

Yr12 Chemistry – Unit 6.2

MAGHULL HIGH SCHOOL – CURRICULUM MAP



Sequence					
TOPIC (S) ALCOHOLS	1. Alcohol production 2. Oxidation of alcohols			3. Elimination	
Knowledge & Skills development	<ul style="list-style-type: none"> Know alcohols are produced industrially by hydration of alkenes in the presence of an acid catalyst. Know ethanol is produced industrially by fermentation of glucose and the conditions for this process. Know ethanol produced industrially by fermentation is separated by fractional distillation and can then be used as a biofuel. Explain the meaning of the term biofuel Justify the conditions used in the production of ethanol by fermentation of glucose Write equations to support the statement that ethanol produced by fermentation is a carbon-neutral fuel and give reasons why this statement is not valid Outline the mechanism for the formation of an alcohol by the reaction of an alkene with steam in the presence of an acid catalyst Discuss the environmental (including ethical) issues linked to decision making about biofuel use. Produce ethanol by fermentation, followed by purification by fractional distillation. 			<ul style="list-style-type: none"> Know alcohols are classified as primary, secondary and tertiary. Know primary alcohols can be oxidised to aldehydes which can be further oxidised to carboxylic acids. Know secondary alcohols can be oxidised to ketones. Know tertiary alcohols are not easily oxidised. Know acidified potassium dichromate(VI) is a suitable oxidising agent. Write equations for these oxidation reactions (equations showing [O] as oxidant are acceptable) Explain how the method used to oxidise a primary alcohol determines whether an aldehyde or carboxylic acid is obtained Use chemical tests to distinguish between aldehydes and ketones including Fehling's solution and Tollens' reagent. Carry out the preparation of an aldehyde by the oxidation of a primary alcohol. Carry out the preparation of a carboxylic acid by the oxidation of a primary alcohol. Know alkenes can be formed from alcohols by acid-catalysed elimination reactions. Know alkenes produced by this method can be used to produce addition polymers without using monomers derived from crude oil. Outline the mechanism for the elimination of water from alcohols. Carry out the preparation of cyclohexene from cyclohexanol, including purification using a separating funnel and by distillation. Required practical 5 Distillation of a product from a reaction. 	
Assessment / Feedback Opportunities	Exam questions – teacher assessed	Exam questions – self assessed	Extended writing task – teacher assessed	Deep marking of required practical in lab books	Topic assessment

Cultural Capital	<ul style="list-style-type: none"> • •
SMSC / Promoting British Values (Democracy, Liberty, Rule of Law, Tolerance & Respect)	<ul style="list-style-type: none"> • Environmental and ethical use of biofuels
Reading opportunities	<ul style="list-style-type: none"> • Recommended Read: https://onlinelibrary.wiley.com/doi/full/10.1111/j.1757-1707.2011.01107.x (science article)
Key Vocabulary	Alkene, catalyst, fermentation, biofuels, fractional distillation, purification, oxidation, oxidising agent, acid catalysed elimination, Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest, Absolute, Uncertainty, Error
Digital Literacy	The use of excel to plot graphs and analyse data MSOffice35 apps including SharePoint
Cross-Curricular Links	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators Biology -biofuel use
Careers	Perfume/ fragrance manufacturer, brewmaster, food scientist,