

SC22: **Hydrocarbons (Paper 2)**

SC23: **Alcohols and Carboxylic Acids (Paper 2)**

SC24: **Polymers (Paper 2)**

Lesson	Objectives Tracker Sheet	Date covered	I know this well	I need to do more work on this
SC22a Alkanes and alkenes	C9.10C Recall the formulae of molecules of the alkanes, methane, ethane, propane and butane, and draw the structures of these molecules, showing all covalent bonds			
	C9.11C Explain why the alkanes are saturated hydrocarbons.			
	C9.12C Recall the formulae of molecules of the alkenes, ethene, propene, butene, and draw the structures of these molecules, showing all covalent bonds (but-1-ene and but-2-ene only).			
	C9.13C Explain why the alkenes are unsaturated hydrocarbons, describing that their molecules contain the functional group C=C.			
SC22b Reactions of alkanes and alkenes	C9.14C Recall the addition reaction of ethene with bromine, showing the structures of reactants and products, and extend this to other alkenes.			
	C9.15C Explain how bromine water is used to distinguish between alkanes and alkenes.			
	C9.16C Describe how the complete combustion of alkanes and alkenes involves the oxidation of the hydrocarbons to produce carbon dioxide and water.			
SC23a Ethanol production	C9.33C Describe the production of ethanol by fermentation of carbohydrates in aqueous solution, using yeast to provide enzymes.			
	C9.34C Explain how to obtain a concentrated solution of ethanol by fractional distillation of the fermentation mixture.			
SC23b Alcohols	C9.26C Recall the formulae of molecules of the alcohols, methanol, ethanol, propanol (propan-1-ol only) and butanol (butan-1-ol only), and draw the			

	structures of these molecules, showing all covalent bonds.			
	C9.27C Recall that the functional group in alcohols is –OH.			
	C9.32C Recall members of a given homologous series have similar reactions because their molecules contain the same functional group and use this to predict the products of other members of these series.			
SC23b The combustion of alcohols – Core Practical	C9.28C Investigate the temperature rise produced in a known mass of water by the combustion of the alcohols, ethanol, propanol, butanol and pentanol.			
SC23c Carboxylic acids	C9.29C Recall the formulae of molecules of the carboxylic acids, methanoic, ethanoic, propanoic and butanoic acids, and draw the structures of these molecules, showing all covalent bonds.			
	C9.30C Recall that the functional group in carboxylic acids is –COOH.			
	C9.30C Recall that the functional group in carboxylic acids is –COOH.			
	C9.32C Recall members of a given homologous series have similar reactions because their molecules contain the same functional group and use this to predict the products of other members of these series.			
SC24a Addition polymerisation	C9.17C Recall that a polymer is a substance of high average relative molecular mass made up of small repeating units.			
	C9.18C Describe: how ethene molecules can combine together in a polymerisation reaction that the addition polymer formed is called poly(ethene) (conditions and mechanisms not required).			
	C9.25C Recall that: DNA is a polymer made from four different monomers called nucleotides (names of nucleotides not required)			

	<p>starch is a polymer based on sugars</p> <p>proteins are polymers based on amino acids.</p>			
SC24b Polymer properties and uses	<p>C9.19C Describe how other addition polymers can be made by combining together other monomer molecules containing C=C, to include poly(propene), poly(chloroethene) (PVC) and poly(tetrafluoroethene) (PTFE) (conditions and mechanisms not required).</p>			
	<p>C9.20C Deduce the structure of a monomer from the structure of an addition polymer and vice versa.</p>			
	<p>C9.21C Explain how the uses of polymers are related to their properties and vice versa: including poly(ethene), poly(propene), poly(chloroethene) (PVC) and poly(tetrafluoroethene) (PTFE).</p>			
SC24c Condensation polymerisation	<p>C19.22C H Explain: why polyesters are condensation polymers how a polyester is formed when a monomer molecule containing two carboxylic acid groups is reacted with a monomer molecule containing two alcohol groups how a molecule of water is formed each time an ester link is formed.</p>			
SC24d Problems with polymers	<p>C9.23C Describe some problems associated with polymers including the: availability of starting materials persistence in landfill sites, due to non-biodegradability gases produced during disposal by combustion requirement to sort polymers so that they can be melted and reformed into a new product.</p>			
	<p>C9.24C Evaluate the advantages and disadvantages of recycling polymers, including economic implications, availability of starting materials and environmental impact.</p>			