

# OCR (B) Chemistry A-Level

## WM2 - Organic Reactions

### 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/)



# What will phenol not react with?



## What will phenol not react with?

- **Carbonates**: although it is acidic, it will not react with carbonates as they are weak alkalis.
- **Carboxylic acid**: phenol will only form an ester when reacting with an acid anhydride.



# How do you test for phenol?



# How do you test for phenol?

Add neutral Iron(III) Chloride solution, if phenol is present a **purple** colour should form.



Give the reactants and reaction  
conditions for  
Alcohol  $\longrightarrow$  Ester



Alcohol  $\longrightarrow$  Ester

Carboxylic acid with conc.  $\text{H}_2\text{SO}_4$

Or acid anhydride

(Condensation reaction)



Give the reactants and reaction  
conditions for  
 $1^\circ$  Alcohol  $\longrightarrow$  Aldehyde





1° Alcohol  $\longrightarrow$  Aldehyde

$K_2Cr_2O_7$  with  $H_2SO_4$

Under Distillation

(Oxidation reaction)



Give the reactants and reaction conditions for  
 $1^\circ$  Alcohol/Aldehyde  $\longrightarrow$  Carboxylic acid



1° Alcohol/Aldehyde → Carboxylic acid

$K_2Cr_2O_7$  with  $H_2SO_4$

Under Reflux

(Oxidation reaction)



What colour change can be seen when an organic compound is oxidised by acidified potassium dichromate(VI)?



What colour change can be seen when an organic compound is oxidised by acidified potassium dichromate(VI)?

Orange to Green.



Give the reactants and reaction conditions for  
2° Alcohol  $\longrightarrow$  Ketone



2° Alcohol  $\longrightarrow$  Ketone

$K_2Cr_2O_7$  with  $H_2SO_4$

Under Reflux

(Oxidation reaction)



Give the reactants and reaction  
conditions for  
Alcohol  $\longrightarrow$  Alkene





Alcohol  $\longrightarrow$  Alkene

Conc.  $\text{H}_2\text{SO}_4$

Heat under Reflux

(Dehydration reaction)



Give the reactants and reaction  
conditions for  
Alcohol  $\longrightarrow$  Haloalkane



Alcohol  $\longrightarrow$  Haloalkane

Phosphorous(III) Halide

Under Reflux

(Substitution reactions)

Or

Sodium Halide with  $\text{H}_2\text{SO}_4$

Under Reflux



What is the principle of waste prevention?



What is the principle of waste prevention?

It is better to prevent the production of waste than to deal with it after it has been created.



# Why is high atom economy better for the environment?



## Why is high atom economy better for the environment?

- Less waste is produced from the reaction which minimises damage from waste chemicals to the environment.
- Less raw materials can be used which is more sustainable.



What is the principle of less toxic syntheses?





What is the principle of less toxic syntheses?

Syntheses should be designed to have the least amount of toxic substances produced or used.



# What is the principle of safer solvents?



What is the principle of safer solvents?

Syntheses should be designed to minimise the use of solvents and separating agents that are dangerous.



How can energy use be made more efficient in reactions?



How can energy use be made more efficient in reactions?

Syntheses should be conducted at room temperature and pressure whenever possible. The use of electricity should be minimised and the source of the electricity should be assessed (whether renewable or not).



# Why are catalysts environmentally friendly?



# Why are catalysts environmentally friendly?

Catalysts reduce the need for heating in a reaction which reduces the amount of energy used for the reaction.

