

FACTSHEET: STANDARDISING SODIUM HYDROXIDE SOLUTIONS

"Do you know the correct concentration of your sodium hydroxide solution?"

Introduction

Sodium hydroxide (NaOH) solutions are one of the main reagents used in a wine laboratory. The accuracy of your Sulfur Dioxide, Titratable Acidity (TA) and Volatile Acidity (VA) results are dependent on these solutions having accurately known concentration values. NaOH absorbs carbon dioxide from the air and reacts with it to form sodium carbonate, thus lowering the concentration of NaOH over time.

Standardisation procedure

The true concentration of NaOH solutions should therefore be determined by standardising them regularly with a standard hydrochloric acid (HCl) solution. One way of doing this (for a 0.1M NaOH solution) is to pipette 20.00 mL of standard 0.100 M HCl into a flask and adding a couple of drops of phenolphthalein indicator.

Then fill your burette with the NaOH solution and titrate the HCl until the colour changes to a pale permanent pink. Alternatively, position your pH electrode in the flask or beaker containing the HCl and titrate until the equivalence point is reached at pH 7.

Calculation

Use the following calculation to determine the correct NaOH concentration and remember to then amend your lab method calculations with the new concentration result:

$$\text{NaOH conc. (M)} = \text{HCl conc. (M)} \times \frac{\text{Volume of HCl in beaker (mL)}}{\text{Titre volume of NaOH (mL)}}$$

Store standardised NaOH solutions in sealed plastic containers: these shouldn't (and needn't) be kept in the fridge.

Dr Schilling burettes

A great way to limit absorption of CO₂ by NaOH is to use a titration reservoir with a soda lime trap, such as a Dr Schilling burette.

Vintessential Laboratories stocks all items needed for the above testing. Some relevant Item Codes are listed below.

- 1S000 Soda lime granules, 500g
- 2B410 Dr. Schilling burette, 10 mL
- 2B425 Dr. Schilling burette, 25 mL
- 2B450 Dr. Schilling burette, 50 mL

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