Chemical analysis Triple

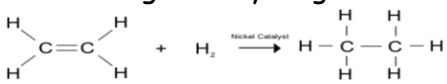
Threshold Concept

What other organic compounds are made out of?

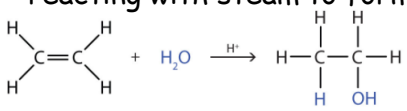
Reactions of Alkenes

Alkenes will go through a number of different addition reactions to form new products.

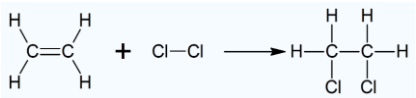
Hydrogenation – reacting with hydrogen to form alkanes



Hydration – reacting with steam to form alcohols

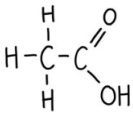


Halogenation – reacting with halogens to form a haloalkane



Carboxylic acids

Carboxylic acids are weak acids with the functional group COOH.



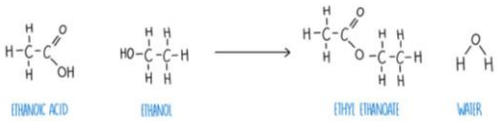
Ethanoic acid

Carboxylic acids behave like other acids and react with metals/metal compounds to form salts.

CARBOXYLIC ACID + METAL ⟶ SALT + HYDROGEN

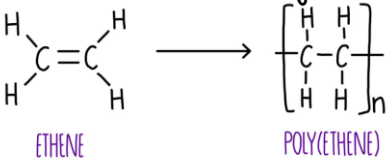
ETHANOIC ACID + CALCIUM ⟶ CALCIUM ETHANOATE + HYDROGEN

Esters are formed from reacting carboxylic acids and alcohols. Their functional group is COO.



Addition polymerisation

Addition polymerisation involves breaking the carbon-carbon double bond of the monomer which allows them to join and form a polymer.

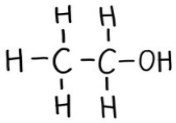


Keywords

Functional group – a group of atoms that are responsible for how a compound reacts
Homologous series – a group of compounds that share a functional group and react similarly
Alcohol – a group of compounds with the functional group OH
Carboxylic acids – a group of compounds with the functional group COOH
Esters – a group of compounds with the functional group COO

Alcohols

Alcohols are a group of compounds with the functional group is OH.
The general formula is $C_nH_{2n+1}OH$

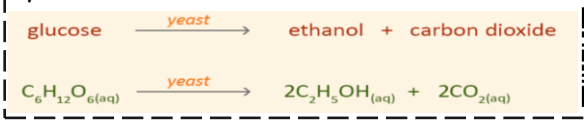


Ethanol

Uses:
- Alcoholic drinks
- Solvents
- Fuels

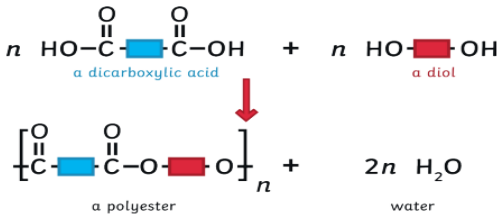
Fermentation

Ethanol can be produced by fermentation.
Glucose is converted into ethanol using enzymes in yeast.



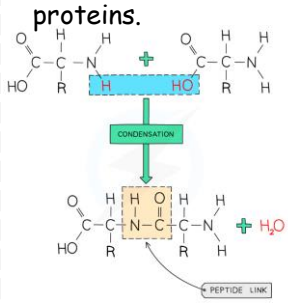
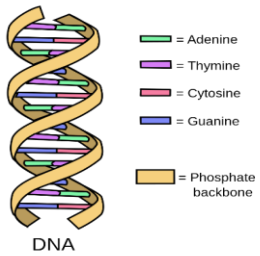
Condensation polymerisation

Condensation polymerisation requires 2 monomers; a diol and a dicarboxylic acid.
Water is always a by-product of this type of polymerisation.



Naturally occurring polymers

Amino acids can join to form a polypeptide. These long chains form proteins.



DNA is a large natural polymer. It's monomers are called nucleotides and the form a double helix structure.