

# OCR (A) Chemistry A-level

## Topic 4.2.1 - Alcohols

### Flashcards

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# What is the functional group of an alcohol?



What is the functional group of an alcohol?

Hydroxyl group -OH



# What is the general formula of an alcohol?



What is the general formula of an alcohol?



How do you name alcohols  
(one prefix, one suffix)?



How do you name alcohols (one prefix, one suffix)?

Hydroxyl- OR -ol



What kind of intermolecular forces do alcohols have?  
Why?





What kind of intermolecular forces do alcohols have? Why?

Hydrogen bonding, due to the electronegativity difference in the OH bond



How do alcohols' melting point and boiling point compare to other hydrocarbons' of similar C chain lengths? Why?



How do alcohols' melting point and boiling point compare to other hydrocarbons' of similar C chain lengths? Why?

Higher, because they have hydrogen bonding (strongest type of intermolecular force) → stronger than London forces



Are alcohols soluble in water?  
Why does solubility depend on  
chain length?



Are alcohols soluble in water? Why does solubility depend on chain length?

Soluble when short chain - OH hydrogen bonds to hydrogen bond in water

Insoluble when long chain - non-polarity of C-H bond takes precedence



# What makes an alcohol primary?



What makes an alcohol primary?

C bonded to OH is only bonded to one other C atom



# What makes an alcohol secondary?





What makes an alcohol secondary?

C bonded to OH is bonded to two other  
C atoms



# What makes an alcohol tertiary?



What makes an alcohol tertiary?

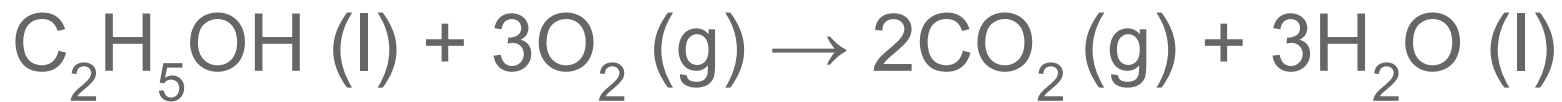
C bonded to OH is bonded to three other  
C atoms



Write an equation for the  
combustion of ethanol



Write an equation for the combustion of ethanol



What forms if you partially oxidise a primary alcohol?



What forms if you partially oxidise a primary alcohol?

An aldehyde



What conditions are needed to partially oxidise a primary alcohol?





What conditions are needed to partially oxidise a primary alcohol?

Dilute sulphuric acid, potassium dichromate (VI), distill product as it's produced, gentle heating



Write an equation for the partial oxidation of ethanol



Write an equation for the partial oxidation of ethanol



What forms if you fully oxidise  
a primary alcohol?



What forms if you fully oxidise a primary alcohol?

A carboxylic acid



What conditions are needed to fully oxidise a primary alcohol?



What conditions are needed to fully oxidise a primary alcohol?

Concentrated sulphuric acid, potassium dichromate (VI), reflux, strong heating



Write an equation for the full  
oxidation of ethanol





Write an equation for the full oxidation of ethanol



What forms if you oxidise a  
secondary alcohol?



What forms if you oxidise a secondary alcohol?

A ketone



What conditions are needed  
for the oxidation of a  
secondary alcohol?



What conditions are needed for the oxidation of a secondary alcohol?

Concentrated sulphuric acid, potassium dichromate (VI), strong heating



Write an equation for the  
oxidation of propan-2-ol



Write an equation for the oxidation of propan-2-ol.



# Is it possible to oxidise tertiary alcohol?





Is it possible to oxidise tertiary alcohol?

No



# What is a dehydration reaction?



What is a dehydration reaction?

A reaction where water is lost to form an organic compound



What are the products of  
dehydration reaction of  
alcohol?



What are the products of dehydration reaction of alcohol?

Alkene and water



What are the conditions required for dehydration of alcohol?



What are the conditions required for dehydration of alcohol?

Concentrated sulfuric acid or  
concentrated phosphoric acid and  $170^{\circ}\text{C}$



What are the products of the halide substitution reaction with alcohol?





What are the products of the halide substitution reaction with alcohol?

Haloalkane and water



In what form is the halide used  
in halide substitution reaction?



In what form is the halide used in halide substitution reaction?

In the form of hydrogen halide, e.g HBr



How is hydrogen halide made  
in situ? Give examples



How is hydrogen halide made in situ? Give examples

A salt is reacted with acid to form the hydrogen halide

E.g sodium bromide reacts with sulfuric acid to form HBr

When iodine is reacted phosphoric acid is used as sulfuric acid oxidises iodide ions into iodine

