

Edexcel Chemistry A-Level

Core Practical 05 - Oxidation of ethanol

Flashcards

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What is oxidation?



What is oxidation?

- Oxidation is loss of electrons.
- If an element is oxidised, it's oxidation number increases.



What is distillation?



What is distillation?

- Distillation is a technique where the heating of a liquid to create a vapour is cooled by a condenser, causing the gas to condense into a liquid and drip into a separate flask.
- The different substances will be separated by boiling point/volatility.



What equipment is used for distillation?



What equipment is used for distillation?

Quickfit apparatus:

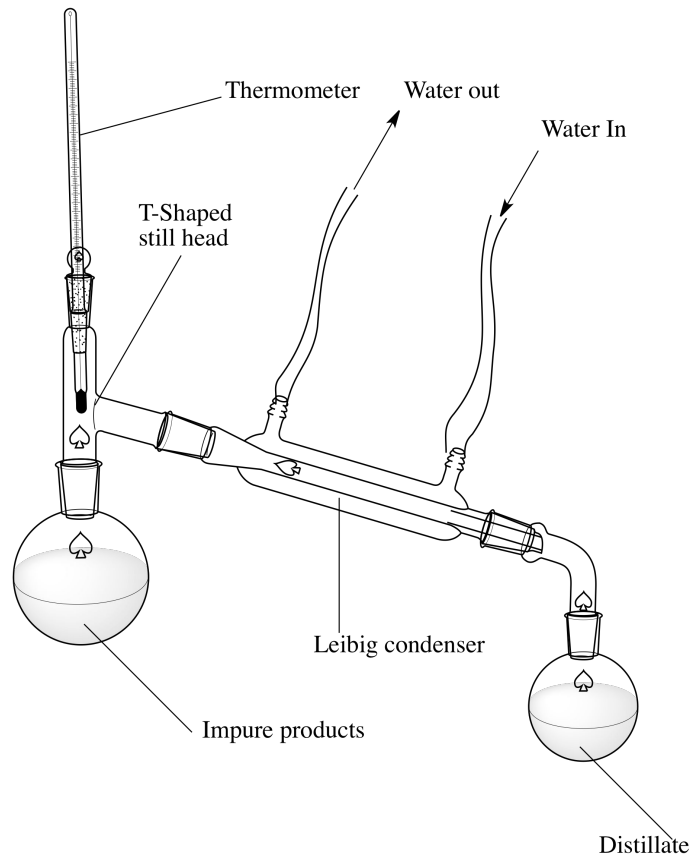
- Pear-shaped or round-bottomed flask with a liebig condenser, still head, stopper, receiver adaptor, fitted with a thermometer and collection vessel.



What does a diagram of Quickfit apparatus set up for distillation look like?



What does a diagram of Quickfit apparatus set up for distillation look like?



What happens when you oxidise ethanol
by distillation?



What happens when you oxidise ethanol by distillation?

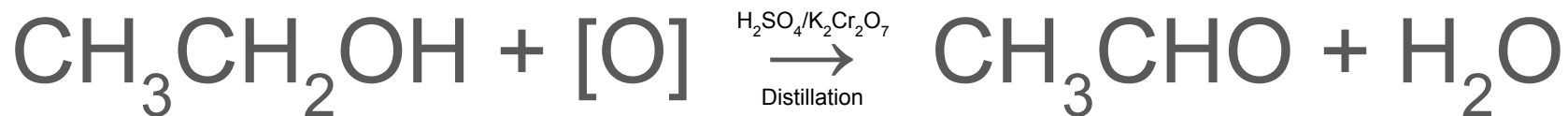
- Ethanol is distilled with acidified potassium dichromate (VI) and is oxidised into an aldehyde, ethanal.
- This is shown by a colour change from **orange** to **green**.



What is the equation for the oxidation of ethanol to ethanal?



What is the equation for the oxidation of ethanol to ethanal?



How do you use laboratory equipment to heat under reflux?



How do you use laboratory equipment to heat under reflux?

Quickfit apparatus is used to heat a substance under reflux.

