



Teaching resource 15

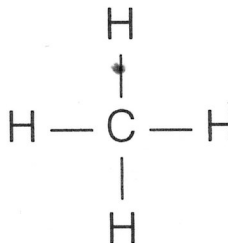
Types of hydrocarbons: Saturated hydrocarbons

Hydrocarbons are chemical compounds that are formed from only hydrogen atoms and carbon atoms

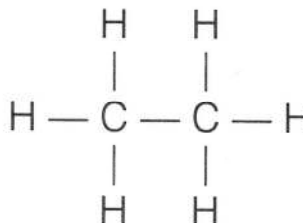
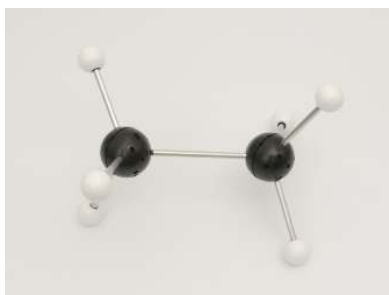
Saturated hydrocarbons (also known as paraffins and **alkanes**) are the simplest hydrocarbons: they are composed entirely of **single bonds** and are saturated with hydrogen. Saturated hydrocarbons are the basis of petroleum fuels.

The carbon atom in all saturated structures is **tetrahedral**. The general formula for saturated hydrocarbons is C_nH_{2n+2} . The table below illustrates the chemical formula and structure of some simple hydrocarbons together with their molecular representation. Note how the models show the correct angle of the bonds.

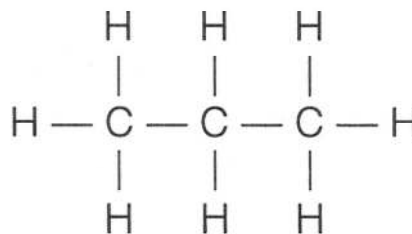
Construct a model of ethane C_2H_6 . You will see that the bond allow **free rotation** so that the methyl groups CH_3 can be rotated relative to each other – this is typical of single bond links.



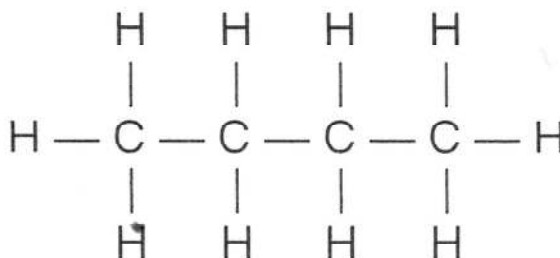
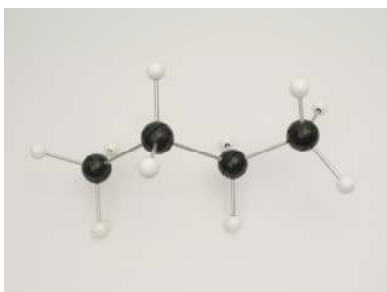
Methane CH_4



Ethane C_2H_6



Propane C₃H₈



Butane C₄H₁₀

Products which can be used for this demonstration:

0045 Orbit Foundation Set
 0046 Orbit Basic Structures Class Set | 0026 Orbit Basic Structures Individual Set
 0047 Orbit Organic/Inorganic Class Set | 0027 Orbit Organic/Inorganic Individual Set
 0049 Orbit Biochemistry Class Set | 0029 Orbit Biochemistry Individual Set
 0041 Large Class Set

For class demonstrations use the Unit large demonstration set 1950

Or you can order sufficient individual atoms from the Orbit, Minit or Unit systems for your individual needs.