# Chemistry Lab Report

Exp No: *03*
Exp Name: Standardization of KOH using 100mL of 0.1(M) HCL.
Equipments: 1. Burette($500mL$) 2. Conical flask($250mL$) 3. Funnel 4. Wash bottle
5. Pipette 6. Burette stand.

Theory: Titration is a common laboratory method of quantitative chemical analysis to determine the concentration of an identified analyte (a substance to be analyzed). A reagent, termed the titrant or titrator, is prepared as a standard solution of known concentration and volume. The titrant reacts with a solution of analyte to determine the analyte's concentration. The volume of titrant that reacted with the analyte is termed the titration volume.

Chemicals: 1. HCl 2. Na_2CO_3 3. Distilled water 4. Indicator(Methyl orange).
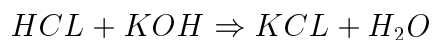
Chemical Reaction:
$$HCL + KOH \Rightarrow KCL + H_2O$$
Now,
$$e_1 S_1 V_1 = e_2 S_2 V_2 \;\; \Rightarrow \;\; S_2 = \frac{e_1 S_1 V_1}{e_2 V_2} \ldots \ldots \ldots (1)$$
Where, $e_1 = 1, \quad e_2 = 1$
S_1 = concentration of HCL
S_2 = concentration of KOH
V_1 = volume of HCL
V_2 = volume of KOH

Description:
01. $0.1(M)HCL$ solution preparation: We obtained $0.1(M)HCL$ provided by our lab assistant.
02. Standardization of KOH solution: At first fil the burette with KOH solution and record the initial burette reading. Then take $10mLHCL$ in conical flask and mix it up with 1/2 drops of phenolphthalein.
03. Determination: Mix HCl with KOH drop by drop carefully until KOH solution changes it's color. When KOH changes it's color that means it's the end point of our titration. Now mark the reading for HCl from burette for our further calculation.

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Data Table:

		Burette KOH volume		
SN	V_{1HCL}	$Initial_{(mL)}$	$Final_{(mL)}$	$Diff_{initial-final}$
01	$10mL$	$0mL$	$7.7mL$	$7.7mL$
02	$10mL$	$7.7mL$	$15.6mL$	$7.9mL$
02	$10mL$	$15.6mL$	$23.1mL$	$7.5mL$

Calculation:

From the table, Mean value of $KOH = \frac{7.7+7.9+7.5}{3} = 7.7mL$

From equation (1) we get, $S_2 = \frac{e_1 S_1 V_1}{e_2 V_2} = \frac{1 \times 0.1 \times 10}{1 \times 7.7} = 0.1298$ M

Result: The concentration of KOH is **0.1298 M**.

Discussion: The molarity of KOH may not be totally correct for same certain chemical fault.

Precaution:
01. Usually an air bubble is present in the nozzele of the burette. It must be removed before taking the inital readint.
02. There should not be any kind of leakage from the burette during titration.
03. Always add acid to water.
04. Dont't let base level in burrete to reach zero.