

Alkanes

Specification reference	Checklist questions	
4.1.2 a	Can you describe alkanes as saturated hydrocarbons containing single C–C and C–H bonds as σ -bonds (overlap of orbitals directly between the bonding atoms), with free rotation of the σ -bond?	<input type="checkbox"/>
4.1.2 b	Can you explain the tetrahedral shape and bond angle around each carbon atom in alkanes in terms of electron pair repulsion?	<input type="checkbox"/>
4.1.2 c	Can you explain the variations in boiling points of alkanes with different carbon-chain length and branching, in terms of induced dipole–dipole interactions (London forces)?	<input type="checkbox"/>
4.1.2 d	Can you describe the low reactivity of alkanes with many reagents in terms of the high bond enthalpy and very low polarity of the σ -bonds present?	<input type="checkbox"/>
4.1.2 e	Can you describe complete combustion of alkanes, as used in fuels, and the incomplete combustion of alkane fuels in a limited supply of oxygen with the resulting potential dangers from CO?	<input type="checkbox"/>
4.1.2 f	Can you describe the reaction of alkanes with chlorine and bromine by radical substitution using ultraviolet radiation, including a mechanism involving homolytic fission and radical reactions in terms of initiation, propagation and termination?	<input type="checkbox"/>
4.1.2 g	Can you describe the limitations of radical substitution in synthesis by the formation of a mixture of organic products, in terms of further substitution and reactions at different positions in a carbon chain?	<input type="checkbox"/>