

## Achievement Standard

<b>Subject Reference</b>	Science 1.8		
<b>Title</b>	Investigate selected chemical reactions		
<b>Level</b>	1	<b>Credits</b>	4
		<b>Assessment</b>	Internal
<b>Subfield</b>	Science		
<b>Domain</b>	Science - Core		
<b>Status</b>	Registered	<b>Status date</b>	30 November 2010
<b>Planned review date</b>	31 December 2014	<b>Date version published</b>	10 January 2011

This achievement standard involves investigating and classifying chemical reactions by carrying out observations and using equations.

***Mutual exclusion exists between this standard and AS90934.***

### Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> <li>Investigate selected chemical reactions.</li> </ul>	<ul style="list-style-type: none"> <li>Investigate, in depth, selected chemical reactions.</li> </ul>	<ul style="list-style-type: none"> <li>Investigate, comprehensively, selected chemical reactions.</li> </ul>

### Explanatory Notes

Version 1 of this achievement standard was republished to correct an error in the exchange/precipitation reactions in explanatory note 6.

- This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 6. It is aligned with the Nature of Science and the Material World strands, and is related to the material in the *Teaching and Learning Guide for Science*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.
- This investigation involves collecting information about chemical reactions. The information could come from a variety of sources such as direct observations, collection of experimental data, resource sheets, photos, videos, websites and reference texts.

The procedures outlined in *Safety and Science: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 2000, must be followed during any practical component of the investigation.

- 3 *Investigate* involves carrying out a range of chemical reactions and recording observations and classifying reactions. It also typically involves describing, gathering, processing, interpreting, identifying, and giving an account of selected chemical reactions and using solubility rules to determine solubility. This requires the use of chemistry vocabulary, symbols and conventions (including names and formulae), and writing word equations.
- 4 *Investigate, in depth*, involves classifying chemical reactions from experimental observations and/or equations and predicting the formation of a precipitate using solubility rules. It requires explanations that use chemistry vocabulary, symbols and conventions (including names and formulae), and completing symbol equations.
- 5 *Investigate, comprehensively*, typically involves explaining, elaborating, justifying, relating, evaluating, comparing and contrasting, or analysing the links between the classification of reactions, observations and equations, and the formation of precipitates and solubility rules. This requires explanations that use chemistry vocabulary, symbols and conventions (including names and formulae), including writing balanced symbol equations.
- 6 *Chemical reactions* will be selected from:
- Combination reactions. These are limited to simple reactions of elements with other elements (such as magnesium or sulphur with oxygen, iron with sulphur etc).
  - Exchange reactions. These are limited to precipitation reactions such as the formation of:
    - chlorides of silver and lead
    - sulfates of barium and lead
    - hydroxides of copper, iron(II), iron(III), calcium, and magnesium
    - carbonates of copper, iron(II), zinc, calcium, and magnesium ions.
  - Decomposition reactions. These are limited to thermal decomposition of carbonates and hydrogen carbonates.
  - Displacement reactions. These are limited to the displacement of metal ions in solution by other metals.
- 7 Conditions of Assessment related to this achievement standard can be found at [www.tki.org.nz/e/community/ncea/conditions-assessment.php](http://www.tki.org.nz/e/community/ncea/conditions-assessment.php).
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### Replacement Information

This achievement standard replaced unit standard 6324, unit standard 6325, and unit standard 8938.

**Quality Assurance**

- 1 Providers and Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against achievement standards.
- 2 Accredited providers and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Accreditation and Moderation Action Plan (AMAP) reference

0233