

2. PREPARATION OF 100ml OF 0.1N ACETIC ACID.

METHOD:

Titration method.

PRINCIPLE:

A concentrated solution of acetic acid is titrated against 0.1N sodium hydroxide solution and the normality of the acetic acid is determined. The acetic acid solution is then diluted to get the desired normal solution.

APPARATUS:

Beaker, volumetric flask, conical flask, burette, burette stand, pipettes

REAGENTS:

1. Acetic acid (concentrated),
2. 0.1N Sodium hydroxide solution,
3. Phenolphthalein (indicator).

PROCEDURE:

Measure 1 to 2ml of concentrated acetic acid solution in a 100ml beaker and dilute it up to 100 ml mark with distilled water. Mix well. Now fill the burette with 0.1N NaOH solution. Acetic acid

Pipette 10ml acetic acid solution prepared, in a titration flask and add 1 to 2 drops of phenolphthalein as an indicator. Titrate the contents of the titration flask with 0.1N NaOH solution in the burette until a persistent faint pink colour appears.

CALCULATIONS:

$$(1) N_1 V_1 = N_2 V_2$$

N_1 is normality of the base, = 0.1N NaOH

V_1 is volume of the base, = reading of NaOH

N_2 is normality of the acid, and = N_2 ?

V_2 is volume of the acid. = 10ml

$$N_2 = \frac{N_1 V_1}{V_2} = \frac{0.1 \times \square}{10}$$

By applying the equation $N_1 V_1 = N_2 V_2$ find out the value for N_2 .

Use the value for N_2 in place of N_S in the equation $N_S V_S = N_R V_R$, and calculate the volume required (V_R) for dilution

Where:

N_S stands for "observed normality", = from formula 1

V_S is "volume of prepared solution" and = ?

N_R stands for "normality of required solution", and = 0.1N

V_R is the "volume of the solution of required normality". = 100ml

$$V_S = \frac{N_R V_R}{N_S} = \square$$

Now dilute the volume required with distilled water to make 100ml of NaOH solution of the desired normality.

100 - = of distilled water to be added for 0.1N acetic acid.

EXPERIMENT No.: 2

Date: 13-12-2013

TO PREPARE 100ml OF 0.1N ACETIC ACID.

OBSERVATIONS:

No.	Initial Burette Reading	Final Burette Reading	DIFFERENCE (Volume used)
1.	0 ml	11.8 ml	11.8 ml
2.	11.8 ml	22.2 ml	10.4 ml
3.	22.2 ml	33.8 ml	11.6 ml
Mean Volume Used =			$\frac{33.8}{3} = 11.2 \text{ ml}$

CALCULATIONS:

FORMULA 1:- $N_1V_1 = N_2V_2$

$$N_2 = \frac{N_1V_1}{V_2} = \frac{0.1 \times 11.2}{10} = 0.112 \text{ N of acetic acid.}$$

N_1 = normality of base = 0.1N NaOH

V_1 = volume of base = 11.2 ml.

N_2 = Normality of acid = ? glacial

V_2 = volume of acid = 10 ml acetic acid.

Dilution formula :- $N_S V_S = N_R V_R$

$$V_S = \frac{N_R V_R}{N_S} = \frac{0.1 \times 100}{0.112} = 89.28 \text{ ml of acetic acid.}$$

N_S = observed normality = 0.112 N of acetic acid.

V_S = volume of prepared solution = ?

N_R = normality of required solution = 0.1N of NaOH.

V_R = Volume of solution of required solution = 100 ml of NaOH.

Volume of distilled water required to make 0.1N Acetic Acid solution =

$$100 - 89.28 = 10.72 \text{ ml}$$

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