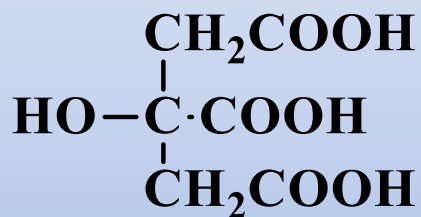


Assay of Citric Acid



□ Introduction

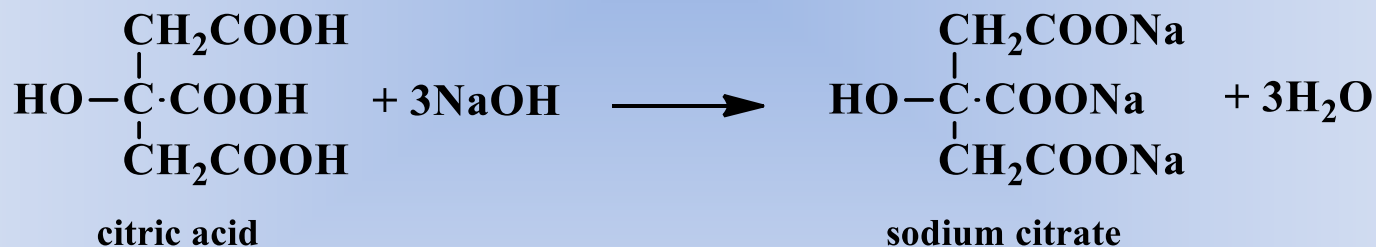
Citric acid ($\text{C}_6\text{H}_8\text{O}_7$, m. wt. = 192.09) is a white crystalline powder (or colourless crystals). It is very soluble in water and freely soluble in alcohol. It is a tri-basic acid, so its solutions are strongly acidic. It is available as the anhydrous form or monohydrate form. Assay of citric acid is based on the anhydrous form.

Citric acid liberates carbonates, so it is used widely in effervescent salts. Citric acid is also used to dissolve renal stones.

Assay of Citric Acid

□ Chemical principle

Since citric acid has strong acid properties, it is titrated against a standard basic solution like *N*/1 NaOH solution in an acid- base reaction.



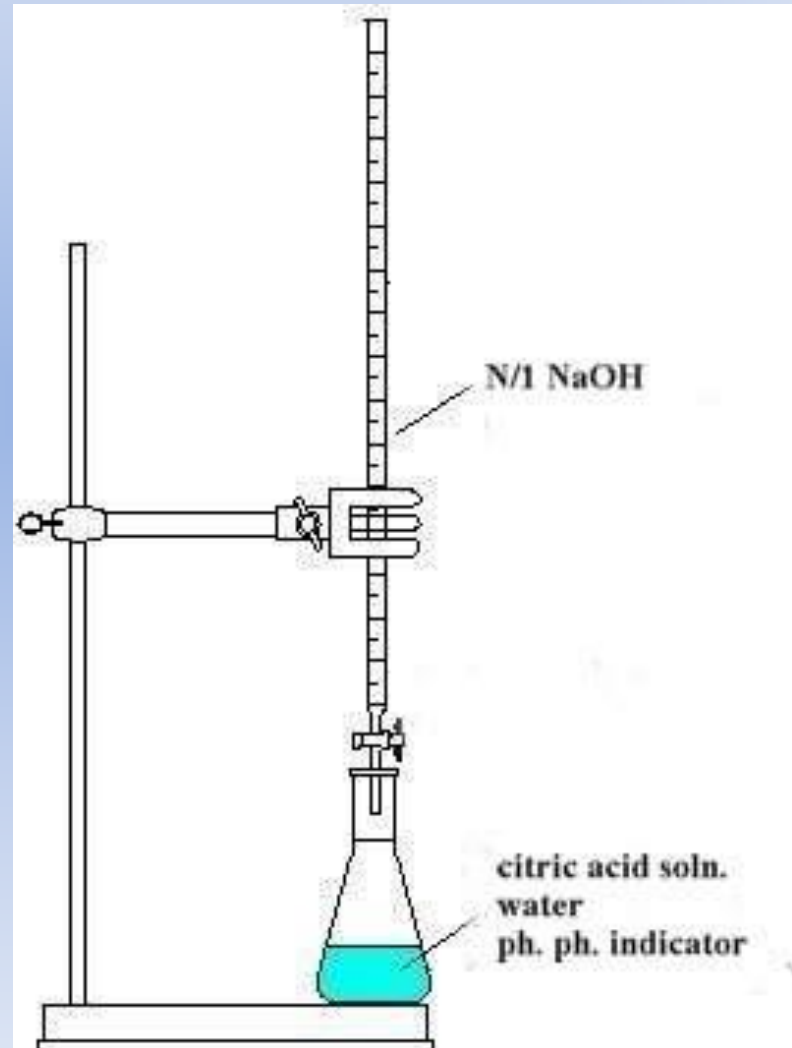
Assay of Citric Acid

□ procedure

Weigh accurately 1 g of citric acid (or you may take 10 mL of an unknown citric acid solution), dissolve in 20 ml of distilled water, and titrate with *N*/1 sodium hydroxide solution using 2 drops of phenolphthalein solution as the indicator. Titrate until you get a faint pink colour.

Assay of Citric Acid

□ titration apparatus



Assay of Citric Acid

□ calculations

- calculate the chemical factor:
(each 1 mL of *N*/1 sodium hydroxide solution is equivalent to 0.06403 g of $\text{C}_6\text{H}_8\text{O}_7$)
- correct the volume of NaOH solution used into *N*/1 volume
- calculate the quantity of citric acid present in your sample
- calculate the percentage w/v of you citric acid sample