



BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

Class- X
Chemistry
Laboratory Activity

Week- 9th Nov to 13th Nov'20

No. of blocks- 1

Guidelines

Dear Students

- Refer to the given video links and observe.
- Record the given experiment in Chemistry practical file.

Topic: Laboratory Activity

Learning outcomes

Each student will be able to:

- observe different chemical reactions
- discuss the properties of acids
- acquire skills to perform experiments by observing videos and simulation

Lesson Development

Aim

To study the properties of acids (HCl) on the basis of their reaction with

- a) Litmus solution (Blue/Red)
- b) Zinc metal
- c) Solid sodium carbonate

Material Required

Test tube, test tube stand, cork, test tube holder, boiling tube, droppers, flat bottom flask, burner, match box, beaker, funnel, litmus paper/solution, fresh lime water, glass rod, dilute HCl, zinc granules, solid sodium carbonate.

Links for the experiment

<http://amrita.olabs.edu.in/?sub=73&brch=3&sim=6&cnt=14>

<http://amrita.olabs.edu.in/?sub=73&brch=3&sim=6&cnt=72>

Theory

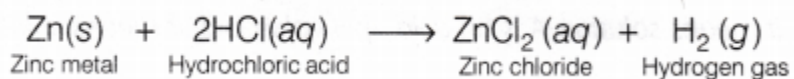
An acid is a substance which furnishes H^+ ions when dissolved in water Example: HCl, H_2SO_4 etc.

1. Action of litmus on acids

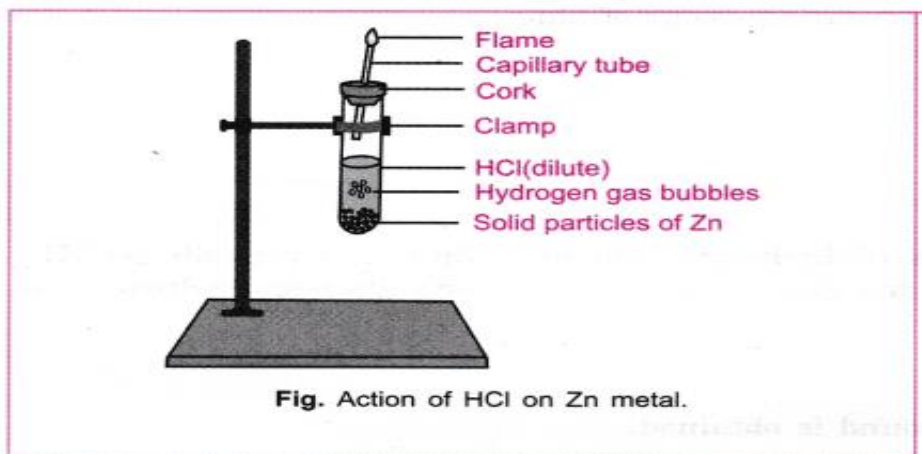
Acids turn blue litmus red and do not affect red litmus.

2. Reaction between Zinc metal and acids

On reacting with zinc metal, HCl forms a salt, zinc chloride ($ZnCl_2$) and hydrogen gas (H_2) is liberated.

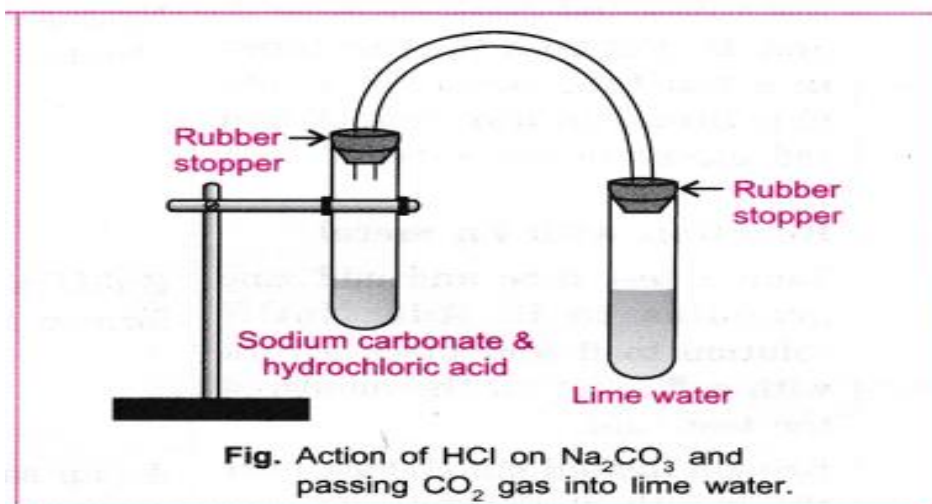
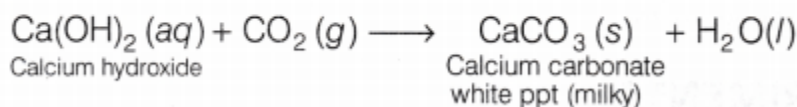
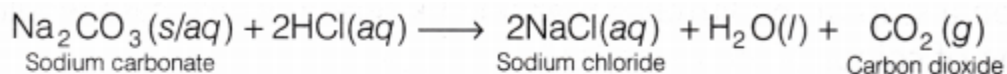


Hydrogen gas burns in air with a pop sound.



3. Reaction between sodium carbonate and acid

HCl reacts with sodium carbonate (aqueous/solid) to liberate carbon dioxide (CO₂) which turns lime water milky due to the formation of calcium carbonate.



Observation Table

S.No.	Experiment	Observation	Inference
1.	Litmus test Take 1 ml dil. HCl in two test tubes each. Mark them 'A' and 'B' and put them in a test tube stand. Add blue litmus in test tube 'A' and red litmus in test tube 'B'. Observe the colour change in both.	Blue litmus turns red. No change in the colour of red litmus.	HCl has acidic character.
2.	Reaction with Zn metal Take a test tube and add zinc granules to it. Add to it dil. HCl. Place a cork with a fine jet on the mouth of the test tube. Bring a lighted matchstick near the mouth of the fine jet after sometime and observe.	Bubbles of hydrogen gas are formed. A pop sound is obtained.	Zn reacts with dil HCl and liberates hydrogen gas.
3.	Na₂CO₃ test Take a small amount of sodium carbonate in a test tube and add dil. HCl dropwise. Pass the gas evolved through lime water and observe the changes.	A colourless, odourless gas is evolved. The evolved gas turns lime water milky. On passing the gas in excess of lime water, the milkyness disappears.	CO ₂ gas is liberated on the reaction between dil. HCl and Na ₂ CO ₃ . $2\text{HCl} + \text{Na}_2\text{CO}_3 \rightarrow 2\text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$

Result

1. Hydrochloric acid turns blue litmus solution/paper to red but it does not affect red litmus solution/paper.
2. It reacts with zinc metal to liberate hydrogen gas and also forms zinc chloride as a product.
3. It reacts with sodium carbonate to liberate carbon dioxide.
Hence, we conclude that hydrochloric acid is acidic in nature.

Precautions

1. As HCl is corrosive in nature, it should be handled with care.
2. Use small quantities of chemicals.
3. Use small quantities of Zinc and HCl, otherwise large amounts of H₂ will be formed which may cause explosion.
4. For heating, use hard glass tubes.
5. Never inhale any gas produced in the reactions.
6. Keep the mouth of the test tube away from your face while heating.
