Preparation and Standardisation of Sodium Hydroxide

Experiment 7 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To prepare a nominal titrant and determine its actual strength.

Principle

Sodium hydroxide absorbs moisture and carbon dioxide, so a nominal solution is standardised against a suitable primary standard such as potassium hydrogen phthalate (KHP). One mole KHP reacts with one mole hydroxide.

Requirements

- Sodium hydroxide, suitable water and clean stoppered bottle
- Prescribed dried KHP, balance, burette and phenolphthalein

Procedure

1. Prepare nominal solution

Calculate the approximate mass required, dissolve carefully and cool before making to volume; use the assigned concentration.

2. Prepare primary standard

Weigh the prescribed KHP and dissolve it in the specified vehicle.

3. Titrate

Titrate with NaOH using the prescribed endpoint; repeat for concordant readings and apply any stated blank.

4. Calculate

Calculate the actual molarity and label concentration, factor, date and storage.

Observations and Record

Reading	Trial 1	Trial 2	Trial 3
Standard mass, g	_____	_____	_____
Initial burette, mL	_____	_____	_____
Final burette, mL	_____	_____	_____
Corrected titre, mL	_____	_____	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- M(NaOH) = mass KHP (g) / [204.22 g/mol × corrected titre (L)].
- Example: 0.51055 g KHP and 25.00 mL NaOH gives 0.1000 mol/L.
- For nominal 0.1000 mol/L, factor = actual/nominal; here 1.000.

Result

Record the observed outcome and calculated value, with units. State whether the stated laboratory specification was met; do not copy the worked example as your result.

Precautions

- NaOH is corrosive and dissolves exothermically; allow the solution to cool.
- Avoid carbon dioxide exposure and use the assigned storage closure.

Viva Questions and Answers

1. Why is weighing NaOH insufficient?

Absorbed moisture and carbonate change the effective hydroxide amount.

2. Why is KHP useful?

It is a suitable high-purity primary acid standard with a defined equivalent amount.

3. Why use concordant readings?

Agreement reduces random endpoint and reading error, but does not remove systematic errors.

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