

CAIE Chemistry IGCSE

11.6 Alcohols

Flashcards

This work by [PMT Education](https://www.pmt.education) is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)



How can ethanol be manufactured by fermentation? What conditions are required?



How can ethanol be manufactured by fermentation? What conditions are required?

Fermentation of aqueous glucose.

Conditions:

- Temperature at 25-30 °C.
- Anaerobic (no oxygen).
- Yeast provides crucial enzymes.



Write the word and chemical equations
for the fermentation of glucose to form
ethanol



Write the word and chemical equations for the fermentation of glucose to form ethanol

Glucose (+ yeast) → ethanol + carbon dioxide



How can ethanol be produced from ethene? What conditions are required?



How can ethanol be produced from ethene? What conditions are required?

Ethene undergoes an addition reaction with steam.

Conditions:

- Phosphoric acid catalyst.
- 300 °C temperature.
- Pressure 60 atm/ 6000 kPa



Write the word and chemical equations
for the production of ethanol from ethene



Write the word and chemical equation for the production of ethanol from ethene

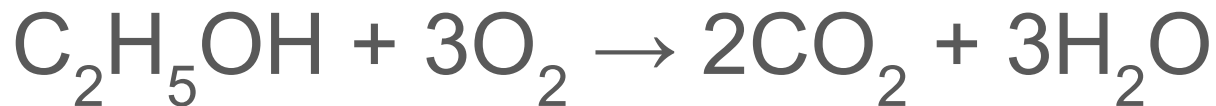
Ethene + steam \rightarrow ethanol



Write a chemical equation for the complete combustion of ethanol



Write a chemical equation for the complete combustion of ethanol



Why can ethanol be used as a fuel?



Why can ethanol be used as a fuel?

Because ethanol releases a lot of energy when burnt.



What are the common uses of ethanol?



What are the common uses of ethanol?

- Fuel
- Solvent



What are the advantages and disadvantages of producing ethanol by the fermentation of glucose?
(extended only)



What are the advantages and disadvantages of producing ethanol by the fermentation of glucose? (extended only)

Advantages	Disadvantages
Renewable raw material from sugar cane	Batch process so not produced continuously
Conditions are not economically demanding	Manual labour required to harvest sugar cane
Only a small amount of energy is required	Slow process
Carbon neutral	Impure product requires further processing



What are the advantages and disadvantages of producing ethanol by the reaction of ethene with steam?
(extended only)



What are the advantages and disadvantages of producing ethanol by the reaction of ethene with steam? (**extended only**)

Advantages	Disadvantages
Continuous process	Non-renewable raw materials
Few workers needed	High temperature and pressure is expensive
Fast rate of reaction	A lot of energy needed
Pure product produced	Catalyst required

