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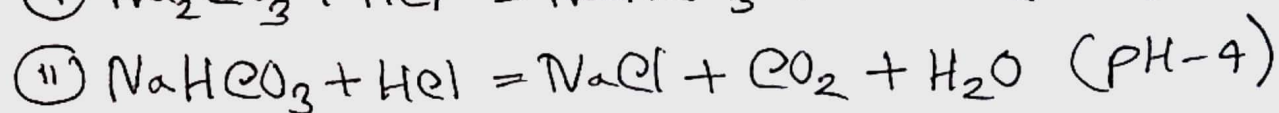
ID: 20-42626-1

Sec: R

Exp 3: Standardization of hydrochloric Acid (HCl) Solution with Standard Sodium Carbonate (Na_2CO_3) Solution.

Method: Acid-base titration

Reactions:



Experimental data: Amount of sodium carbonate taken = 0.63

Strength of sodium

$$\text{Carbonate solution} = \frac{\text{Weight taken (in gm)} \times 0.1}{0.53} \text{ (N)}$$

$$= \frac{0.63 \times 0.1}{0.53} \text{ N}$$

$$= 0.1188 \text{ N}$$

$$= 0.12 \text{ N}$$

(P.T.O)

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Table: Standardization of supplied HCl solution against standard Na_2CO_3 solution by acid-base titration.

No of reading	Vol. of Na_2CO_3 (in mL)	Vol. of HCl (in mL)			Difference between (a) and (c) (in mL)	Mean (in mL)
		Initial (a)	1st End point (b)	2nd End point (c)		
1	10	0.00	5.60	10.20	10.20	10.425 = 10.43
2	10	10.20	19.80	20.40	10.20	
3	10	20.40	25.90	31.30	10.90	
4*	10	31.30	—	41.80	10.40	

Calculations:

A) The strength of supplied dil. HCl solution:

$$V_{\text{Na}_2\text{CO}_3} \times N_{\text{Na}_2\text{CO}_3} = V_{\text{dil. HCl}} \times N_{\text{dil. HCl to be determined}}$$

$$N_{\text{dil. HCl to be determined}} = \frac{10 \times 0.12}{10.425} \text{ N}$$

$$= \cancel{0.1150} \text{ N } 0.1148 \text{ N}$$

$$= 0.12 \text{ N}$$

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(B) The strength of conc. HCl solution:

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

(1000ml) (0.12N) (10 ml)

$$V_{\text{dil. HCl}} \times N_{\text{dil. HCl determined}} = \frac{1000 \times 0.12}{10} N$$
$$= 12 (N)$$

Results:

A) The strength of supplied dil. HCl solution is 0.12N

(B) (A) The strength of conc. HCl solution is 12N.