

Achievement Standard

Subject Reference Chemistry 2.2

Title Carry out an acid-base volumetric analysis

Level 2 **Credits** 3 **Assessment** Internal

Subfield Science

Domain Chemistry

Status Expiring **Status date** 17 November 2011

This achievement standard is expiring. Assessment against the standard must take place before the expiry date set out below.

Expiry date 31 December 2012 **Date version published** 17 November 2011

This achievement standard involves carrying out an acid-base volumetric analysis using a given titration procedure.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Carry out an acid-base titration. Use titration data to calculate the concentration of a solution. 	<ul style="list-style-type: none"> Carry out an acid-base titration with reasonable precision. Use titration data to correctly determine the concentration of a solution. 	<ul style="list-style-type: none"> Carry out an acid-base titration with high precision. Use titration data from a reaction where the stoichiometry is not one-to-one, to correctly determine the concentration of a solution.

Explanatory Notes

- This achievement standard is derived from achievement objectives 7.1, 7.2 and 7.3 in *Chemistry in the New Zealand Curriculum*, Learning Media, Ministry of Education, 1994, p. 23.
- Procedures outlined in *Safety and Science: a Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 2000, should be followed.
- The titration procedure and balanced equation will be provided.

- 4 The standard solution to be used in the titration will be provided.
 - 5 In solving volumetric problems, the titration data used may be that collected by the student, or that provided by the assessor.
 - 6 For achievement of the standard:
 - at least two recorded titre values must fall within a range of 0.4 mL; the average titre value must be within 0.8 mL of the expected outcome
 - the calculation must be carried out using an appropriate procedure (not provided). A minor error (such as incorrect substitution of a numerical error or incorrect conversion of volumes such as mL to L) is allowed but the solution must be a sensible one. Students will not be penalised for using all titre values in their calculation.
 - 7 For achievement with merit:
 - at least three titre values must fall within a range of 0.4 mL; the average titre value must be within 0.5 mL of the expected outcome
 - a titration calculation must be carried out correctly using only concordant titre values.
 - 8 For achievement with excellence:
 - at least three titre values must fall within a range of 0.2 mL; the average titre value must be within 0.2 mL of the expected outcome
 - a titration calculation where the stoichiometry is not one-to-one must be carried out correctly using only concordant titre values. The final answer must have correct units and an appropriate number of significant figures.
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Replacement Information

This achievement standard, AS90763 and unit standard 8940 have been replaced by AS91161.

Quality Assurance

- 1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.
- 2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference

0226