

Edexcel Chemistry A-level

Practical 6

Chlorination of 2-methylpropan-2-ol.



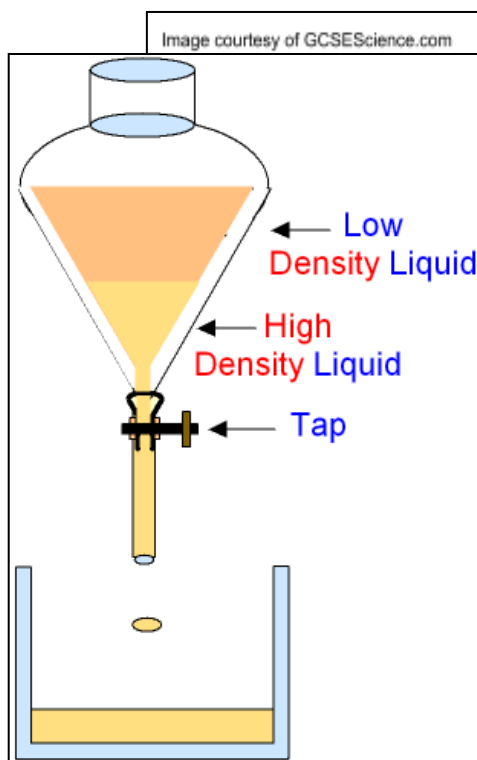
Method

1. Add concentrated HCl and the tertiary alcohol to a conical flask. Swirl gently.
2. Put the rubber bung in and swirl the flask gently. Open the bung to release the pressure from fumes from time to time. Repeat this regularly over 20 minutes.
3. Add some anhydrous CaCl_2 and shake. At this point, there should be two distinct layers.

[In this case, the upper (organic) layer contains the desired product. The lower layer is the aqueous layer.]

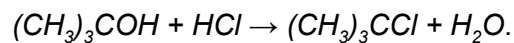
4. Transfer the contents of the flask to separating funnel.
5. Allow the layers to separate and discard the lower (aqueous) layer. Close the tap, keep the organic layer in the separatory funnel.
6. Add a solution of NaHCO_3 to remove the unreacted HCl. Swirl gently. Stopper the separating funnel and shake it. Invert the separatory funnel and open the tap to release the pressure due to CO_2 formed. Repeat twice.
7. Remove the stopper and run off the aqueous layer. Then, run the organic layer into a clear conical flask. Add some anhydrous Na_2SO_4 which acts as a drying agent.
8. Swirl the contents and leave the flask to stand for a bit. Then, either decant the liquid, or filter it.
9. Distill to purify the product.

Diagram



Key Points

- A **weaker base is used to prevent hydrolysis of haloalkane. NaOH could react with the product via nucleophilic substitution.**
- Equation:



Errors

- Some product is lost when **transferring** liquids between the vessels.

