Chemistry Topic 8

Pure Substances and formulations	
Pure Substances	In chemistry, a pure substance is a single element or compound, not mixed with any other substance. Pure elements and compounds melt and boil at specific temperatures. Impure substances melt over a range.
Everyday pure substance	In everyday language, a pure substance can mean a substance that has had nothing added to it, so it is unadulterated and in its natural state, eg pure milk.
How to determine if a substance is pure	Pure elements and compounds melt and boil at specific temperatures. Impure substances melt over a range.
Advantages of Instrumental methods of chemical tests.	Accurate, sensitive, rapid

Gas Tests	
Oxygen	Glowing splint inserted into a test tube of the gas. The splint relights in oxygen.
Hydrogen	A burning splint held at the open end of a test tube of the gas. Burns rapidly with a pop sound.
Carbon Dioxide	Aqueous solution of calcium hydroxide (lime water). When carbon dioxide is shaken with or bubbled through limewater the limewater turns milky (cloudy).
Chlorine	When damp litmus paper is put into chlorine gas the litmus paper is bleached and turns white.

Chromatography: a separating technique.

Stationary phase (paper) and a mobile phase (solvent). Separation depends on solubility and attraction to the paper(stationary phase).

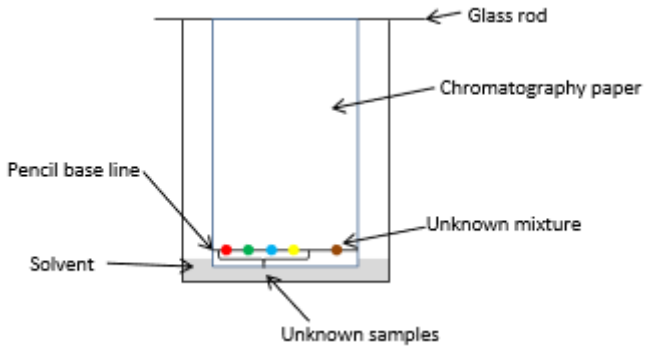
The ratio of the distance moved by a compound (centre of spot from origin) to the distance moved by the solvent can be expressed as its Rf value:

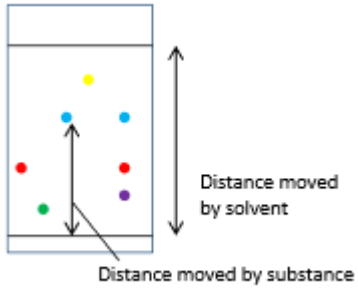
$$Rf = \frac{\text{distance moved by substance}}{\text{distance moved by solvent}}$$

Different compounds have different Rf values in different solvents, which can be used to help identify the compounds.

The compounds in a mixture may separate into different spots depending on the solvent but a pure compound will produce a single spot in all solvents.

Require Practical





Method

- Draw a pencil line 2cm from the bottom
- Mark 5 spots in pencil equal distance along the line
- Use a capillary tube, put a spot of each sample on the pencil dots
- Add water to the beaker 1cm depth
- Tape the paper to a glass rod, rest it on top of the beaker – do not allow the samples to go in the water
- Allow the solvent to travel up the paper
- Use a pencil to show the distance the water travels
- Measure the distance the water has travelled
- Measure the distance each sample has travelled
- Calculate Rf