

Exercise walk-through

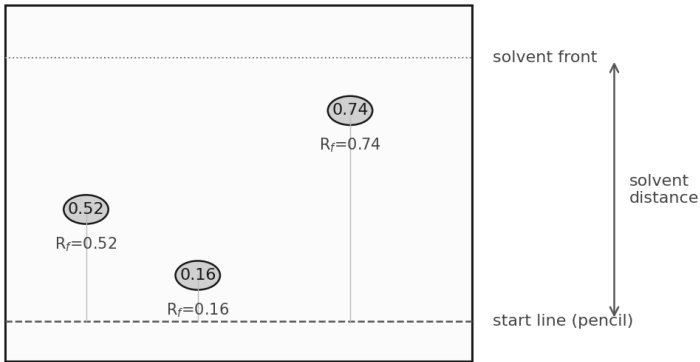
8.2

Identification of common gases (4.8.2)

AQA · GCSE · Chemistry

Chromatography

$R_f = \text{spot distance (from start line)} / \text{solvent distance}$



- Stationary phase — the paper; mobile phase — the solvent.
- Separation by distribution between the two phases.
- $R_f = \text{spot distance over solvent distance}$.

Ion tests

reagent	ion	result
flame	Li / Na / K / Ca / Cu	crimson / yellow / lilac / orange-red / green
NaOH(aq)	Al ³⁺ / Ca ²⁺ / Mg ²⁺	white ppt; only Al dissolves in excess
NaOH(aq)	Cu ²⁺ / Fe ²⁺ / Fe ³⁺	blue / green / brown ppt
acid + AgNO ₃	Cl ⁻ / Br ⁻ / I ⁻	white / cream / yellow ppt
HCl + BaCl ₂	SO ₄ ²⁻	white ppt

- Identification of ions by chemical and spectroscopic means.
- Flame — Li crimson, Na yellow, K lilac, Ca orange-red, Cu green.
- NaOH — white for Al, Ca, Mg; only Al redissolves in excess.
- Halides with acidified silver nitrate; sulfate with acidified barium chloride.

Exercises 2.1·3.1

2.1 State the test and result for hydrogen. [2]

2.2 Which gas bleaches damp litmus paper? [1]

3 Exam-style questions

3.1 Describe the test for carbon dioxide, including the chemical the gas is bubbled through and both observations. [3]

Exercises 2.1·3.1

2.1 State the test and result for hydrogen. [2]

2.1 Place a burning splint in the tube; a squeaky pop.

2.2 Which gas bleaches damp litmus paper? [1]

3 Exam-style questions

2.2 Chlorine.

3.1 Describe the test for carbon dioxide, including the chemical the gas is bubbled through and both observations. [3]

3.1 Bubble the gas through calcium hydroxide solution – limewater; it turns milky/cloudy; it clears again with continued bubbling, confirming CO₂.

Exercise 3.2

3.2 A student tests a gas with a glowing splint – it relights. Name the gas and explain why the other three gases give no such result. [3]

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3.2 Oxygen; hydrogen would burn with a pop rather than relight a splint; carbon dioxide and chlorine do not support combustion/relight – chlorine only bleaches litmus.