

Topics: Carbon and its Compounds

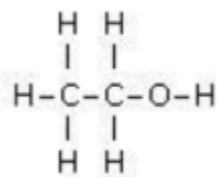
Subtopics: Some important Carbon Compounds – Ethanol and Ethanoic acid

Some Important Carbon Compounds

Ethanol or Ethyl Alcohol

The structural formula of ethanol is given as follows:

Structural formula



Its molecular formula is $\text{CH}_3\text{CH}_2\text{OH}$ or $\text{C}_2\text{H}_5\text{OH}$

Properties of Ethanol

1.

Action with Sodium Metal

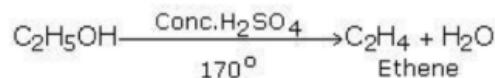
When a piece of sodium is dropped in ethyl alcohol, bubbles of hydrogen gas are observed.



2.

Action with Concentrated Sulphuric Acid

At 170°C ethyl alcohol undergoes dehydration when treated with concentrated H_2SO_4 to form ethane.



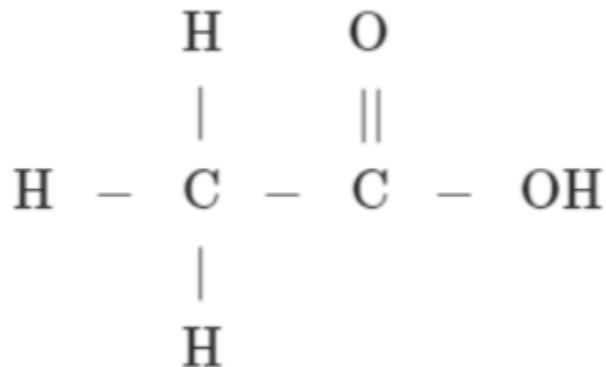
Ethanoic Acid

Acetic acid is one of the commonest organic acids and has been known for quite a long time in the form of vinegar. It is also present free in a number of fruit juices. In the combined state it occurs in many oils and essential oils.

Formula: CH_3COOH , IUPAC Name: Ethanoic acid

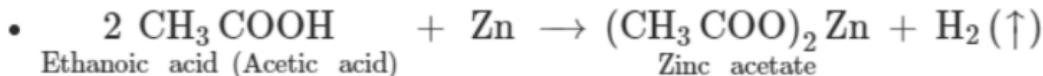
Acetic acid is a colourless, corrosive liquid with a pungent smell at ordinary temperatures. But below 290K, it solidifies to an icy mass called glacial acetic acid.

Structure of acetic acid



Chemical properties

- **Acidic nature:** Acetic acid is a weak acid. The following reactions prove the acidic nature of acidic acid.
 - It turns blue litmus red.
 - It reacts with active metals such as Zn and Mg to evolve hydrogen gas.



- **Reaction with alcohol or esterification reaction:** The reaction of a carboxylic acid with an alcohol to form an ester is known as **esterification reaction**.

When ethanoic acid reacts with ethanol in the presence of an acid, ethyl ethanoate is formed.



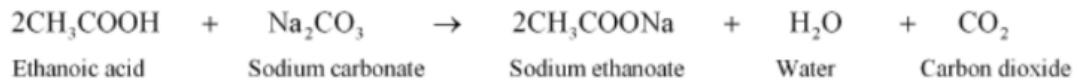
Esters react in the presence of an acid or a base to give back alcohol and sodium salt of carboxylic acid as:



This reaction is used in the preparation of soaps and is known as saponification reaction.

Reaction with carbonates and hydrogen carbonate:

Carbonates and bicarbonates are also basic in nature and react with ethanoic acid to form salt and water. Carbon dioxide is also formed in the reaction. The chemical equations involved are given as:



Sodium ethanoate is produced in the reaction. It is commonly known as sodium acetate.