

CLASS X - PRACTICAL WORKSHEET

STUDY OF CHEMICAL PROPERTIES OF HCl ACID & NaOH

Experiment No: ...2....

Date:

Objective: To carry out reactions of Hydrochloric acid and NaOH with: (a) Blue / red litmus, (b) Zn Metal, and (c) Sodium Bicarbonate.

Requirement: Test tubes, litmus papers, Zn granule, solid NaHCO_3 , match box, dil. HCl acid, dil. NaOH solution, etc.

Procedure: Take one test tube full of dil HCl acid and keep it on one end of the test tube rack for further use.

#	EXPERIMENT	OBSERVATION	INFERENCE
1.	Put a drop of dil HCl on blue litmus paper and observe the change	Blue colour changes to red	Litmus is red in acid solutions
2.	Put a drop of dil HCl on red litmus paper and observe the change	Red colour does not change	Litmus is red in acid solutions
3.	Take a small granule of Zn in one test tube and add 1 ml of dil HCl acid to it. Keep the test tube aside and not the change after 2 minutes.	Slow evolution of a colourless, odourless gas	$2\text{HCl} + \text{Zn} \rightarrow \text{ZnCl}_2 + \text{H}_2\uparrow$
4.	(i) Take little of solid NaHCO_3 in one test tube and treat it with 1 ml of dil HCl acid	Brisk effervescence of a colourless, odourless gas	HCl liberates CO_2 gas from sodium bicarbonate $\text{NaHCO}_3 + \text{HCl} \rightarrow$ $\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2\uparrow$
	(ii) Insert a burning matchstick in to the test tube.	Fire gets extinguished	CO_2 does not support combustion.

Procedure: Take one test tube full of NaOH solution and keep it on one end of the test tube rack for further use.

#	EXPERIMENT	OBSERVATION	INFERENCE
1.	Put a drop of NaOH solution on blue litmus paper and observe the change	Blue colour does not change	Litmus is blue in alkaline/basic solution
2.	Put a drop of NaOH solution on red litmus paper and observe the change	Red colour changes to blue	Litmus is blue in alkaline/basic solution

3.	Take a small granule of Zn in one test tube and add 1 ml of NaOH to it. Keep the test tube aside and note the change after 2 minutes.	Very Slow evolution of a colourless, odourless gas	$2 \text{NaOH} + 2 \text{Zn} + 2 \text{H}_2\text{O} \rightarrow \text{Na}_2[\text{Zn}(\text{OH})_4] + \text{H}_2 \uparrow$
4.	Take little of solid NaHCO_3 in one test tube and treat it with 1 ml of NaOH solution	No visible reaction	

Precautions:

1. For best result use a small amount of chemicals as possible.
2. Students should not handle solid NaOH with bare hands as it is very corrosive in nature.

Questions:

1. What is a base? (A substance which reacts with acids to form salt and water as the only product is called a base)
2. What is an alkali? (A soluble base, which furnishes OH^- ions when dissolved in water, is called an alkali.)
3. Classify the following as acids and bases: (HCl, NaOH, KOH, HNO_3)
4. Name the products formed when:
 - a. Al metal is heated with NaOH? (Sodium aluminate and Hydrogen gas)
 - b. Zn powder is warmed with NaOH? (Sodium zincate and hydrogen gas)

Multiple choice type questions

1.	When dilute HCl is added to solid sodium carbonate, it is observed that <ol style="list-style-type: none"> a) No change takes place b) A popping sound is produced c) Brisk effervescence occurs d) The solution turns blue.
2.	A teacher gave two test tubes, one containing water and other containing sodium hydroxide solution to the students and asked them to identify the test tube containing sodium hydroxide solution. Which one of the following can be used for correctly identifying that: <ol style="list-style-type: none"> a) Blue litmus b) Red litmus c) Sodium carbonate d) Dilute HCl
3.	The following pairs of substances are available in the laboratory. 1) Zn & dil HCl 2) Zn & dil NaOH c) NaHCO_3 & dil HCl Which of these can be used to produce a colourless & odourless gas which gives a pop sound on burning <ol style="list-style-type: none"> a) 1 only b) 2 only

	c) 1 and 2 d) 1 and 3
4.	What happens when Na_2CO_3 is added to NaOH ? a) CO_2 is evolved b) No reaction takes place c) NaHCO_3 is formed d) None of these
5.	A student added Zn granules to dil HCl, a colourless odourless gas was evolved which was tested with a burning match stick. It was observed that a) The match stick continued to burn brilliantly. b) The match stick burned slowly with blue flame. c) The match stick extinguished and the gas burned with a pop sound. d) The match stick burned with an orange flame.
6.	Which of the following is used to make litmus paper? a) Algae b) Fungi c) Lichens d) Bacteria
7.	Four drops of red litmus solution were added to each one of the following substances. Which one turns red litmus solution blue? a) Alcohol b) Distilled water c) NaOH solution d) HCl