

4. Preparation & standardization of Potassium permanganate- by Ms. Lipsa Samal

AIM:

To determine the Normality of given sample of 0.1N Potassium permanganate.

REQUIREMENTS:

Apparatus : Burette, Iodine flask, Pipette,

Reagents : Potassium Permanganate and oxalic acid.

PRINCIPLE:

The principle of standardization of potassium permanganate is based upon redox titration in which strength of an oxidizing agent is estimated by titrating it with a reducing agent and viceversa. Potassium permanganate acts as a strong oxidizing agent in acidic medium that oxidizes oxalic acid into carbon dioxide. Known strength of oxalic acid is titrated directly with potassium permanganate. End point can be detected with appearance of permanent pink colour potassium permanganate acts as self indicator



PROCEDURE:

Preparation of 0.1 N Potassium permanganate solution

Dissolve 3.2g of potassium permanganate in 1000ml of water, heat on a water bath for 1 hour, allow to stand for 2 days. Filter the solution through glass wool.

Preparation of 0.1 N Oxalic acid:

6.3 gm of oxalic acid dissolve in 1000 ml of distilled water

Standardisation of 0.1N Potassium permanganate

Take 20 ml of Oxalic acid solution .add 5 ml of 1M sulphuric acid.warm the mixture to about 70°C .titrate with potassium permanganate solution taken in the burette. End point is appearance of pink colour that persist for 30sec

$$N_1 V_1 = N_2 V_2$$

$$N_2 = \frac{N_1 V_1}{V_2}$$

$$V_2$$

Observation table –

Sl. NO	Content of the Flask	Burette Reading (ml)				Indicator
		Initial reading	Final reading	Difference	Precision	
1	20 ml of 0.1N Oxalic acid solution + 5 ml of 1m sulphuric acid	0.0	19.8	19.8		-----
2	20 ml of 0.1N Oxalic acid solution + 5 ml of 1m sulphuric acid	0.0	19.9	19.9	19.9	-----
3	20 ml of 0.1N Oxalic acid solution + 5 ml of 1m sulphuric acid	0.0	19.9	19.9		-----

Calculation : $N_1 V_1 = N_2 V_2$

$N_1 = 0.1$ N = Normality of 0.1N Oxalic acid Solution, $N_2 = ?$ = Normality of Potassium permanganate

$V_1 = 20$ ml = Volume of Oxalic acid Solution, $V_2 = 9.9$ ml = Volume of Potassium permanganate

$$N_2 = \frac{N_1 V_1}{V_2}$$

$$V_2$$

$N_2 = 20 \text{ ml} \times 0.1$
19.9

$N_2 = 0.10 \text{ N}$

REPORT: The strength of the given solution of potassium permanganate is.....