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Exp 2 : Standarization of Hydrochloric Acid (HCl) Solution with standard Sodium Hydroxide (NaOH) Solution.

Name of the Method :

Acid based titration.

Experimental Data :

Amount of oxalic acid taken = 0.63 gm

The strength of oxalic acid solution = $\dfrac{\text{Weight taken (in gm)} \times 0.1}{0.63}$

$$= \dfrac{0.63 \times 0.1}{0.63} \ (N)$$

$$= 0.1 N$$

Table 1 : Standardization of supplied NaOH solution against standard oxalic acid solution by acid-base titration.

No of reading	Vol. of NaoH (in mL)	Vol. of Oxalic acid (burette reading) in (mL)			Mean (in mL)
		Initial	Final	Difference	
1	10	0.00	8.50	8.50	8.50+8.7
2	10	8.50	17.20	8.70	+8.60
3	10	17.20	25.80	8.60	3
					= 8.60

The strength of supplied NaoH Solution :

$$V_{NaOH} \times N_{NaOH} = V_{oxalic\ acid} \times N_{oxalic\ acid}$$

$$N_{NaOH} = \dfrac{8.60 \times 0.1}{10} = 0.08 N$$

Table 2 : Standardization of supplied HCl Solution against standard by acid-base titration.

No. of reading	Vol. of NaOH (in mL)	Vol. of HCl (burette reading)			Mean (in mL)
		Initial	Final	Difference	
1	10	0·00	9·70	9·70	9·70+9·80 +9·80
2	10	9·70	19·50	9·80	—————
3	10	19·50	29·30	9·80	3 = 9·77

Calculation :

(A) The strength of supplied HCl solution :

$$V_{NaOH} \times N_{NaOH} = V_{dil.HCl} \times N_{dil.HCl \text{ to be determined}}$$

$$N_{dil.HCl \text{ to be determined}} = \frac{10 \times 0·08}{9·77} = 0·081 N$$

(B) The strength of conc. HCl solution :

$$\underset{(1000\,mL)}{V_{dil.HCl} \times N_{dil.HCl \text{ determined}}} = \underset{(10mL)}{V_{conc.HCl\,taken}} \times \underset{\substack{HCl\,to\,be\\determine}}{N_{conc.}}$$

$$N_{conc.HCl \text{ to be determined}} = \frac{1000 \times 0·081}{10} N$$

$$= 8·1 N$$

Results :

(A) The strength of supplied dil.HCl. solution is 0·08N

(B) The strength of conc.HCl solution is 8·1N