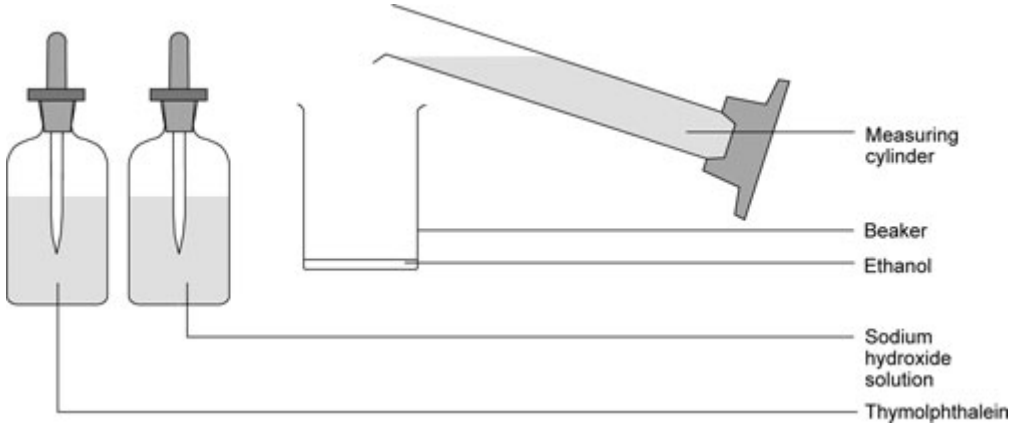
Disappearing ink – student sheets

Introduction

A blue liquid is made. This liquid is tested on a white page, it leaves a blue ink spot. In a few seconds, the blue spot disappears.



Equipment

Apparatus

- Eye protection
- Beaker, 100 cm^3
- Measuring cylinder, 10 cm^3
- Small paint brush to test the ink

Chemicals

- Ethanol
- Sodium hydroxide 0.4 mol dm^{-3}
- Thymolphthalein solution (50 per cent water, 50 per cent ethanol)

Health, safety and technical notes

- Read our standard health and safety guidance here https://rsc.li/3OEFuTD
- Always wear eye protection.
- Ethanol is highly flammable, see CLEAPSS Hazcard HC040a.
- Sodium hydroxide is an irritant, see CLEAPSS Hazcard HC091a.
- Thymolphthalein soluiton is flammable, see CLEAPSS Hazcard HC032.

Procedure

1. Place 10 cm^3 of ethanol in a small beaker.
2. Add a few drops of thymolphthalein indicator solution.
3. Add just enough NaOH solution, dropwise, to produce a deep blue colour in the solution.
4. Using a small paint brush, test the ‘disappearing ink’ on a white page.

Questions

The colour change occurs because sodium hydroxide reacts with a gas in the air.

1. Which gas in the air causes this colour change?
2. Write a word equation for the reaction.
3. Write a formula equation for the reaction.