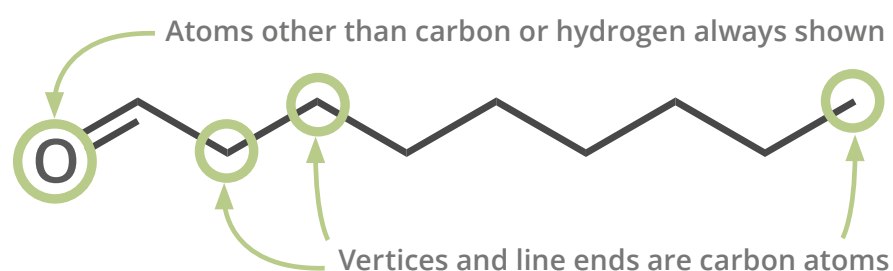


# A BASIC GUIDE TO DECODING ORGANIC COMPOUND NAMES

The names of organic molecules can be long and look like a confusing mix of words and numbers. However, they follow a particular set of rules which allows their structure to be decoded from their name. This graphic summarises some basic rules, and shows how they apply to some organic molecules.

## ORGANIC COMPOUND REPRESENTATION

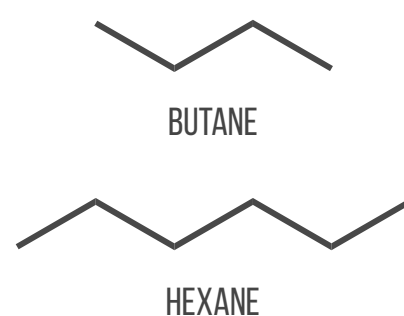


Organic molecules are usually represented using skeletal formula. In these diagrams, the line ends and vertices represent carbon atoms. Hydrogen atoms are 'implied' – that is, they are not usually shown, but each carbon must have four bonds, and it's assumed they have the required number of hydrogens for this to be the case. Atoms other than carbon or hydrogen are always shown, and hydrogen atoms are shown if they are bonded to one of these 'heteroatoms'.

## PARENT CHAIN

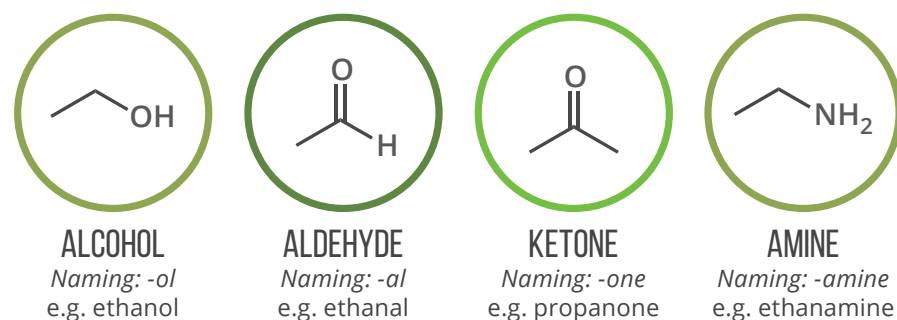
NUMBER OF CARBONS DENOTED BY PREFIX

- |         |         |
|---------|---------|
| 1 METH- | 6 HEX-  |
| 2 ETH-  | 7 HEPT- |
| 3 PROP- | 8 OCT-  |
| 4 BUT-  | 9 NON-  |
| 5 PENT- | 10 DEC- |



Part of the organic molecule's name denotes how many carbons make up its 'parent chain'. This is defined as the longest continuously connected chain of carbon atoms including the functional group in the molecule. Carbons not included are dealt with as 'side chains'.

