentation or by reaction of ethene with steam. Each of these methods has advantages and disadvantages:

Ethanol from fermentation	Ethanol from ethene and steam
Simple method	More complex method
Needs a lot of very large tanks	Needs smaller-scale equipment to produce the same amount of ethanol
Uses a batch process: you have to start again from the beginning once you have removed the solution in the tank	A continuous process: the ethanol is removed continuously and the ethene and steam are fed into the apparatus continuously
Rate of reaction is slow	Rate of reaction is fast
Ethanol needs further purification by distillation	Produces ethanol of high purity
Uses renewable resources	The ethene is made from a non-renewable resource – petroleum