Lab: Preparation of Bromoethane and Investigation of its Properties

Reaction

$C_2H_5OH + HBr \rightarrow C_2H_5Br + H2O$

$(KBr + H_2SO_4 \rightarrow HBr + \ldots?\ldots)$

In this preparation you will meet the techniques of reflux, simple distillation and use of a separating funnel, which are commonly used in the purification of an organic liquid to give the best possible yield.

Safety

Ethanol is flammable. Concentrated sulfuric acid is corrosive. Therefore, you must: keep stoppers on bottles as much as possible, keep flammable liquids away from flames, and wear safety glasses.

Procedure

1. In the round bottomed flask, place 7 cm^3 of ethanol, 3 cm^3 of conc. H_2SO_4 and 12 g of KBr. Add a boiling stone and reflux gently for 10 minutes.
2. Set up the apparatus for distillation and distill off the bromoethane, collecting it under water in a small beaker (bp 38˚C).

   See Diagrams

   Refluxing: is the process of boiling volatile reactants in a flask connected to a condenser which is fitted vertically so that the condensed liquid runs back into the flask. In this way, the liquid mixture can be maintained at a fairly high temperature for a long period of time without loss of evaporation.

Tests

1. Hydrolysis

   -Boil 2-3 drops with a little dilute nitric acid then add aqueous $AgNO_3$ to show the formation of a halogen.

2. Reaction with alcoholic potash

   -In a boiling tube fitted with a cork and bent delivery tube place 10 drops of liquid, 5 cm^3 of alcohol and 5-6 pellets of KOH. Warm gently and collect 3 test tubes of gas over water. Test the gas…

   a) by burning
   b) with bromine water (in TTE)
   c) with acidified $KMnO_4$

   What forms each time?

   Write equations to represent the reactions occurring.