Title	**Describe cheese making in an artisan or boutique dairy processing operation**		
Level	**5**	**Credits**	**15**

Purpose	People credited with unit standard are able to describe, in an artisan or boutique dairy processing operation: properties of milk and how these can influence cheese making; the handling and processing of raw milk used for cheese making; the preparation and use of starters for cheese making; rennet coagulation of milk for cheese making; the curd making process for cheeses; curd salting for cheese; changes that occur during cheese ripening; cheese composition control; and the management of cheese making processes.

Classification	Dairy Processing > Milk Products

Available grade	Achieved

Guidance Information

Legislation and regulations relevant to this unit standard include but are not limited to:
- Animal Products Act 1999;
- Health and Safety at Work Act 2015;
- Animal Products (Dairy) Regulations 2005.

Outcomes and performance criteria

Outcome 1

Describe properties of milk and how these can influence cheese making in an artisan or boutique dairy processing operation.

Performance criteria

1.1 Describe properties of milk from cows, goats and sheep in terms of the variations in composition across the different species, and how it affects cheese making.

Range fat, protein, water, minerals, lactose.

1.2 Describe properties of milk in terms of conditions for microbial contaminants, growth, and controls to achieve speciality cheese product specifications.

Range contaminants may include but are not limited to – psychrotrophs, coliforms, thermophiles, thermodurics, yeasts, moulds, geotrichum;
evidence of four contaminants is required.

1.3 Describe the cheese making process in terms of monitoring and responding to factors influencing milk composition in relation to product type.

Range factors may include but are not limited to – seasonal variation, livestock species, livestock breed;
evidence of two factors is required.

Outcome 2

Describe the handling and processing of raw milk used for cheese making in an artisan or boutique dairy processing operation.

Performance criteria

2.1 Describe the handling and processing of raw milk used for speciality cheese making in terms of conditions required to prevent deterioration of milk during storage.

Range conditions may include but are not limited to – temperature, time, microbial counts, pre-treatment, storage;
evidence of three conditions is required.

2.2 Describe the handling and processing of raw milk used for cheese making in terms of the purposes of heat treatment and the influences of heat treatment on speciality cheese making.

Range heat treatment may include but are not limited to – pasteurisation, thermisation;
evidence of one heat treatment is required.

Outcome 3

Describe the preparation and use of starters for cheese making in an artisan or boutique dairy processing operation.

Performance criteria

3.1 Describe the use of starters in cheese making in terms of starter types, characteristics, selection of starter organisms, maintenance of starter organism ratios and the impacts on starter systems for different cheese types to achieve cheese characteristics in the finished product.

3.2 Describe the use of starters for cheese making in terms of bacteriophage inhibition of starter organisms.

Outcome 4

Describe rennet coagulation of milk for cheese making in an artisan or boutique dairy processing operation.

Performance criteria

4.1 Describe coagulation of milk for cheese making in terms of the mechanisms of coagulation, and issues that can occur during the coagulation of milk.

Range mechanisms may include but are not limited to – enzymatic phase, coagulation phase, acid coagulation, flocculation test, determining accurate cutting times;
evidence of three mechanisms is required.

4.2 Describe rennet coagulation of milk for cheese making in terms of factors that influence rennet coagulation.

Range factors may include but are not limited to – type of rennet, temperature, pH, time, milk casein content, calcium concentration;
evidence of four factors is required.

4.3 Describe rennet coagulation of milk for cheese making in terms of the influences of coagulation and linkage with the final cheese product characteristics.

Range influences may include but are not limited to – manufacturing conditions, flavour, functionality;
evidence of two influences is required.

Outcome 5

Describe the curd making process for cheeses made in an artisan or boutique dairy processing operation.

Performance criteria

5.1 Describe the curd making process in terms of influences of factors affecting syneresis.

Range factors may include but are not limited to – milk composition, curd particle size, acidity, agitation, temperature, time, post-vat conditions;
evidence of four factors is required.

5.2 Describe the curd making process in terms of impacts of curd washing on the cheese making process and cheese characteristics.

Range impacts may include but are not limited to – syneresis, pH, lactose concentration;
evidence of two impacts is required;
cheese characteristics include but are not limited to – moisture content, fat content, solids non-fat content, flavour, sensory;
evidence of one characteristic for a cheese variety is required.

5.3 Describe the curd making process for cheeses in terms of influences of cooking and stirring on the cheese making process and subsequent cheese varieties.

Range cooking and stirring may include but is not limited to – direct heating, indirect heating, temperature, time;
evidence of two is required;
influences may include but are not limited to – syneresis, case hardening, starter activity;
evidence of two influences is required.

5.4 Describe the curd making process in terms of influences for the separation of curd from whey on cheese ripening and cheese properties.

Range influences may include but are not limited to – pH, residual rennet, calcium ion concentration, curd matting;
evidence of two influences is required.

Outcome 6

Describe curd salting for cheese manufactured in an artisan or boutique dairy processing operation.

Performance criteria

6.1 Describe curd salting in terms of factors influencing salt uptake, moisture loss and differences in salt dispersion in dry salted and brine salted cheeses.

Range factors may include but are not limited to – curd particle size, curd condition at salting, salt application rate, salt application method, salt application period;
evidence of three factors is required.

6.2 Describe curd salting in terms of factors causing salting related defects in cheeses.

Range salting types may include but are not limited to – brine salting, dry salting;
evidence of two factors causing defects for one salting type is required.

Outcome 7

Describe changes that occur during cheese ripening in an artisan or boutique dairy processing operation.

Performance criteria

7.1 Describe changes that occur during cheese ripening in terms of differences in equilibration of moisture and salt distribution in rindless and rinded cheeses.

7.2 Describe changes that occur during cheese ripening in terms of the action of proteolytic and lipolytic enzymes.

7.3 Describe changes that occur during cheese ripening in terms of texture and flavour development of rindless and rinded cheeses.

Outcome 8

Describe cheese composition control in an artisan or boutique dairy processing operation.

Performance criteria

8.1 Describe cheese composition control in terms of process variables for control of fat in the dry matter (FDM) and the influence of FDM on moisture in the non-fat substance (MNFS).

8.2 Describe cheese composition control in terms of dependent and independent process variables for control of MNFS.

8.3 Describe cheese composition control in terms of process variables for control of salt-in-moisture.

8.4 Describe cheese composition control in terms of process variables for control of cheese pH.

Outcome 9

Describe the management of cheese making processes in an artisan or boutique dairy processing operation.

Performance criteria

9.1 Describe the management of cheese making processes in terms of the importance and use of process control checks.

Range process control checks may include but are not limited to – temperature, pH, microbiological, relative humidity; evidence of two process control checks is required.

Planned review date	31 December 2026

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 November 2000	31 December 2012
Revision	2	13 June 2003	31 December 2012
Review	3	25 May 2007	31 December 2012
Review	4	17 May 2012	31 December 2016
Review	5	18 June 2015	31 December 2024
Review	6	28 April 2022	N/A

Consent and Moderation Requirements (CMR) reference	0022

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.