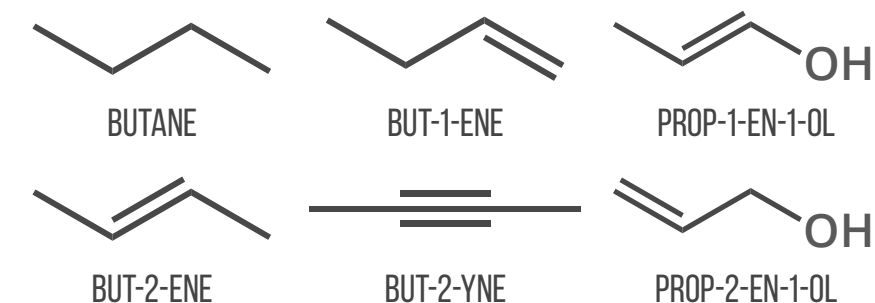
## FUNCTIONAL GROUPS



A molecule's functional group is the group of atoms that give it its chemical properties and reactivity. It's usually indicated by a suffix at the end of the name, with a number indicating its position if this is required for clarity. There are many different functional groups.

Different functional groups have different suffixes. Alcohols (-ol), aldehydes (-al), & ketones (-one) are examples of functional groups.

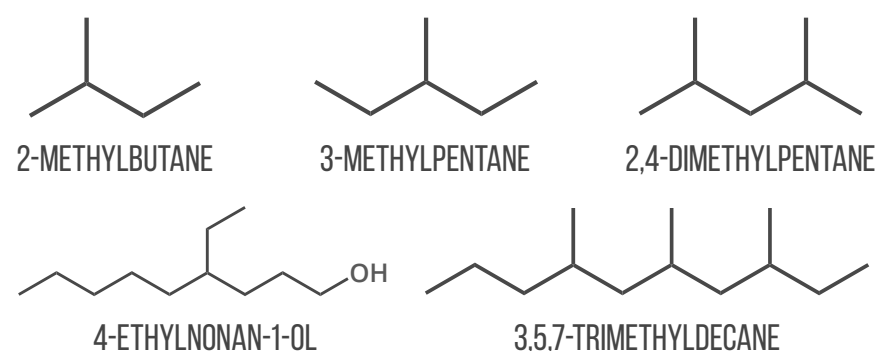
## BOND TYPES



Carbon atoms can be linked by single bonds, double bonds, or even triple bonds. The name of the molecule reflects the bonds present.

- an- present in name – molecule contains only single bonds
  - en- present in name – molecule contains at least 1 double bond
  - yn- present in name – molecule contains at least 1 triple bond
- For double and triple bonds, numbers indicate their position.

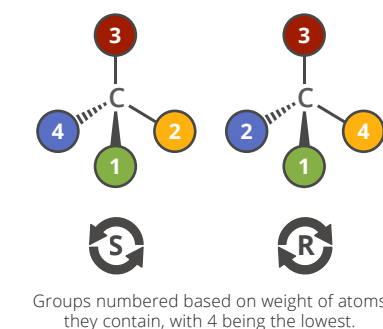
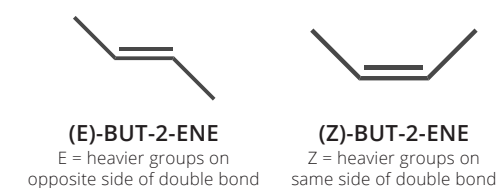
## SIDE CHAINS



Molecules can have one or more carbons that aren't part of the parent chain, referred to as 'side chains'. The number of carbons in the side chain is used to name it, in the same way as for the parent chain, but the ending -yl is then added. A number is added to show the location of the side chain on the parent chain. If there is more than one of the same side chain at different points, the prefixes di- (2), tri- (3), or tetra- (4) are used in the name.

## STEREISOMERISM

2 MAIN TYPES: E-Z ISOMERISM (BELOW) & OPTICAL ISOMERISM (RIGHT)



Chemical names sometimes contain a letter in brackets; for example, (Z), (E), (R), or (S). These refer to stereoisomerism: when a molecule has the same chemical formula as another, but a different arrangement in 3D space. This can be due to a different arrangement of atoms around a double bond, or when a molecule has two different arrangements of four different groups of atoms around a central carbon which are non-superimposable mirror images.

