

## Achievement Standard

<b>Subject Reference</b>	Processing Technologies 2.61		
<b>Title</b>	Demonstrate understanding of advanced concepts used in processing		
<b>Level</b>	2	<b>Credits</b>	4
		<b>Assessment</b>	Internal
<b>Subfield</b>	Technology		
<b>Domain</b>	Processing Technologies		
<b>Status</b>	Registered	<b>Status date</b>	17 November 2011
<b>Planned review date</b>	31 December 2016	<b>Date version published</b>	12 December 2013

This achievement standard requires demonstrating understanding of advanced concepts used in processing.

### Achievement Criteria

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

### Explanatory Notes

- 1 This achievement standard is derived from Level 7 of the Technology learning area in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007; and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education at <http://seniorsecondary.tki.org.nz>.

Further information can be found at <http://www.technology.tki.org.nz/>.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Ministry of Education at <http://technology.tki.org.nz/Curriculum-support/Safety-and-Technology-Education>, and the Health and Safety in Employment Act 1992.

- 2 *Demonstrate understanding of advanced concepts used in processing* involves:
- describing processing operations and identifying their impact on resulting outcomes
  - describing the nature of specific tests used in processing operations

- explaining visually how processing operations and tests can be combined in a processing sequence
- explaining the differences between processing in the classroom and processing in industry
- explaining the differences between health and safety regulations in the classroom and industry.

*Demonstrate in-depth understanding of advanced concepts used in processing involves:*

- explaining processing operations and how they achieve required outcomes
- explaining why specific tests are used in processing operations.

*Demonstrate comprehensive understanding of advanced concepts used in processing involves:*

- comparing and contrasting processing operations and tests, and their suitability for different materials and/or purposes
- discussing the implications of testing outcomes on processing decisions.

- 3 Materials may include but are not limited to: food ingredients, plant extracts, micro-organisms, concrete, fibreglass, woodchips, recycled materials, and resins.
- 4 *Processing* refers to the combining and/or manipulating of materials to make a product. Processing operations for this achievement standard include:
- one or more of: measuring/shaping/forming eg automated filling, cell counting, aggregating, rotational moulding
  - one or more of: contamination prevention/disposal eg chemical cleaning, waste water treatment, solid waste disposal, environmentally sustainable practices, protective clothing and industrial hygiene
  - one or more of: mixing/extracting/separating/growing eg emulsifying, enrobing, dehydrating, filtering, crystallising, chemical peeling, centrifuging, adsorption, gravity settling, leaching, solvent extraction, plant tissue culturing
  - one or more of: heating/cooling/reacting eg melting, coagulating, gelling, gelatinising, denaturing, evaporating, fermenting, controlling non-enzymatic browning, plate and blast freezing
  - one or more of: materials transfer eg pumping, piping, air conveying.
- 5 A processing sequence is a combination of processing operations and tests in the correct order to undertake a safe process.
- 6 Health and safety documentation may include but is not limited to: Hazard Analysis and Critical Control Point (HACCP), Hazardous Substances and New Organisms Act 1996 (HSNO), Physical Containment Level 1 (PC1) for working with micro-organisms.
- 7 Tests may include but are not limited to testing: viscosity, sensory attributes, brix, moisture content, nutrition content using tables, presence (or absence) of microbial activity, degree of fermentation, and colour stability.
- 8 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-aligned-standards/Technology/Level-2-Technology>.

**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