WJEC (Wales) Chemistry A-level

SP 4.8e - Paper Chromatography

Methods and images taken from the WJEC practical handbook

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Aim

To **analyse** biro inks using paper **chromatography.**

Apparatus and Chemicals

- Whatman Grade 1 chromatography paper
- Scissors
- Green, black, blue and red biro inks (or equivalent)
- 250 cm^3 bottle or conical flask with tight fitting bung
- Pasteur pipette
- Developing solvent (20 cm^3 of water, 20 cm^3 of ethanol and 60 cm^3 butan-1-ol)

Safety Considerations

★ Developing solvent - flammable

Method

1. Cut a piece of chromatography paper to fit the bottle or conical flask and draw a **straight pencil line** approximately 10-15 mm from the bottom edge of the paper.
2. Make sure the biro is working and then make a small dot (no more than 1-2 mm in diameter) on the paper on the pencil line. If more than one biro dot (e.g. different colours) is placed on the line, ensure that there is at least a **5 mm gap** between the dots along the line. Do not put any dots close to the side edges of the chromatography paper.
3. Add the **developing solvent** to the bottle to a depth of **no more than 10 mm**. Use a **fume cupboard** when using the developing solution.
4. Carefully insert the paper into the solvent. Make sure that the pencil line with the biro dots stays **above the solvent level**. Hold the chromatography paper in place with a cork or bung.
5. Leave the flask/bottle where it will not be moved for about 30 minutes. Do not allow the solvent front to reach the bottom of the bung.
6. Remove the paper, mark the **position of the solvent front** and leave it to dry near an open window or in a fume cupboard.
7. The dry chromatograms can be stuck into the lab book.

[**Note:** Thin layer chromatography may be used in place of paper chromatography.]