OCR (A) Chemistry A-level

Topic 6.2.5 - Organic Synthesis

Flashcards

When purifying by recrystallisation, why is the minimum volume of hot solvent used?

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So that a saturated solution is created, so that as many crystals will fall out of solution as possible when it is cooled

Why is the solution filtered hot when purifying by recrystallisation?

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To remove insoluble impurities and ensure that the crystals do not form in the filter paper

Why is the solution cooled in an ice bath when purifying by recrystallisation?

Why is the solution cooled in an ice bath when purifying by recrystallisation?

To ensure that as many crystals as possible fall out of solution - yield is higher

Why are the crystals washed with cold water when purifying by recrystallisation?

Why are the crystals washed with cold water when purifying by recrystallisation?

To remove soluble impurities

How would you separate the crystals from the reaction mixture when purifying by recrystallisation?

How would you separate the crystals from the reaction mixture when purifying by recrystallisation?

Filter under reduced pressure using a Buchner funnel

Why might percentage yield be below 100% (practical reasons)?

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Product is lost during filtration, drying and weighing - spills, not all transferred from one piece of apparatus to the other

Product is left dissolved in the solution - some does not crystallise. Some left on filter paper. Sample still wet

Describe how Quickfit apparatus is connected.

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Grease the joints using some petroleum jelly on the inside of the joints before connecting the pieces together.

In a distillation setup, why is it necessary to have a continuous water flow around the condenser?

In a distillation setup, why is it necessary to have a continuous water flow around the condenser?

So that the water remains cool in order for the mixture to be distilled

Describe a method that can be used to separate immiscible liquids.

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- Pour the mixture into a separating funnel and some distilled water
- Add the stopper and invert the flask to mix the mixture
- Equalise the pressure by opening the stopper as required
- Continue shaking until there is no ‘whistle’ sound
- To collect the water in the lower layer, open the stopper and place a beaker under the spout
- Use another beaker to collect the desired organic layer
- Shake the liquid with some drying agent

Name two drying agents.

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Magnesium sulphate

and

Calcium chloride

How is a drying agent used?

How is a drying agent used?

- Add a selected drying agent to the organic product
- If the drying agent forms clumps add some more until they are moving freely
- Use gravity filtration to collect the dry product.
- Filtrate is the product

What does re-distillation mean?

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When a liquid is purified by using multiple distillations

What are the three key steps to purify an organic solid?

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1. filtration under reduced pressure
2. recrystallisation
3. measurement of melting points