

Exercise no. 1

Dilute the analytical sample with distilled water in a measuring flask to the mark (100 mL) and mix completely. The solution in the measuring flask should be treated as 100 mL of the water sample. **Pipette** 10 mL of the solution into the conical flask and dilute with distilled water to **about** 100 mL.

Determination of total acidity in the presence of phenolphthalein

Add 2 drops of **phenolphthalein** to the solution in the conical flask and titrate the sample with a base solution (0.02 M NaOH) till a slightly **pink colour** appears. Repeat the titration to obtain three concordant results (not differing more than 0.2 mL). Calculate the total acidity expressed in millimoles of NaOH (mmol):

$$X = V_{\text{NaOH}} \cdot C_{\text{NaOH}} \cdot 10$$

Determination of total alkalinity in the presence of methyl orange

Add 1 drop of 0.1N $\text{Na}_2\text{S}_2\text{O}_3$ to the solution in the conical flask to remove residual chlorine present in the water to prevent reaction with the indicator. Then, add 2 drops of **methyl orange** and titrate the sample with an acid solution (0.02 M HCl) till the colour change from **yellow to orange**. Repeat the titration to obtain three concordant results (not differing more than 0.2 mL). Calculate the total alkalinity expressed in millimoles of HCl (mmol):

$$X = V_{\text{HCl}} \cdot C_{\text{HCl}} \cdot 10$$