Triple Science

C8 Chemical Analysis Revision Checklist

Topic	Content	✓
Purity, Formulations and Chromatography	• Pure Substances – Define purity as a single element or compound not mixed with any other substance, explain how melting and boiling point data can be used to distinguish pure substances from mixtures, describe how the everyday meaning of purity differs from the scientific definition.	
	• Formulations – Define formulations as carefully controlled mixtures designed for specific uses, explain how different components in a formulation are combined in measured quantities to ensure the required properties, describe examples such as fuels, cleaning agents, paints, medicines, alloys, fertilisers, and foods.	
	• Chromatography – Explain how chromatography separates mixtures based on their distribution between a stationary and mobile phase, describe how paper chromatography can be used to distinguish pure substances from mixtures, calculate and interpret Rf values from chromatograms, explain how different solvents can affect the separation of substances in a mixture.	
	• Required Practical 6 – Chromatography – Investigate how paper chromatography can be used to separate and analyse coloured substances	
	• Identify unknown substances using Rf values, explain how chromatography can be applied in forensic and food analysis.	
Identification of Common Gases	• Tests for Gases – Describe the test for hydrogen using a burning splint (squeaky pop test), describe the test for oxygen using a glowing splint (relights in oxygen), describe the test for carbon dioxide using limewater (turns milky/cloudy), describe the test for chlorine using damp litmus paper (bleaches white).	
Identification of Ions by Chemical Means and Spectroscopic Means	• Flame Tests – Describe how flame tests are used to identify metal ions, recall the flame colours for lithium (red), sodium (yellow), potassium (lilac), calcium (orange-red), and copper (green).	
	• Metal Hydroxides – Explain how sodium hydroxide solution is used to identify metal ions by precipitate formation, recall the colours of the precipitates for calcium (white), copper(II) (blue), iron(II) (green), iron(III) (brown), aluminium (white then dissolves in excess NaOH), and magnesium (white).	
	• Tests for Negative Ions – Describe the test for carbonates using dilute acid and limewater, describe the test for halides using silver nitrate solution after adding dilute nitric acid, recall the precipitate colours for chloride (white), bromide (cream), and iodide (yellow), describe the test for sulfates using barium chloride solution after adding dilute hydrochloric acid (white precipitate of barium sulfate).	
	• Required Practical 7 – Identifying Ions – Carry out qualitative tests to identify different ions	
	• Observe and record flame test results, test solutions for metal hydroxide formation using sodium hydroxide, use silver nitrate and barium chloride to identify halides and sulfates, explain how to systematically test an unknown substance.	
	• Flame Emission Spectroscopy – Explain how flame emission spectroscopy identifies metal ions and measures their concentration, describe how different metal ions produce unique line spectra, explain why flame emission spectroscopy is more useful than simple flame tests (sensitive, fast, and accurate).	

Double Science

C8 Chemical Analysis Revision Checklist

Topic	Content	✓
Purity, Formulations and Chromatography	• Pure Substances – Define purity as a single element or compound not mixed with any other substance, explain how melting and boiling point data can be used to distinguish pure substances from mixtures, describe how the everyday meaning of purity differs from the scientific definition.	
	• Formulations – Define formulations as carefully controlled mixtures designed for specific uses, explain how different components in a formulation are combined in measured quantities to ensure the required properties, describe examples such as fuels, cleaning agents, paints, medicines, alloys, fertilisers, and foods.	
	• Chromatography – Explain how chromatography separates mixtures based on their distribution between a stationary and mobile phase, describe how paper chromatography can be used to distinguish pure substances from mixtures, calculate and interpret Rf values from chromatograms, explain how different solvents can affect the separation of substances in a mixture.	
	• Required Practical 5 – Chromatography – Investigate how paper chromatography can be used to separate and analyse coloured substances	
	• Identify unknown substances using Rf values, explain how chromatography can be applied in forensic and food analysis.	
Identification of Common Gases	• Tests for Gases – Describe the test for hydrogen using a burning splint (squeaky pop test), describe the test for oxygen using a glowing splint (relights in oxygen), describe the test for carbon dioxide using limewater (turns milky/cloudy), describe the test for chlorine using damp litmus paper (bleaches white).	