Edexcel Chemistry A-Level

Core Practical 06 - Chlorination

Flashcards

How do you form the crude product?

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- Add conc. HCl and 2-methylpropan-2-ol to a conical flask. Put the rubber bung in and swirl the flask.
- Open the bung to release the pressure. Repeat this regularly over 20 minutes.
- Add some anhydrous $CaCl_2$ and shake.
- At this point, there should be two distinct layers.
- Upper layer = organic product. Lower layer = aqueous layer

How do you separate the organic layer from the aqueous layer?

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- Transfer the contents of the flask to a separating funnel.
- Allow the layers to separate and remove the lower (aqueous) layer by opening the tap.
- Keep the organic layer in the separating funnel.

How do you remove the unreacted HCl?

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- Add a solution of $NaHCO_3$ to remove the unreacted HCl. Swirl. Stopper the separating funnel and shake it.
- Invert and open the tap to release pressure. Repeat a few times.
- Remove the stopper and run off the aqueous layer. Then, run the organic layer into a clear conical flask.

How do you remove any water from the organic liquid?

How do you remove any water from the organic liquid?

Add some anhydrous Na_2SO_4 because it acts as a drying agent.

How do you purify the product?

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- Distillation.
- This separates the products based on boiling point.
- Collect the liquid boiling between 50°C and 52°- this should be the pure product.

What is distillation?

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- 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?

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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?

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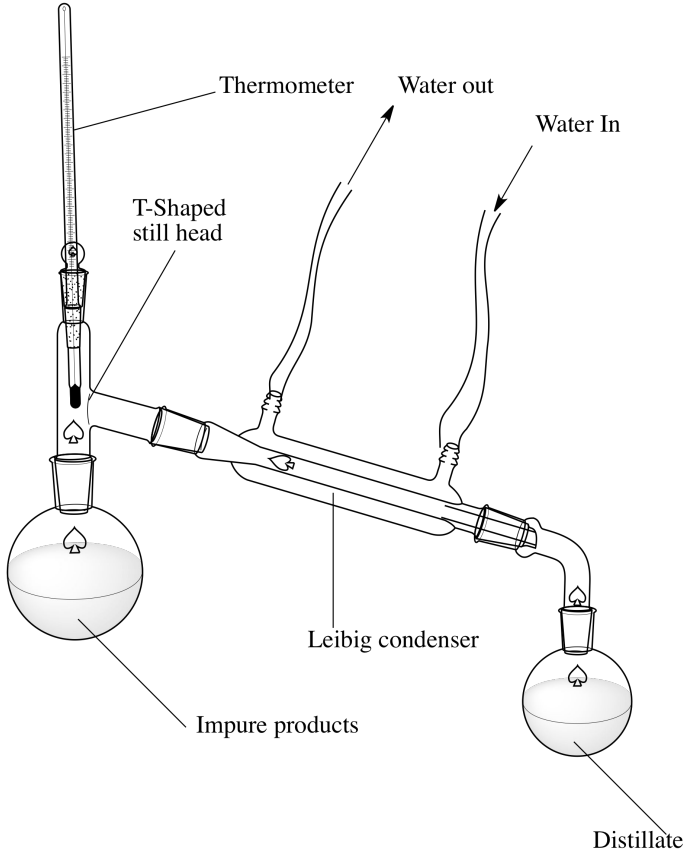

Why are anti-bumping granules used in distillation?

Why are anti-bumping granules used 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 are some potential hazards and risks in the laboratory?

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Hazard	Risk	Control
Bunsen burner	Burns.	Keep away from flammable chemicals and away from the edge of the desk.
2-methylpropan-2-ol And 2-chloro-2-methylpropane	Flammable and harmful	Wear eye protection. Keep away from the edge of the desk and from an open flame. Don't ingest or inhale.
HCl	Corrosive	Don't inhale or ingest. Wear gloves when handling. Wear safety glasses. Carry out this part of the experiment in a fume cupboard.
Glassware i.e. beakers	May break and cut you.	Handle with care. Keep away from edge of the desk.