

Year 11 C12: Chemical analysis. Chemistry – Science Faculty

Rationale and Context of Unit:	Core curriculum content:	Tier 2 & Tier 3 vocabulary explicitly taught:
<p>In this chapter, students will learn about various techniques for analysing substances. All students will learn the difference between a pure substance, a mixture, and a formulation, and what is meant by purity. Students will also build upon their understanding of chromatography experiments from Chapter C1 and be able to analyse a chromatogram, both qualitatively and quantitatively using R<sub>f</sub> values. Students will also learn how to describe the different experimental tests for gases, including both the procedure and positive result.</p> <p>Separate science students will also learn how to describe experimental tests for positive and negative ions, and to write balanced symbol equations for them. They will be able to apply their knowledge of all of the tests they have learnt to be able to plan and investigation to identify positive and negative ions. Students will also studied flame emission spectroscopy, and how to interpret instrumental results.</p>	<ul style="list-style-type: none"> <li>• Pure substances and mixtures</li> <li>• Analysing chromatograms</li> <li>• Testing for gases</li> <li>• Tests for positive ions (separate science only)</li> <li>• Tests for negative ions (separate science only)</li> <li>• Instrumental analysis (separate science only)</li> </ul>	<p>Formulation Pure Mixture Qualitative Quantitative Spectroscopy</p>
Challenge and Support:	World wide learning/ links to 21 <sup>st</sup> century:	Cultural capital/ Industry/ Enrichment:
<ul style="list-style-type: none"> <li>• <i>Guided examples of how to calculate R<sub>f</sub> values provided to support pupils.</i></li> <li>• <i>Using the results of chemical analysis to identify unknown compounds.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Chemical tests have a number of applications in the modern world such as in forensic science, consumer advice, environmental protection, health care, quality control and in customs and excise.</li> </ul>	<ul style="list-style-type: none"> <li>• Flame emission spectroscopy is used in pharmaceutical analysis.</li> <li>• Chromatography and other chemical analysis methods are used by CSI investigators.</li> </ul>

Historical, Social, Moral, Spiritual, Cultural context:	Cross curricular links/ literacy/numeracy:	Common misconceptions:
<ul style="list-style-type: none"> <li>Opportunity to consider whether it is misleading/unethical that companies use the word 'pure' to describe a product that is not pure (for example 'pure' water).</li> </ul>	<ul style="list-style-type: none"> <li>Links to maths and physics: using mathematical formulae.</li> </ul>	<ul style="list-style-type: none"> <li><i>Bottled water is pure.</i></li> <li><i>Tap water is pure.</i></li> </ul>
<b>Assessment timeline:</b>		
<ul style="list-style-type: none"> <li><i>regular EPPQs</i></li> <li><i>end of unit test (separate science only)</i></li> <li><i>EPPQ homework task</i></li> <li><i>in lesson questioning and other progress checks</i></li> </ul>		
<b>Home learning</b>		
<ul style="list-style-type: none"> <li><i>EPPQ homework booklet</i></li> </ul>		
<b>Feedback</b>		
<ul style="list-style-type: none"> <li><i>Students self/peer mark homework booklets and set revision goals based on understanding.</i></li> <li><i>Feedback based on the end of the unit test (separate science only).</i></li> </ul>		

**Length of unit (duration indicated in lessons)**

C12.1	C12.2	C12.3	C12.4	C12.5	C12.6	C12 test
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**Unit: C12 Chemical analysis, Chemistry**