

AIM: To prepare and standardize 0.1 N KMnO_4 solution.

APPARATUS: burette, pipette, conical flask etc.

CHEMICALS: 0.1 N KMnO_4 solution, 0.1 N oxalic acid, dil. H_2SO_4 .

PRINCIPLE: In volumetric analysis many reactions involve the process of oxidation and reduction. An oxidizing agent is estimated by titrating with a reducing agent and vice versa. These titrations are called redox titrations. The standardization of KMnO_4 is an example of redox titration. KMnO_4 is a powerful oxidant and in acidic medium it oxidizes oxalic acid to carbon dioxide. The reaction is maintained at $60-70^\circ\text{C}$ during the titration because the reaction proceeds slowly at room temperature. The end point of the titration is the appearance of permanent pink color. No indicator is required as KMnO_4 is a self-indicator.

PROCEDURE: Into a conical flask pipette out exactly 10 ml of 0.1 N oxalic acid. Add 10 ml dil H_2SO_4 and boil the contents of the flask upto 70°C . Titrate the contents of the flask against 0.1 N KMnO_4 solution until a faint pink color is obtained. Repeat the titration to get concurrent values.

OBSERVATION TABLE:

S.No.	Volume of 0.1 N oxalic acid (ml)	Burette reading		Volume of NaOH used (ml)
		Initial (ml)	Final (ml)	

--	--	--	--	--

FORMULA: The normality of KMnO₄ solution is calculated using the formula

$$N_1V_1=N_2V_2$$

RESULT: The normality of the given KMnO₄ solution is