- The substance is boiled in a pear-shaped or round-bottomed flask.
- As it evaporates, it is cooled by the water in the liebig condenser and so condenses back into a liquid and drips back down into the flask to be heated again.



Why is heating under reflux used?



Why is heating under reflux used?

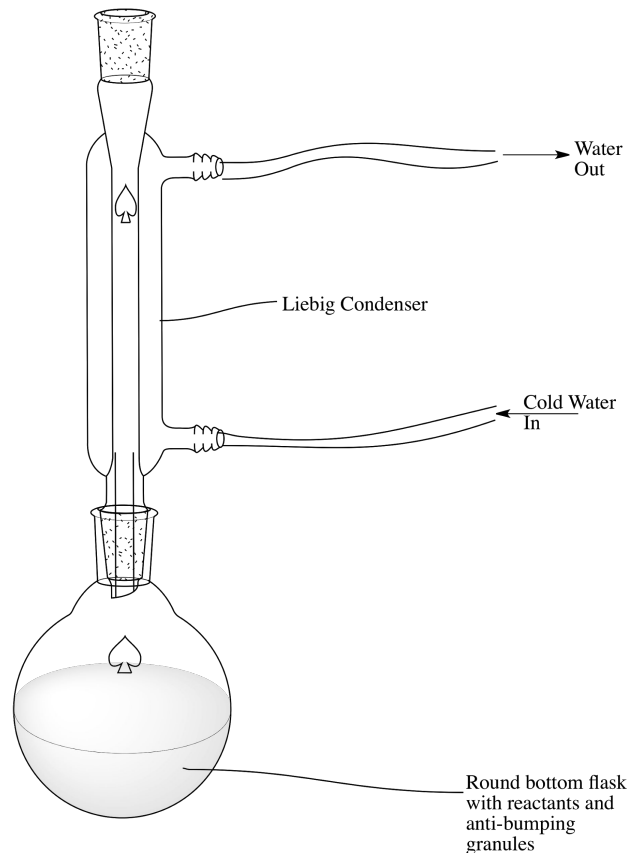
- Allows heating for a long period of time
- Prevents the flask from boiling dry
- Prevents volatile reactants/products escaping
- Ensures even heating



What does a diagram of Quickfit apparatus set up for heating under reflux look like?



What does a diagram of Quickfit apparatus set up for heating under reflux look like?



Why are anti-bumping granules used when heating under reflux/in distillation?



Why are anti-bumping granules used when heating under reflux/in distillation?

To allow smooth boiling. They prevent the appearance of bubbles caused by vapour in the hot liquid which would cause splashing up the sides of the flask.



What happens when you oxidise ethanol under reflux?



What happens when you oxidise ethanol under reflux?

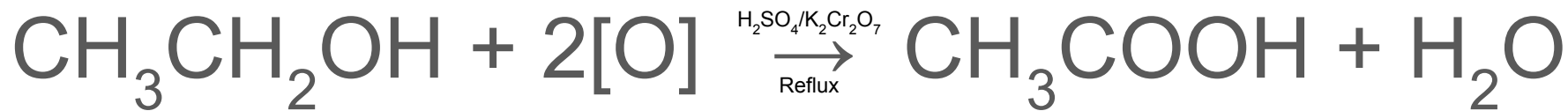
- Ethanol is refluxed with acidified potassium dichromate (VI) and is oxidised into a carboxylic acid, ethanoic acid.
- This is shown by a colour change from **orange** to **green**.



What is the equation for the oxidation of ethanol to ethanoic acid?



What is the equation for the oxidation of ethanol to ethanoic acid?



What are some potential hazards and risks in the laboratory?



What are some potential hazards and risks in the laboratory?

Hazard	Risk	Control
Bunsen burner	Burns.	Keep away from flammable chemicals and away from the edge of the desk.
Ethanol	Flammable.	Wear eye protection. Keep away from the edge of the desk and from an open flame.
Potassium dichromate (VI)	Health hazard and irritant.	Don't inhale or ingest. Wear gloves when handling. Wear safety glasses.
Glassware i.e beakers, test tubes.	May break and cut you.	Handle with care. Keep away from edge of the desk.

