

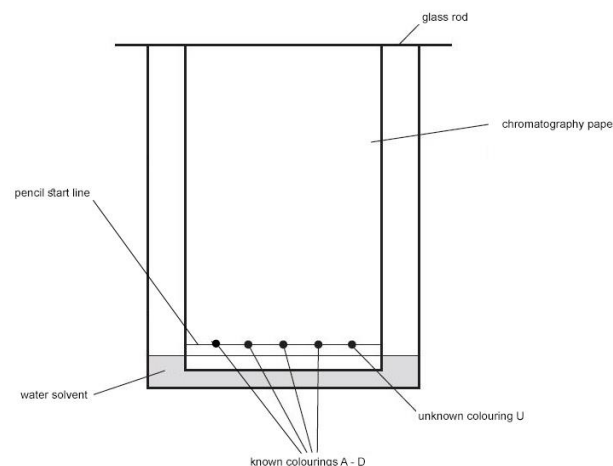
## Pure Substances

1	Definition	A <b>single</b> element or compound, <b>not mixed</b> with any other substance.
2	Using data	Pure elements and compounds melt and boil at specific temperatures. Melting and boiling point data can be used to distinguish pure substances from mixtures.
3	Melting and boiling points	Pure substances have sharp melting/boiling points.

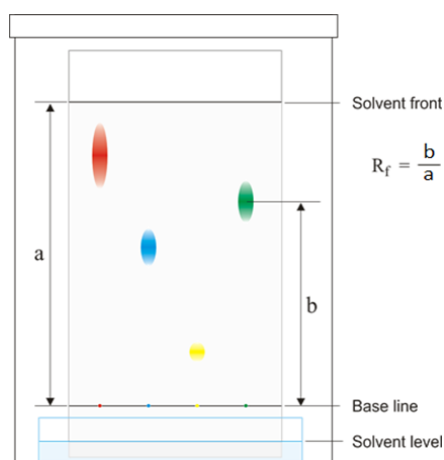
## Formulations

1	Definition	A <b>mixture</b> that has been <b>designed</b> as a <b>useful product</b> .
2	How they are made	Made by mixing the components in <b>measured quantities</b> to ensure the product has the <b>desired properties</b> .
3	Examples	Fuels, cleaning products, , paints, medicines, alloys, fertilisers and food.

## Chromatography Required Practical



## Chromatography: Calculating $R_f$



## Gas Tests

1	Chlorine	Add damp litmus paper, chlorine bleaches it white.
2	Carbon dioxide	Bubble through limewater, carbon dioxide turns in cloudy.
3	Hydrogen	Hold a burning splint at the open end of a test tube. Hydrogen burns with a squeaky pop.
4	Oxygen	Insert a glowing splint into a test tube. The splint relights in oxygen.

## Key Vocabulary

1	Stationary phase	The medium (material) that does not move.
2	Mobile phase	The liquid that is used to move the sample through the stationary phase.
3	Solvent front	The level reached by the top of the moving solvent.
4	Chromatogram	The final result with the substances separated on it.

### Flame Tests

1	Lithium	Crimson
2	Sodium	Yellow
3	Potassium	Lilac
4	Calcium	Orange-red
5	Copper	Green

### Instrumental Methods

1	Advantages	Accurate, rapid and sensitive
2	Flame Emission Spectroscopy	<ul style="list-style-type: none"> <li>The sample is put into a flame and the light given out is passed through a spectroscope.</li> <li>The line spectrum produced can be analysed</li> </ul>

### Tests for Metal Hydroxides

1	Method	Add sodium hydroxide
2	<b>Metal Ion</b>	<b>Precipitate Colour</b>
a	Aluminium, calcium, magnesium	White. Only the aluminium hydroxide precipitate dissolves in excess NaOH
b	Copper (II)	Blue
c	Iron (II)	Green
d	Iron (III)	Brown

### Chemical Tests

Compound		Test	Positive Result
1	Carbonates	1) React with dilute acid 2) Test for carbon dioxide	Limewater turns cloudy
2	Halides	Add silver nitrate solution in the presence of dilute nitric acid	Silver chloride → white precipitate Silver bromide → cream precipitate Silver iodide → yellow precipitate
3	Sulphates	Add barium chloride solution in the presence of dilute hydrochloric acid	White precipitate