

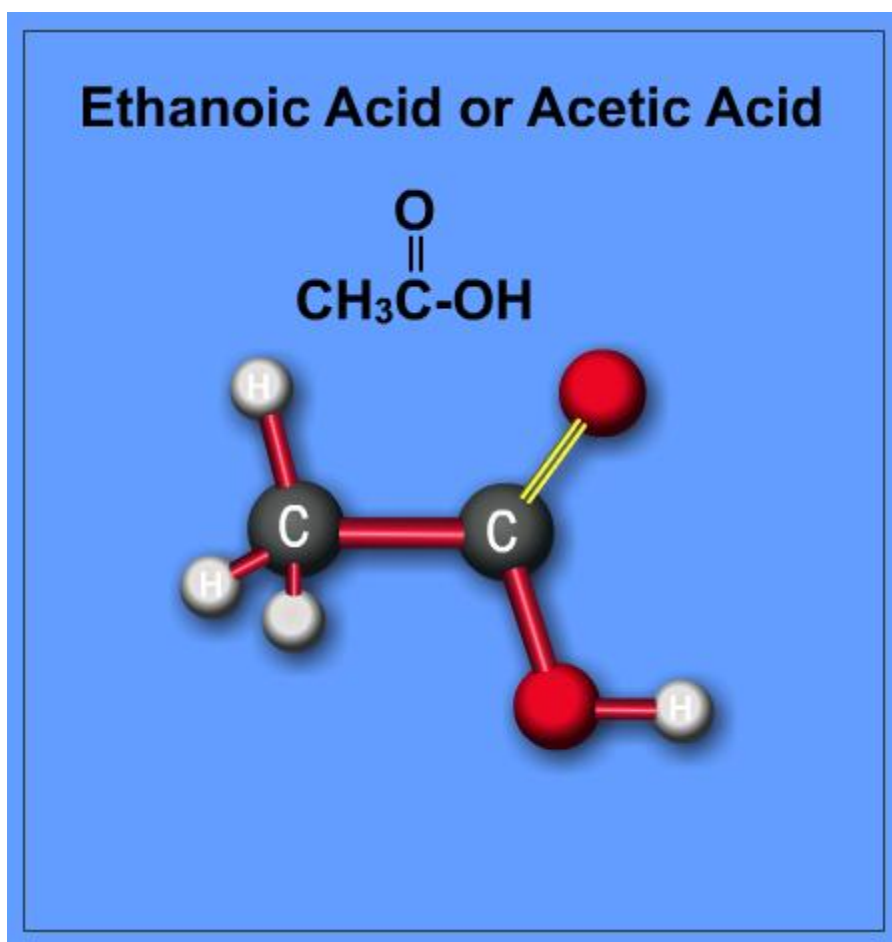
Objective

To study the following properties of acetic acid (ethanoic acid):

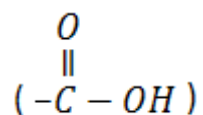
- Odour
- Solubility in water
- Effect on litmus
- Reaction with sodium bicarbonate

Theory

What you know about acetic acid?



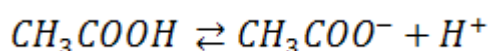
Acetic acid is an organic acid with the formula $\text{CH}_3\text{-COOH}$. Its functional group is carboxylic acid group.



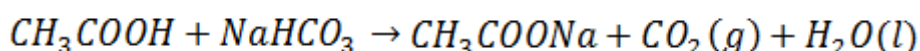
Acetic acid is a monocarboxylic acid because it contains only one "COOH" group. It has a sour taste and pungent smell. It is the main component of vinegar. Vinegar is typically 3-7% solution of acetic acid in water. Vinegar is mainly used as a preservative in food and in the pickling of vegetables. Water free acetic acid is known as glacial acetic acid.

What are the properties of acetic acid?

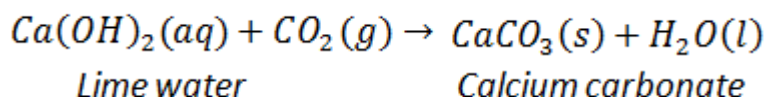
1. Acidic character
2. When dissolved in water, acetic acid undergoes dissociation to form hydrogen (H^+) ion. Because of the release of a proton, acetic acid has an acidic character. It turns blue litmus paper red, indicating that it is acidic in nature. However, it is a weak acid because it does not dissociate completely in aqueous solution.



3. Reaction with sodium bicarbonate
4. Acetic acid reacts with sodium bicarbonate to produce carbon dioxide.



On passing CO_2 gas through lime water, the lime water turns milky. The milky appearance of lime water is due to the formation of solid calcium carbonate ($CaCO_3$).



Common uses of acetic acid:

1. Acetic acid is used as coagulant in the manufacture of rubber.
2. It is used in the manufacture of various dye stuffs and perfumes.
3. It is used in the manufacture of rayon fibre.
4. It is used as a solvent.

Learning Outcomes

1. Students understand the chemical properties of acetic acid after this experiment.
2. Students acquire skills to perform & visualize the reaction of acetic acid with the following.

- Water
 - Litmus paper
 - Sodium bicarbonate
3. Students will be able to properly use glassware like thistle funnel, delivery tubes, etc., in the real lab.
 4. Based on acquired skills, the student will be able to analyze a given sample & recognize it as acetic acid.