



# Cambridge IGCSE Chemistry

## Topic 14: Organic chemistry

### Names of compounds

#### Notes





Name and draw the structures of methane, ethane, ethene, ethanol, ethanoic acid and the products of the reactions in 14.4-14.6

- Prefixes (beginning of the name)
  - o Any compound with 1 carbon has the prefix of: Meth-
  - o 2 carbons: Eth-
  - o 3 carbons: Prop-
  - o 4 carbons: But-
  - o Remember the first 4 prefixes using MEPB Monkeys Eat Peanut Butter
- The suffix of any compound refers to the functional group
  - o Alkanes –ane (C-C) e.g. ethane
  - o Alkenes –ene (C=C) e.g. ethene
  - o Alcohols –ol (OH) e.g. ethanol
  - o Carboxylic acids –anoic acid (-COOH) e.g. ethanoic acid

methane	$\text{CH}_4$	<pre>  H     H-C-H       H</pre>
ethane	$\text{C}_2\text{H}_6$	<pre>  H H       H-C-C-H         H H</pre>
ethene	$\text{C}_2\text{H}_4$	<pre>  H   H    \ /     C=C    / \   H   H</pre>
ethanol	$\text{C}_2\text{H}_5\text{OH}$	<pre>  H H       H-C-C-O-H         H H</pre>
ethanoic acid	$\text{CH}_3\text{COOH}$	<pre>  H   O       // H-C-C       \   H   O-H</pre>





*(Extended only) Name and draw the structures of the unbranched alkanes, alkenes (not cis-trans), alcohols and acids containing up to four carbon atoms per molecule*

- use above information and examples given of ways to go through thinking to name compounds of alkanes, alkenes, alcohols and acids containing up to four carbon atoms per molecule

*State the type of compound present, given a chemical name ending in -ane, -ene, -ol or -oic acid or a molecular structure*

- -Ane : alkane
  - Functional group (same group of atoms in each molecule that makes an alkane) is C-H / C-C (NOT C=C)
- -Ene : alkene
  - Functional group is C=C
- -Ol : alcohol
  - Functional group is OH
- -Oic acid : carboxylic acid
  - Functional group is COOH

*(Extended only) Name and draw the structural formulae of the esters which can be made from unbranched alcohols and carboxylic acids, each containing up to four carbon atoms*

- General rule
  - Alcohol + carboxylic acid → ester + water
  - e.g. Methanol + Ethanoic acid → Methyl Ethanoate + H<sub>2</sub>O
- How to name esters
  - (prefix of alcohol + yl) + (name of carboxylic acid minus the "oic acid" + oate)
  - E.g. Meth-yl Ethan-oate

- This ester is formed (from the example)
- the alcohol part is to the right normally with an H from the -OH functional group being lost.
- The carboxylic acid part is to the left with an OH from the -COOH functional group being lost
- $H + OH \rightarrow H_2O$  (a by-product).

