

Achievement Standard

Subject Reference	Processing Technologies 3.62		
Title	Demonstrate understanding of combined preservation mechanisms used to maintain product integrity		
Level	3	Credits	4
		Assessment	Internal
Subfield	Technology		
Domain	Processing Technologies		
Status	Registered	Status date	4 December 2012
Planned review date	31 December 2020	Date version published	17 November 2016

This achievement standard involves demonstrating understanding of combined preservation mechanisms used to maintain product integrity.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Demonstrate understanding of combined preservation mechanisms used to maintain product integrity. 	<ul style="list-style-type: none"> Demonstrate in-depth understanding of combined preservation mechanisms used to maintain product integrity. 	<ul style="list-style-type: none"> Demonstrate comprehensive understanding of combined preservation mechanisms used to maintain product integrity.

Explanatory Notes

- This achievement standard is derived from Level 8 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 at Work Act 2015.

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.

- 2 *Demonstrate understanding of combined preservation mechanisms used to maintain product integrity* involves:
- explaining why combinations of preservation mechanisms are used to maintain the integrity of specific products
 - describing how each preservation mechanism in a combination works and how it contributes to overall product integrity
 - explaining why the same material may be preserved in different ways in relation to the situation of use.
- Demonstrate in-depth understanding of combined preservation mechanisms used to maintain product integrity* involves:
- explaining why each preservation mechanism in a combination works for specific products
 - explaining why materials are preserved in different ways in relation to cost, required storage life, and environmental sustainability.
- Demonstrate comprehensive understanding of combined preservation mechanisms used to maintain product integrity* involves:
- discussing the use of combined preservation mechanisms in specific products in relation to the nature of the materials used in the product, user requirements, cost, storage life and environmental sustainability.
- 3 *Preservation mechanisms* are physical, chemical, or microbiological and may include heat treatment, low temperature treatment, moisture removal, acidity control, fermentation, chemical change, irradiation, atmosphere modification, chilled storage, and aseptic packaging.
- 4 *Combined preservation mechanisms* are important in a range of contexts where product integrity is critical, such as fermented and non-fermented foods and beverages, and biologically and/or chemically active products. In the context of food products, one example of *combined preservation mechanisms* is hurdle technology.
- 5 Specific products are those that are preserved using a combination of at least three preservation mechanisms.
- 6 Product integrity may relate to: microbiological viability, separation, colour change, loss or gain of moisture, changes in nutritional content, enzymatic or chemical activity, and changes in size, shape or form.
- 7 Materials may include: food ingredients, plant extracts, micro-organisms, concrete, fibreglass, woodchips, recycled materials, and resins.
- 8 Situation of use refers to the primary reason a user has selected the product. For example - tramping, camping, heat and eat, special occasion.
- 9 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-aligned-standards/Technology/Level-3-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