**NZQA**

**Approved**

Achievement standard: 91083 Version 3

Standard title: Demonstrate understanding of basic concepts used in processing

Level: 1

Credits: 4

Resource title: Say cheese

Resource reference: Processing Technologies VP-1.61 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-02-2015-91083-02-7381 |
| 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 exemplar 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: 91083

Standard title: Demonstrate understanding of basic concepts used in processing

Level: 1

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Resource title: Say cheese

Resource reference: Processing Technologies VP-1.61 v2

Vocational pathway: Manufacturing and Technology

Learner instructions

# Introduction

This assessment activity requires you to prepare a presentation that demonstrates your understanding of basic concepts used in the cheese making process.

You are going to be assessed on how comprehensively you demonstrate understanding of basic concepts used in the cheese making process.

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

Create an individual presentation that demonstrates your understanding of the basic concepts used in the cheese making process. You need to show that you are able to process and interpret information, and prepare a presentation. The presentation should contain information that includes the processing operations used to make cheese, the role of testing in processing operations, and the safe practices used to process ingredients to make cheese.

## Investigate

Carry out some initial investigations. Working in pairs or small groups, find out about how food ingredients are processed to make different types of cheese. For each product, gather information about:

* the processing operations and their differences
* the order in which the operations are carried out, and the reason for this order
* the tests that are applied during the processing, when they are applied, and how they informed the processing to ensure the end product had the required qualities, for example how the tests provided information that helped with the next step or provided guidance on changes that needed to be made
* the safety procedures followed
* why a processing sequence failed to produce the desired result.

During your investigation:

* compare and contrast the processing and testing of ingredients to make different cheeses
* identify the similarities and differences between processing and testing these products
* identify the safety procedures followed when working with them
* gain an understanding of how processing and testing results in cheeses with different textures, densities, colours and flavours.

## Present your findings

Use the results of your investigations to compile your presentation and include the following:

* Explain processing operations, and how these achieve the resulting outcomes in cheeses. Ensure that you include at least one processing operation from each of the following categories:
	+ measuring, shaping, or finishing (e.g. weighing, counting, grinding, slicing, moulding)
	+ containment, contamination prevention, or disposal (e.g. hygienic handling of materials/ingredients, sanitising, working aseptically, safe disposal of biologically active materials)
	+ mixing, extracting, separating, or growing (e.g. liquid mixing, blending, mechanical peeling, sieving, washing, juicing, crushing, culturing by plating)
	+ heating, cooling, or reacting (e.g. liquid heating, heating a solid, maintaining temperature for growth, acidifying, controlling of enzymes).
* Describe the role, and explain the importance of tests in processing operations when making cheese:
	+ testing refers to testing for such things as temperature, colour, size, shape, texture, ripeness and whether the product is set or matured.
* Describe safe practices in the cheese making process.
* Describe how and explain why processing operations and tests are combined in a processing sequence when making cheese.
* Compare and contrast processing operations and tests and their suitability for different materials and/or ingredients and/or purposes within cheese making.
* Discuss the relationship/s between processing operations, tests, and outcomes required in cheese making.

Include annotated flow diagrams, written discussion, annotated photos or short video clips of the experimenting you did and/or diagrams where appropriate.

# Resource A

## Useful reading

* Chambers IV, E and Wolf, MB 1996, *Sensory Testing Methods*, Chambers IV, E and Baker Wolf, MB editors, United States.
* Murano, P 2002, *Understanding Food Science and Technology,* Brooks Cole, United States.
* Hallam, E 2005, *Understanding Industrial Practices*, Nelson Thornes, United Kingdom.
* Resurreccion, A 1998, *Consumer Sensory Testing for Product Development,* Aspen Publishers, United States.

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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 exemplar 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 their comprehensive understanding of basic concepts used in making cheese.

# Conditions

Learners could work independently or in groups to develop their understanding, but they need to create their presentation independently, and will be assessed individually.

# Resource requirements

The assessor/educator will provide learners with opportunities to explore a range of processing operations, testing techniques and appropriate safety procedures in processing.

# Additional information

None.

