

## Achievement Standard

<b>Subject Reference</b>	Chemistry 2.7		
<b>Title</b>	Demonstrate understanding of oxidation-reduction		
<b>Level</b>	2	<b>Credits</b>	3
		<b>Assessment</b>	Internal
<b>Subfield</b>	Science		
<b>Domain</b>	Chemistry		
<b>Status</b>	Registered	<b>Status date</b>	17 November 2011
<b>Planned review date</b>	31 December 2019	<b>Date version published</b>	20 November 2014

This achievement standard involves demonstrating understanding of oxidation-reduction.

### Achievement Criteria

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

### Explanatory Notes

- This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 7. The standard is aligned to the Nature of Science achievement objectives and the Material World achievement objectives, and is related to the material in the *Teaching and Learning Guide for Chemistry*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

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](#) for the relevant learning area.

- Procedures outlined in *Safety and Science: a Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 2000 should be followed.
- Demonstrate understanding* involves describing, identifying, naming, giving an account of oxidation-reduction and describing oxidation-reduction reactions. This requires the use of chemistry vocabulary, symbols and conventions.

*Demonstrate in-depth understanding* involves making and explaining links between oxidation-reduction reactions, observations and equations. This requires explanations that use chemistry vocabulary, symbols and conventions.

*Demonstrate comprehensive understanding* involves justifying, evaluating, comparing and contrasting, or analysing links between oxidation-reduction reactions, observations and equations. This requires the consistent use of chemistry vocabulary, symbols and conventions.

- 4 *Oxidation-reduction* is limited to:
- oxidation numbers
  - electron transfer in reactions
  - oxidants and/or reductants
  - observations for reactions
  - balanced oxidation-reduction half equations
  - overall balanced oxidation-reduction equations.
- 5 Knowledge of the appearance of redox reactants and their products includes a selection from, but is not limited to:
- oxidants include a selection from, but not limited to:  $O_2$ ,  $I_2$ ,  $Br_2$ ,  $Cl_2$ ,  $OCl^-$ ,  $H^+$ ,  $Fe^{3+}$ ,  $Cu^{2+}$ ,  $H_2O_2$ ,  $MnO_4^-/H^+$ ,  $Cr_2O_7^{2-}/H^+$ , concentrated  $HNO_3$ ,  $IO_3^-$
  - reductants include a selection from, but not limited to, metals, C,  $H_2$ ,  $Fe^{2+}$ ,  $Br^-$ ,  $I^-$ ,  $H_2S$ ,  $SO_2$ ,  $SO_3^{2-}$ ,  $HSO_3^-$ ,  $H_2O_2$
- 6 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.
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### Replacement Information

This achievement standard replaced unit standard 8947 and AS90311.

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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.

Consent and Moderation Requirements (CMR) reference

0233