

## Achievement Standard

**Subject Reference** Science 1.5

**Title** Demonstrate understanding of aspects of acids and bases

**Level** 1      **Credits** 4      **Assessment** External

**Subfield** Science

**Domain** Science - Core

**Status** Registered      **Status date** 30 November 2010

**Planned review date** 31 December 2016      **Date version published** 12 December 2013

This achievement standard involves demonstrating understanding of atomic structure, particle theory and rates of reaction relating to acids and base properties, uses and reactions.

### Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> <li>Demonstrate understanding of aspects of acids and bases.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate in-depth understanding of aspects of acids and bases.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate comprehensive understanding of aspects of acids and bases.</li> </ul>

### Explanatory Notes

Version 2 of this achievement standard was republished to correct an error in the bullet points about properties of acids and bases in explanatory note 5.

This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the [Papa Whakaako](#).

- This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 6. It is aligned with the Material World strand, and is related to the material in the *Teaching and Learning Guide for Science*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.
- Demonstrate understanding* typically involves describing, identifying, naming, drawing, or giving an account of aspects of acids and bases. This may require the use of chemistry vocabulary, symbols and conventions (including names and formulae), and completing word equations.

- 3 *Demonstrate in-depth understanding* typically involves explaining aspects of acids and bases. This may require explanations that use chemistry vocabulary, symbols and conventions (including names and formulae) and writing word equations or completing given symbol equations.
- 4 *Demonstrate comprehensive understanding* typically involves linking aspects of acids and bases. It may involve explaining, elaborating, justifying, relating, evaluating, comparing and contrasting, or analysing. This may require the use of chemistry vocabulary, symbols and conventions (including names and formulae), and writing balanced symbol equations.
- 5 *Aspects of acids and bases* will be selected from:
- Atomic structure
    - electron arrangement of atoms and monatomic ions of the first 20 elements (a periodic table will be provided)
    - ionic bonding
    - names and formulae of ionic compounds using a given table of ions.
  - Properties
    - acids release hydrogen ions in water
    - reactions (of acids with bases) to form salts
    - pH and effects on indicators.
  - Rates of reaction and particle theory.
  - Uses
    - neutralisation
    - carbon dioxide formation
    - salt formation.
- 6 *Acids and bases* are restricted to HCl, H<sub>2</sub>SO<sub>4</sub>, HNO<sub>3</sub>, metal oxides, hydroxides, carbonates and hydrogen carbonates. Other acids may be included in examination questions. The names and formulae of any such acids will be given in the question.
- 7 Assessment Specifications for this achievement standard can be accessed through the Science Resources page found at [www.nzqa.govt.nz/ncea/resources](http://www.nzqa.govt.nz/ncea/resources).
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### **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.