**NZQA**

**Approved**

Achievement standard: 91353 Version 3

Standard title: Demonstrate understanding of advanced concepts used in preservation and packaging for product storage

**Level:** 2

**Credits:** 4

**Resource title:** Oranges and lemons

Resource reference: Processing Technologies VP-2.62 v2

Vocational pathway: Manufacturing and Technology

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| Quality assurance status | These materials have been quality assured by NZQA.NZQA Approved number A-A-02-2015-91353-02-8275 |
| Authenticity of evidence | Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or example material.Using this assessment resource without modification may mean that learners’ work is not authentic. Assessors/ educators may need to change figures, measurements or data sources or set a different context or topic to be investigated or a different text to read or perform. |

Vocational Pathway Assessment Resource

Achievement standard: 91353

Standard title: Demonstrate understanding of advanced concepts used in preservation and packaging for product storage

Level: 2

Credits: 4

Resource title: Oranges and lemons

Resource reference: Processing Technologies VP-2.62 v2

Vocational pathway: Manufacturing and Technology

Learner instructions

# Introduction

This assessment activity requires you to demonstrate understanding of advanced concepts used in the preservation and packaging of fruit juice for storage.

You are going to be assessed on how comprehensive your understanding is of advanced concepts used in the preservation and packaging of fruit juice for storage.

The following instructions provide you with a way to structure your work so you can demonstrate what you have learnt and achieve success in this standard.

Assessor/educator note: It is expected that the assessor/educator will read the learner instructions and modify them if necessary to suit their learners.

# Task

Prepare a presentation on different ways excess produce could be preserved as fruit juice, packaged and transported for consumption around New Zealand.

Gather information, examples, and evidence to use in your presentation.

This will include:

* the different types of decay that could occur typically in fruit juice products
* the different types of preservation, packaging, and storage methods used for fruit juices that are transported around New Zealand
* the labelling and marketing requirements for New Zealand
* how labels could be used as a marketing or promotional technique in a national environment.

Consult with your assessor/educator and agree on an appropriate form for your presentation. You could include photographs with annotations, written discussions, diagrams, and tables.

Prepare a presentation in which you:

* explain why a particular combination of preservation and packaging techniques was chosen for storage in a national environment
* consider the advantages and limitations of a range of preservation and packaging techniques that would enable fruit juice to be stored and transported around New Zealand
* consider the positives and limitations of each method and explain how each type of preservation and packaging limits the decay and maintains the product’s integrity as it is transported around the country
* discuss the labelling requirements for fruit juice products and how they could be used as a marketing tool.

# Resources

The following resources may be useful:

* Murano, P 2002, *Understanding Food Science and Technology*, Brooks Cole
* Campbell-Platt, G 2009, *Food Science and Technology*, Wiley Blackwell
* Hutton, T June 2004, *Food Preservation: An Introduction*, Campden & Chorleywood Food Research Association
* Hutton, T August 2003, *Food Packaging: An Introduction,* Campden & Chorleywood Food Research Association
* *Principles and practices of small and medium-scale fruit juice processing* <http://www.fao.org/docrep/005/y2515e/y2515e09.htm>

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Assessor/Educator guidelines

# Introduction

The following guidelines are supplied to enable assessors/educators to carry out valid and consistent assessment using this internal assessment resource.

As with all assessment resources, education providers will need to follow their own quality control processes. Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or example material. Using this assessment resource without modification may mean that learners' work is not authentic. The assessor/educator may need to change figures, measurements or data sources or set a different context or topic. Assessors/educators need to consider the local context in which learning is taking place and its relevance for learners.

Assessors/educators need to be very familiar with the outcome being assessed by the achievement standard. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing learners against it.

# Context/setting

This activity requires learners to demonstrate comprehensive understanding of advanced concepts used in the preservation and packaging for product storage. They are required to investigate a range of methods used to preserve and package fruit juice. The methods being investigated must be those that would enable the product to be packaged, stored and transported around New Zealand.

# Conditions

This is an individual task. The learner’s presentation could be in the form of a slideshow, display board, portfolio, or written report, and could include annotated flow diagrams with written discussion, photographs and drawings. The learner should confirm with the assessor/educator, the format of their presentation.

# Resource requirements

Learners will require internet access to suitable reference material.

# Additional information

None.

## Other possible contexts for this vocational pathway

The context of this resource could be adapted for other industries in the manufacturing and technology sector, where learners demonstrate understanding preservation and packaging for storage of products such as:

* household chemicals
* toiletries
* cosmetics.

