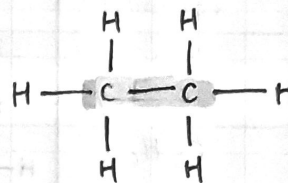


ALKANES AND ALKENES

ALKANES

- contain only one carbon-carbon single bond
- C_nH_{2n+2} , $n \geq 1$
- saturated hydrocarbons (single bonds)



name	molecular formula	structural formula
methane	CH_4	$\begin{array}{c} H \\ \\ H-C-H \\ \\ H \end{array}$
ethane	C_2H_6	$\begin{array}{c} H & H \\ & \\ H-C & -C-H \\ & \\ H & H \end{array}$
propane	C_3H_8	$\begin{array}{c} H & H & H \\ & & \\ H-C & -C & -C-H \\ & & \\ H & H & H \end{array}$

physical properties

DOWN

↓

methane

ethane

propane

butane

pentane

- melting and boiling points increase
- become more viscous (flow less easily)
- become less flammable

chemical properties

combustion

- alkanes burn in excess oxygen to produce carbon dioxide and water vapour
- exothermic

substitution reactions

- alkanes react with halogens in the presence of ultraviolet (UV) light
- a hydrogen atom is replaced/substituted by a halogen atom to form a mixture of products

eg. methane + chlorine $\xrightarrow[\text{light}]{\text{UV}}$ chloromethane + hydrogen chloride

