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

2. preparation of 1L of 1N NaOH solution

Dissolve 45 g sodium hydroxide in distilled water using a beaker, allow to cool, transfer the solution to a 1L volumetric flask and complete the volume to the mark by distilled water.

Then standardize against standard HCl solution.

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❑ **standardization**

The principle of the reaction is acid base titration reaction

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

➢ 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

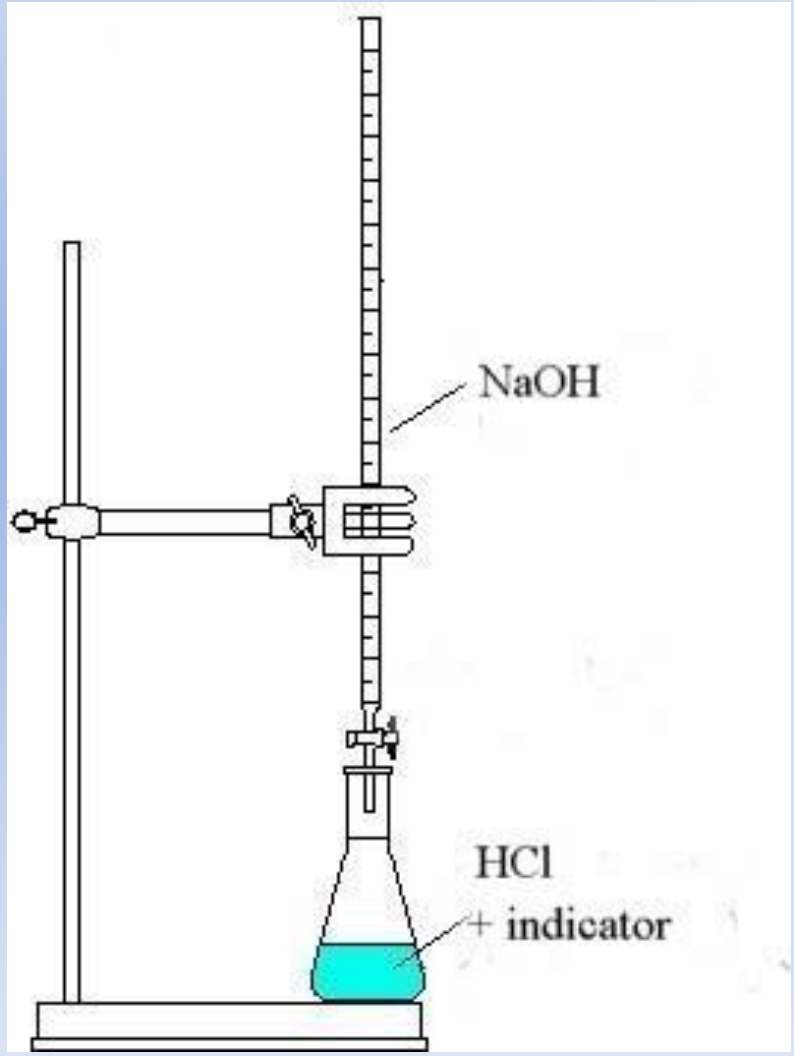
❑ procedure

- wash the burette with the D. W. and the titrant (NaOH)
- fill the burette with NaOH to a level (adjust it)
- wash a 10 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

- titration apparutus



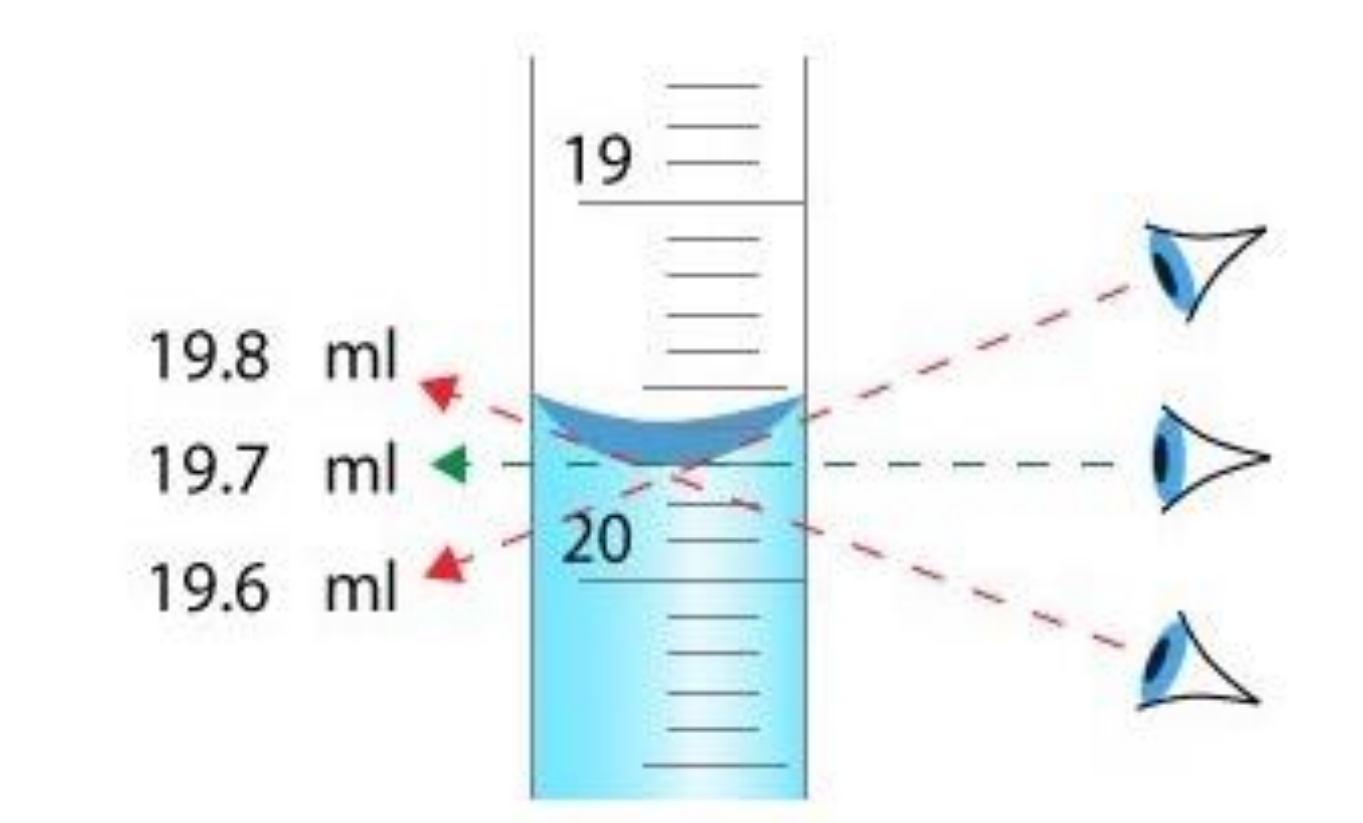
Preparation and Standardization of 1 *N* HCl Solution

- **burette adjusment**

Preparation and Standardization of 1 *N* HCl Solution

- **burette adjusment**

How to read the burette?



Preparation and Standardization of 1 *N* NaOH Solution

end point
(pink)

Preparation and Standardization of 1 *N* NaOH Solution

- **calculations**

NaOH HCl

$$N_1 \times V_1 = N_2 \times V_2$$

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 (10 mL in our experiment)

Preparation and Standardization of 1 *N* NaOH Solution

- **Home work**

Why have you used 45 g of NaOH to prepare 1000 mL of 1 *N* NaOH solution?