Determine the Percentage Purity Of the Given Sample Of Oxalic Acid. Ask For Your Requirement

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Requirement

A standard solution of $KMnO_4$ $\left(\frac{N}{20}\right)$.

Chemical equations

Same as in Experiment 11.16.
Indicator, End point and Procedure are also same as in Experiment 11.16.
Weigh exactly 1.0 g of the given sample of oxalic acid and dissolve in water to prepare exactly 250 ml solution using a 250 ml measuring flask.

Observations

Solution taken in burette = $\frac{N}{20}$ $KMnO_4$

Volume of oxalic acid solution taken for each titration = 20.0 ml.

S. No.	*Initial reading of the burette*	*Final reading of the burette*	*Volume of the $KMnO_4$ solution used*
1.	—	—	— ml
2.	—	—	— ml
3.	—	—	— ml
4.	—	—	— ml

Concordant volume = x ml (say).

Calculations

(*a*) *Normality of oxalic acid solution*

x ml of $\frac{N}{20}$ $KMnO_4$ solution are equivalent to 20 ml of N_1 oxalic acid solution.

Applying normality equation,

$$\underset{\text{Oxalic acid}}{N_1V_1} = \underset{KMnO_4}{N_2V_2}$$

$$N_1 \times 20 = \frac{1}{20} \times x$$

$\therefore$ Normality of oxalic acid, $N_1 = \frac{x}{400}$.

(*b*) *Strength of oxalic acid solution (in g/litre)*

= Normality × Eq. mass

$= \frac{x}{400} \times 63 = y$ g/litre (say) ($\because$ Eq. mass of crystalline oxalic acid = 63)

(*c*) *Percentage purity of oxalic acid*

$$= \frac{\text{Strength of the pure sample}}{\text{Strength of the given sample}} \times 100$$

$$= \frac{y}{4} \times 100.$$

Instructions for the Preparation of Solutions

Provide the following :

1. Solid oxalic acid
2. $KMnO_4$ solution (1.58 g/litre)
3. 4N H_2SO_4.