Preparation and Standardization of 1 *N* NaOH Solution

- **Sodium hydroxide is a strong base that is usually used to prepare standard alkaline solutions useful for volumetric analysis of acidic compounds.**
- **Sodium hydroxide is hygroscopic and can react with atmospheric carbon dioxide.**

$$2NaOH + CO_2 \longrightarrow Na_2CO_3 + H_2O$$

contaminant
(water soluble)

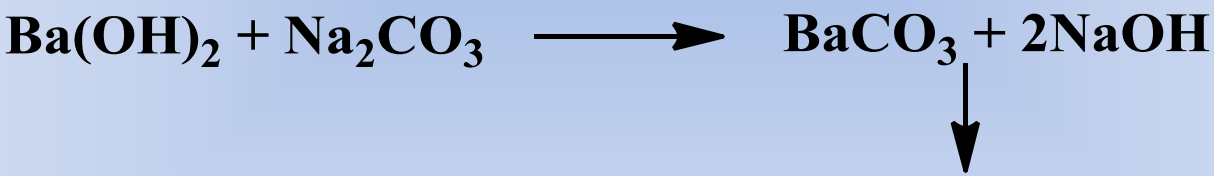
Preparation and Standardization of 1 *N* NaOH Solution

- **preparation of 100 mL of 1 *N* NaOH solution**

  Dissolve 4.5 g of sodium hydroxide in 100 mL distilled water, allow to cool, and then add saturated barium hydroxide solution drop wise with stirring until a precipitate is formed. Leave aside allowing for complete precipitation, filter, and collect the filtrate to be standardized against 1 *N* HCl solution.

Preparation and Standardization of 1 *N* NaOH Solution

contaminant
(water soluble)



water insoluble

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- **standardization**

$$NaOH + HCl \longrightarrow NaCl + H_2O$$

- 1 *N* HCl solution is used as a secondary standard

- phenolphthalein is used as the indicator

colourless	***pink***
***p*H: 8.3**	**10**

Preparation and Standardization of 1 *N* NaOH Solution

❑ procedure

- **wash the burette with the D. W. and the titrant (NaOH)**
- **fill the burette with NaOH to a level (adjust it)**
- **wash a 20 mL – bulb pipette with D. W. then by a little of HCl solution; fill it to the mark with the acid**
- **transfer the acid into a clean conical fask; add D.W. (50 mL)**
- **add 2 drops of phenolphthalein indicator**
- **start titration by adding NaOH solution drop wise with continuous stirring until the solution changes from colourless to pink**
- **record the volume of NaOH solution used and calculate the normality**

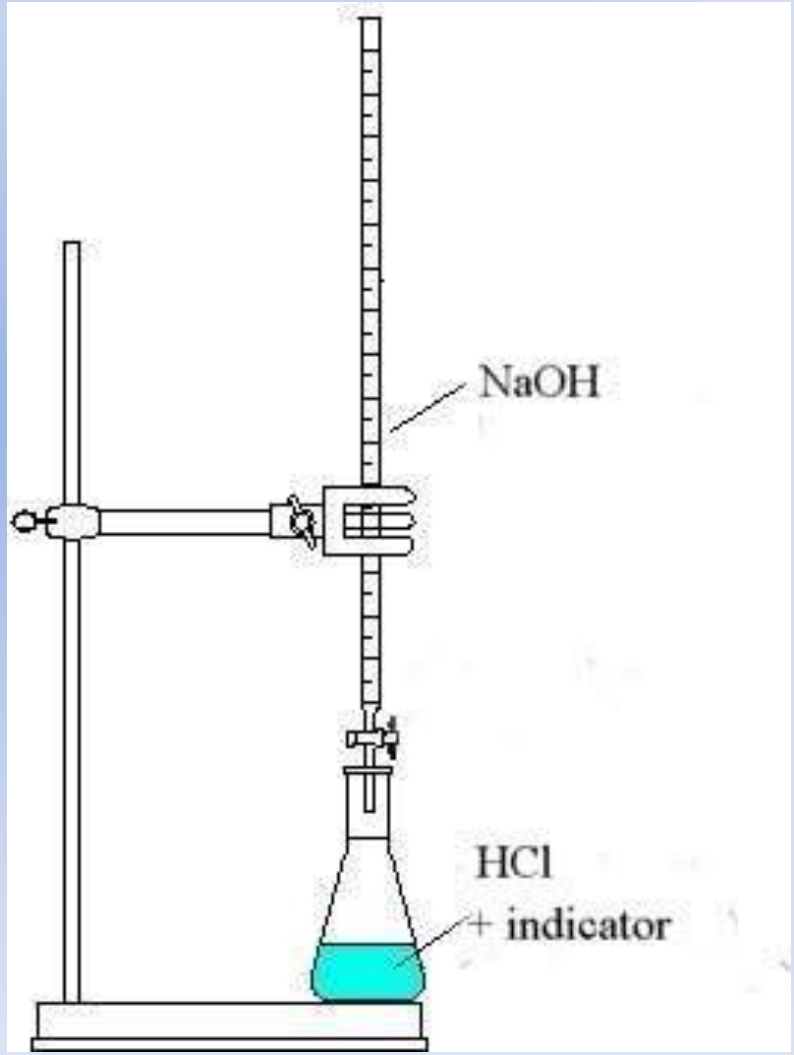
Note ***wash the burette with water thoroughly***

Preparation and Standardization of 1 *N* NaOH Solution

- **procedure**

Preparation and Standardization of 1 *N* NaOH Solution

- **titration apparutus**



Preparation and Standardization of 1 *N* NaOH Solution

end point
(pink)

Preparation and Standardization of 1 *N* NaOH Solution

- **calculations**

$$\underbrace{N_1 \times V_1}_{\text{NaOH}} = \underbrace{N_2 \times V_2}_{\text{HCl}}$$

N_1 :the normality of NaOH solution
V_1 :the volume of NaOH solution used
N_2 :the normality of HCl
V_2 : volume of HCl solution used (20mL in our experiment)

Preparation and Standardization of 1 *N* NaOH Solution

- **Home work**

Why have you used 4.5 g of NaOH to prepare 100 mL of 1 *N* NaOH solution?