SC22 Hydrocarbons

Topic Progression Checklist

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Subtopics and Learning Objectives	Start	End
SC22a Alkanes and Alkenes		
State the names, formulae and structures of the first four members of the alkane homologous series.		
Distinguish between saturated hydrocarbons and unsaturated hydrocarbons.		
State the names, formulae and structures of the first four members of the alkene homologous series.		
Define the term 'functional group' and describe the functional group in alkenes.		
Describe the similarities and differences between butane, but-1-ene and but-2-ene.		
SC22b Reactions of alkanes and alkenes		
Describe what an 'addition reaction' is.		
Describe the reaction of bromine with ethene and other alkenes.		
Recall how bromine water is used to distinguish between alkanes and alkenes.		
Explain how the bromine water test distinguishes between alkanes and alkenes.		
Recall the products of complete combustion of alkanes and alkenes.		
Explain why the products of the complete combustion of a hydrocarbon are carbon dioxide and water.		

SC23 Alcohols and Carboxylic Acids

Topic Progression Checklist

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Subtopics and Learning Objectives	Start	End
SC23a Ethanol Production		
State the name and formula of the alcohol in alcoholic drinks.		
Describe how alcoholic drinks are made from carbohydrates.		
Write word equations for the formation of ethanol from carbohydrates.		
Write balanced equations for the formation of ethanol from carbohydrates.		
Explain how fractional distillation can be used to produce more concentrated alcohol solutions.		

SC23b Alcohols		
State the names, formulae and structures of the first four members of the alcohol homologous series.		
State the functional group present in all alcohols.		
Describe some chemical reactions of alcohols.		
Explain why alcohols have similar chemical properties.		
Use the chemical properties of the first four alcohols to predict the properties of other alcohols.		
SC23c Carboxylic Acids		
State the names, formulae and structures of the first four members of the carboxylic acid series.		
Recall the functional group present in all carboxylic acids.		
Recall that carboxylic acids can be formed by the oxidation of alcohols.		
Describe some chemical properties of carboxylic acids.		
Explain why carboxylic acids take part in similar chemical reactions.		
Use the properties of the first four carboxylic acids to predict the properties of other carboxylic acids.		

SC24 Polymers

Topic Progression Checklist

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Subtopics and Learning Objectives	Start	End
SC24a Addition Polymerisation		
Recall the meaning of the term polymer.		
Describe how ethene molecules join together to form poly(ethene).		
Describe how alkenes undergo addition polymerisation.		
Recall that DNA is a polymer made from four different monomers called nucleotides.		
Recall that starch is a polymer made from sugars.		
Recall that proteins are polymers made from amino acids.		
SC24b Polymer Properties and uses		
Describe how other addition polymers are formed from their monomers: poly(propene), poly(chloroethene) (PVC) and poly(tetrafluoroethene) (PTFE).		
Deduce the structure of a polymer from the structure of a monomer.		
Deduce the structure of a monomer from the structure of a polymer.		

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Subtopics and Learning Objectives	**Start**	**End**
Explain how the uses of a polymer are related to its properties and vice versa.		
SC24c Condensation Polymerisation		
H Explain what is meant by a condensation reaction.		
H Draw the structure of a molecule with two carboxylic acid groups.		
H Draw the structure of a molecule with two alcohol groups.		
H Draw the structure of a polyester.		
H Explain how a molecule of water is formed each time an ester link is formed.		
SC24d Problems with Polymers		
State the starting material for most synthetic polymers.		
Describe the problems associated with the production and disposal of synthetic polymers.		
Describe some advantages of recycling polymers.		
Describe some disadvantages of recycling polymers.		
Evaluate the advantages and disadvantages of recycling polymers.		