

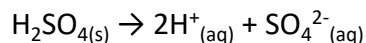
# C10 Organic reactions - Triple

## Keywords

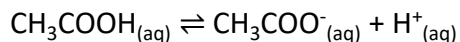
<b>Functional Group</b>	An atom or group of atoms that give organic compounds their characteristic reactions
<b>Homologous series</b>	A group of related organic compounds that have the same functional group
<b>Carboxylic Acid</b>	A homologous series with the functional group -COOH
<b>Ester</b>	Formed when a carboxylic acid reacts with an alcohol
<b>Alcohol</b>	A homologous series with the functional group -OH
<b>Alkene</b>	Unsaturated hydrocarbons (contain a C=C double bond)

## 3. Strong vs Weak acids

Strong acids ionise completely eg:

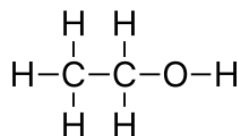


Ionisation of weak acids is reversible ie:



This is called **partial ionisation**.

## 1. Alcohols



### Combustion:

Alcohol + oxygen  $\rightarrow$  carbon dioxide + water

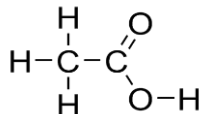
### Reaction with sodium:

Sodium + ethanol  $\rightarrow$  sodium ethoxide + Hydrogen

### Reaction with an oxidising agent:

Alcohol + oxygen  $\rightarrow$  carboxylic acid + water

## 4. Carboxylic acids



### Reaction with carbonates:

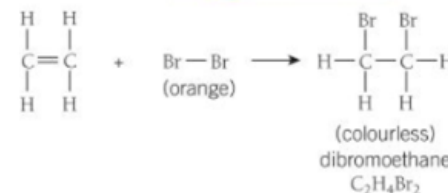
Carboxylic acid + carbonate  $\rightarrow$  salt + water + carbon dioxide

### Reaction with alcohol:

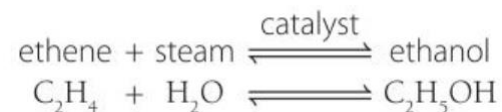
Carboxylic acid + alcohol  $\rightarrow$  ester + water

## 2. Alkenes

### Reaction with the halogens:

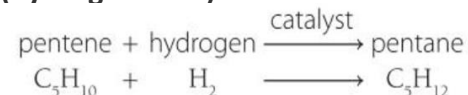


### Reaction with steam (hydration):



### Reaction with hydrogen

#### (hydrogenation):



## 5. Making esters

Esters are made when carboxylic acids react with alcohols in the presence of **sulphuric acid acting as a catalyst**.

When naming esters the alcohol is named first then the carboxylic acid. The **OATE** suffix is placed on the end of the chemical to tell you it is an ester

Methanoic acid + ethanol  $\rightarrow$  Ethyl methanoate + water