Organic Compounds:

Organic compounds are a class of compounds which are based upon CARBON. In an organic molecule the carbon MUST be attached to hydrogen. The carbon molecules most commonly form a chain or BACKBONE and the other elements, hydrogen and possibly oxygen and nitrogen or others, branch off from that backbone.

There are some compounds that contain carbon that ARE NOT classified as organic. These include any carbon compounds without HYDROGEN and even a few with hydrogen:

1. Carbonates: Ionic compounds that have carbonate (CO32-) as the anion

Ex: MgCO3 : magnesium carbonate

Na2CO3 : sodium carbonate

Al2(CO3)3 : aluminum carbonate

2. Cyanides: Ionic compounds that have cyanide (CN-) as the anion

Ex: Be(CN)2 : beryllium cyanide

KCN : potassium cyanide

HCN : hydrocyanic acid

3. Carbides: Ionic compounds with carbide (C-4, C2-2, or C3-4) as the anion

Ex: Na2C2 : sodium carbide

MgC : magnesium carbide

CaC3 : calcium carbide

Other than these, any compound containing carbon is an organic compound.

Organic compounds have many important uses and are also the basis of all living things. In fact the term ORGANIC comes from the term ORGANISM.

Organic compounds have many variations and include:

HYDROCARBONS, which make up many of the fuels we burn.

ALCOHOLS, which have many uses including as solvents.

SUGARS, which have the property of sweetness and can be used by our bodies in cellular respiration.

PROTEINS, which are necessary for the structure of all living tissues.

**HYDROCARBONS:**

These are the simplest of the organic molecules and consist of only hydrogen and carbon. There are thousands of naturally occurring and synthetic hydrocarbons. The naming of these compounds can be complicated, but you can learn the first few:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Formula** | **Structure** | **Structural Formula** | **Common Uses/Names** |
| methane |  |  |  |  |
| ethane |  |  |  |  |
| propane |  |  |  |  |
| butane |  |  |  |  |
| pentane |  |  |  |  |

**ALCOHOLS:**

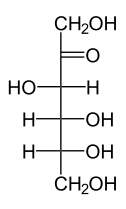
These compounds are very much like hydrocarbons except that one of the hydrogens is replaced by a HYDROXYL group or an O-H group.

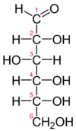
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Formula** | **Structure** | **Structural Formula** | **Common Uses/Names** |
| methanol/  methyl alcohol |  |  |  |  |
| ethanol/  ethyl alcohol |  |  |  |  |
| propanol/  propyl alcohol |  |  |  |  |
| butanol/  butyl alcohol |  |  |  |  |
| pentanol/  propyl alcohol |  |  |  |  |

**SIMPLE SUGARS**

Simple sugars are, in fact, not really very simple at all. These are compounds of carbon, hydrogen and oxygen. The carbons are again arranged in a chain. Single chain sugars are called MONOsaccharides, these include glucose and fructose. More complicates sugars are formed when two of these monosaccharides combine and form a Disaccharide like maltose, lactose or sucrose.

We don’t need to know the detailed structure of these delicious little molecules, but here are a couple of examples:





**PROTEINS**