

Title	Demonstrate knowledge of ingredients and baking science used in a plant bakery		
Level	4	Credits	12

Purpose	<p>This unit standard is for people working in or intending to work in a plant bakery as a baking tradesperson.</p> <p>People credited with this unit standard are able to: describe the development of plant baking; explain the scientific principles used in plant baking; explain the functions and interactions of baking ingredients; describe the production of frozen doughs made in plant bakeries; demonstrate knowledge of premixes and concentrates used in plant baking; explain aeration as it applies to plant baking; and state the nutritional values of bakery products.</p>
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Classification	Food and Related Products Processing > Baking
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Available grade	Achieved
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Explanatory notes

Assessment information

Evidence generated during assessment against this standard must be consistent with industry practice. Such knowledge is available in relevant training manuals and reference texts. No one textbook or other source of information is envisaged, as new approaches to commercial baking and baking products are published regularly.

Outcomes and evidence requirements

Outcome 1

Describe the development of plant baking.

Evidence requirements

- 1.1 The history of baking is outlined in terms of its origin and evolution from the ancient Egyptian period through to the present time.
- 1.2 Cereals are described in terms of their importance to world nutrition and use in the baking industry.

1.3 The evolution and development of plant baking processes and ingredients is described.

Range plant baking processes, wheat cultivars, flour properties, flour milling processes, modification of yeast cultures.

1.4 The role and importance of plant baking in meeting the nutrition needs of large populations is explained.

1.5 Plant production processes are described, and compared for different bakery products in terms of the number and sequence of steps.

Range processes – ingredient storage, ingredient preparation, weighing, mixing, baking, cooling, finishing, packing.

Outcome 2

Explain the scientific principles used in plant baking.

Evidence requirements

2.1 The changes in the states of matter of doughs, batters, and baked products during their development are explained.

Range solids, liquids, gases, emulsions, suspensions.

2.2 pH levels are described in terms of their effect on doughs, batters and baked products and their control during the baking process.

Range yeast fermentation, staling and spoilage, sourdough breads, aerating agents, use of acidity regulators.

2.3 The importance of temperature control and measurement is explained in relation to the mixing of doughs and batters, and the baking process.

2.4 The importance of controlling the energy input levels and its subsequent effects on mixing and baking doughs and batters is explained.

Range heat, work.

2.5 The cooling process is described in terms of its effect on product quality, and means of achievement in an automated baking plant.

Outcome 3

Explain the functions and interactions of baking ingredients.

Evidence requirements

3.1 Primary ingredients are described in terms of their origin, form, properties, function, and use in automated plant baking.

3.2 Secondary ingredients are described in terms of their, form, function, and use in automated plant bakery products.

Range dough conditioners, emulsifiers, improvers, flour treatment agents, oxidising agents, aerating agents, acidity regulators, processing aids, fat replacers, enzymes.

3.3 Flavourings, colours, and spices are described in terms of their function and use in plant bakery products.

3.4 The chemical reactions and interactions of ingredients during baking processes are described.

Outcome 4

Describe the production of frozen doughs made in plant bakeries.

Evidence requirements

4.1 Frozen doughs are described in terms of recipe formulation, production processes and temperature control.

Outcome 5

Demonstrate knowledge of premixes and concentrates used in plant baking.

Evidence requirements

5.1 Premixes and concentrates are described according to recipe formulation and use in plant baking.

5.2 The advantages and disadvantages of using premixes, concentrates, and frozen doughs in plant baking are described.

Outcome 6

Explain aeration as it applies to the baking process.

Evidence requirements

6.1 Aeration is defined by its function and effect on baked products.

6.2 Aerating of doughs and batters is described in terms of processes used and its importance to baked products.

6.3 The methods of aerating doughs and batters in automated plant baking are described.

Range mechanical, biological, physical, chemical.

6.4 Aeration agents and methods are described in relation to plant produced products

Range yeast, baking powder, bi-carbonate of soda, balance of acids, reaction rates, time and temperature.

Outcome 7

State the nutritional values of bakery products.

Evidence requirements

7.1 The nutritional values of baked products are described in terms of proteins, carbohydrates, sugars, fibre, vitamins, minerals, fats, sodium, and energy.

Range bread, pastry, cakes, biscuits.

7.2 The moisture content of baked products is stated and its effect on shelf life described.

Range bread, pastry, cakes, biscuits.

7.3 Bakery products are described in terms of meeting dietary and cultural requirements.

Range gluten free, low fat, low sugar, dietary intolerances, halal, kosher, vegetarian, vegan.

Planned review date	31 December 2021
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	17 March 2016	N/A

Consent and Moderation Requirements (CMR) reference	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The

CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact Competenz at qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.