# Assessment schedule: Processing Technologies 91083 – Say cheese

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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 basic concepts used in processing cheese by:* describing safe practices in processing

For example the learner describes:* + routine personal hygiene practices e.g. washing hands, clean clothing, hair tied back, no nail polish or jewellery
	+ food safety practices e.g. milk quality, temperatures, storage
	+ how equipment is cleaned and sterilised
	+ kitchen safety e.g. handling the equipment.
* describing processing operations and identifying the resulting outcomes

For example:The learner describes at least one processing operation from each of the following categories: * + measuring, shaping or finishing e.g. measuring the culture, pressing and/or transferring to perforated moulds
	+ containment, contamination prevention, or disposal e.g. preventing the cheese from getting too moist and excess mould building up
	+ mixing, extracting, separating, growing e.g. curds and whey separation
	+ heating, cooling or reacting e.g. heating to develop the curds.

The learner describes how processing operations change for different types of cheese.* describing the role of tests in processing operations and how processing operations and tests can be combined in a processing sequence

For example the learner describes:* + how weighing and measuring must be accurate to ensure the correct ratio of ingredients to produce the desired product
	+ how milk must be tested to ensure the optimum temperature for starter cultures to grow
	+ testing for pH of the milk and acidity
	+ how hands are used to feel the curd
	+ the visual tests for colour before brining
	+ the salinity testing of brine.

*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates in-depth understanding of basic concepts used in processing cheese by:* describing safe practices in processing

For example the learner describes:* + routine personal hygiene practices e.g. washing hands, clean clothing, hair tied back, no nail polish or jewellery
	+ food safety practices e.g. milk quality, temperatures, storage
	+ how equipment is cleaned and sterilised
	+ kitchen safety e.g. handling the equipment.
* explaining processing operations and how these achieve required outcomes

For example:The learner describes at least one processing operation from each of the following categories: * + measuring, shaping or finishing e.g. measuring the culture, pressing and/or transferring to perforated moulds
	+ containment, contamination prevention, or disposal e.g. preventing the cheese from getting too moist and excess mould building up
	+ mixing, extracting, separating, growing e.g. curds and whey separation
	+ heating, cooling or reacting e.g. heating to develop the curds.

The learner explains how processing operations change for different types of cheese.* explaining the importance of tests in processing operations and why operations and tests are combined in a processing sequence

For example:The learner explains how the milk must be warmed to a particular temperature to ensure optimal conditions for the starter culture, and how, if the temperature is too low, the bacteria will not develop the lactic acid needed to set the curds and develop the flavour.*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates comprehensive understanding of basic concepts used in processing cheese by:* describing safe practices in processing

For example the learner describes:* + routine personal hygiene practices e.g. washing hands, clean clothing, hair tied back, no nail polish or jewellery
	+ food safety practices e.g. milk quality, temperatures, storage
	+ how equipment is cleaned and sterilised
	+ kitchen safety e.g. handling the equipment.
* comparing and contrasting processing operations and tests, and their suitability for different materials and/or purposes

For example:The learner compares and contrasts at least one processing operation from each of the following categories:* + measuring, shaping or finishing e.g. measuring the culture, pressing and/or transferring to perforated moulds
	+ containment, contamination prevention, or disposal e.g. preventing the cheese from getting too moist and excess mould building up
	+ mixing, extracting, separating, growing e.g. curds and whey separation
	+ heating, cooling or reacting e.g. heating to develop the curds.

The learner discusses how, for fresh cheese, lactic acid and bacteria are used to separate the curds and whey, and to provide some of the distinctive flavour. After separating the curds (when testing shows it is at the right stage), salt is added for flavour (mechanical probes are used to adjust the amount) and the cheese is ready to eat (fresh cheese), or it can be pressed into moulds and matured (aged cheese), with tests being carried out to ensure the temperature and moisture levels are optimal. The learner compares and contrasts this with, for example, haloumi cheese, and discusses:* + how the curds are separated using only rennet and not bacteria
	+ how the curds are cooked further to develop the stringy consistency (tested with hands for elasticity and firmness) and how it is then stored in brine to develop the flavour.
* discussing the relationship/s between processing operations, tests, and outcomes required

For example:The learner discusses how, for both cheeses, the temperature of the milk and curd is important to ensure bacteria can develop (for fresh cheese) and the texture of the protein altered to create the stringy texture of the haloumi cheese.*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.