# Assessment schedule: Processing Technologies 91353 – Oranges and lemons

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| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The learner demonstrates understanding of advanced concepts used in preservation and packaging for fruit juice storage by:* describing the links between preservation and packaging techniques for fruit juice and types of decay

For example:* + decay types such as microbial action are described. The use of preservation techniques such as refrigeration, pasteurisation and chemical additives to overcome spoilage and extend shelf life are described and reasons for packaging in materials such as glass, metal cans and laminated plastic detailed.
* describing how fruit juice product could be effectively preserved, packaged and stored to maintain product integrity in a national environment

For example:* + a single strength fruit juice processed from high quality fruit is considered. The description includes storage techniques used for nationwide distribution
	+ the description includes the use of the correct technical terms such as deterioration, Maillard browning, pasteurisation, pH value, aseptic and gives details of what the preservation and packaging techniques do to prevent the decay types identified
	+ the description includes how freezing and storage in a low oxygen environment can maintain the fresh character of single strength juice.
* describing legal and marketing requirements for labelling in a national environment

For example:* + the description details how the labelling must comply with the Australia New Zealand Food Standards Code. This would include information regarding the safety and suitability of the juice product, indicating any precautions to be taken, such as storage instructions, date marks and whether it contains allergens
	+ key requirements such as a nutritional content label are included and they can point to this on the label ingredients listing and ‘use by’ labelling
	+ marketing requirements could include brand identification, communication of product values and third party endorsement of product points of difference (e.g. heart tick).

*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates in-depth understanding of advanced concepts used in preservation and packaging for fruit juice storage by:* explaining the links between preservation and packaging techniques of fruit juice and the types of decay

For example:* + the food chemistry underpinning a range of decay reactions such as those caused by pathogenic microbes and natural microflora is explained
	+ environmental influences such as changes in temperature are considered in terms of the effect on limiting the shelf life of the food product.
* explaining why a particular combination of preservation and packaging techniques was chosen for fruit juice storage in a national environment

For example, the learner explains why specific fruit juice products are produced and packaged in different ways to prevent decay and deliver the qualities required by consumers. Reasons will be related to:* + controlling and preventing different types of decay
	+ maintaining product integrity during storage and transportation in the national environment
	+ legal requirements for labelling and consumer expectation for marketing.

The influence of thermal processing on the inactivation of enzymes and in doing away with the absolute need for refrigeration is explained. Consequences in terms of changes to the character of the juice from this type of processing are also considered.Advances in packaging technology that have occurred in parallel with the development of food processing systems are explained.The replacement of the 3 piece can and glass-canning jar in some applications with 2 piece aluminium cans, lightweight shock resistant glass, plastic and laminate material is explained in terms of increased efficiencies such as rapid throughput, product protection, lower cost and consumer convenience.* describing legal and marketing requirements for labelling in a national environment

For example:* + the description details how the labelling must comply with the Australia New Zealand Food Standards Code. This would include information regarding the safety and suitability of the juice product, indicating any precautions to be taken, such as storage instructions, date marks and whether it contains allergens
	+ key requirements such as a nutritional content label are included and they can point to this on the label ingredients listing and ‘use by’ labelling
	+ marketing requirements could include brand identification, communication of product values and third party endorsement of product points of difference (e.g. heart tick).

*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates comprehensive understanding of advanced concepts used in preservation and packaging for fruit juice storage by:* explaining the links between preservation and packaging techniques of fruit juice and the types of decay

For example:* + the food chemistry underpinning a range of decay reactions such as those caused by pathogenic microbes and natural microflora is explained
	+ environmental influences such as changes in temperature are considered in terms of the effect on limiting the shelf life of the food product.
* comparing and contrasting preservation and packaging techniques of fruit juice in a national environment

For example:The learner compares and contrasts options for preservation and packaging for fruit juice. The discussion includes the factors that are considered when selecting both preservation and packaging techniques for the product. Factors could include:* + the action of the preservation method
	+ the performance attributes of the packaging material
	+ the financial and environmental considerations and the requirements of the distribution channel and the consumer
	+ a discussion of techniques such as canning, tetra pak, freeze drying irradiation, chemical additives.
* discussing why labelling is legally required and how labelling for marketing is used in a national environment

For example:The discussion focuses on the role of the label in providing relevant product information to both consumer and supplier. The discussion covers:* + the rationale behind each aspect of the label and gives the reasons for its inclusion
	+ food safety issues, including date marking and an allergy warning statement
	+ product performance specifications such as in nutrition claims and active ingredients
	+ consumer preference, unique three digit code for food additives and irradiation warnings
	+ the use of marketing labelling strategies such as colour and text to tempt prospective customers to purchase the product
	+ issues related to compliance of marketing material with the Fair Trading Act (1986) and the Food Act (1981)
	+ specific health-related claims made by new juice products.

*The above expected learner responses are indicative only and relate to just part of what is required.* |

Final grades will be decided using professional judgement based on an examination of the evidence provided against the criteria in the Achievement Standard. Judgements should be holistic, rather than based on a checklist approach.