

Title	Describe the buttermaking process in a dairy processing operation		
Level	5	Credits	15

Purpose	People credited with this unit are able to describe: properties of raw materials, and butters made using a buttermaking process; the handling and processing of raw materials used for the manufacture of butter products; and the buttermaking process for the manufacture of butter products.
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Classification	Dairy Processing > Milk Products
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Available grade	Achieved
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Guidance Information

- 1 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.
- 2 For assessment against this unit standard it is expected that the candidate will be experienced in the operation of a buttermaking plant. This experience will include the handling of raw materials for the processing and packaging of the finished product.

Outcomes and performance criteria

Outcome 1

Describe properties of raw materials, and butters made using a buttermaking process.

Performance criteria

- 1.1 Describe milk components in terms of their influence on the buttermaking process and on properties of the final products.

Range milk components may include but are not limited to – sterols, vitamins, phospholipids, colouring compounds, fatty acids (short, medium, long, unsaturated), melting properties and crystallisation of triglycerides, seasonal variation; evidence of five milk components is required.

- 1.2 Describe the causes of lipolysis and oxidation of milkfat in terms of their influence on final butter flavour and shelf-life.

- 1.3 Describe conditions for microbial contaminants, growth and control in terms of achieving butter and buttermilk specifications.

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

Outcome 2

Describe the handling and processing of raw materials used for the manufacture of butter products.

Performance criteria

- 2.1 Describe milk and cream handling in terms of manufacturing to meet final product specifications of butter products.

Range product specifications may include but are not limited to – emulsion stability, fat globule membrane, gelling, microbial growth, lipolysis, solids; evidence of four product specifications is required.

- 2.2 Describe the purposes of cream treatment in terms of manufacturing to meet final product specifications of butter products.

Range purposes may include but are not limited to – flavour management, pasteurisation, lipase inactivation, cream crystallisation, shelf-life; evidence of three purposes is required.

- 2.3 Describe cream treatment equipment in terms of their operating principles.

Range equipment may include but is not limited to – Flavourtech, Vacreators; evidence of one equipment type is required.

- 2.4 Describe cream treatment in terms of the factors influencing taint removal, fat globule size, and fat losses.

Range factors may include but are not limited to – strip rate, temperature, pressure and vacuum, taint type, taint concentration, fat recovery; evidence of three factors is required.

- 2.5 Describe cream treatment and holding in terms of control of cream crystallisation for buttermaking.

Range control may include but is not limited to – solid fat content, fat content consistency, silo agitation, seasonal variation; evidence of three controls is required.

Outcome 3

Describe the buttermaking process for the manufacture of butter products.

Performance criteria

- 3.1 Describe the components of buttermaking equipment in terms of the operating principles.
- Range components may include but are not limited to – cream pump, cream heating plate heat exchanger, churning, buttermilk separation, working, vacuum, ingredient dosing, butter pump; evidence of four components is required.
- 3.2 Describe cream process variables in terms of their effect on composition control and hardness of butter.
- Range variables may include but are not limited to – fat content, solids content, temperature, fat globule size, solid fat content, fat recovery; evidence of three variables is required.
- 3.3 Describe butter machine variables in terms of their effect on composition control and hardness of butter.
- Range variables may include but are not limited to – throughput, cream heating plate heat exchanger, churning section, buttermilk separation, working sections, vacuum, ingredient dosing, machine starting and stopping; evidence of four variables is required.
- 3.4 Describe butter packing and handling in terms of colour and body defects and unit load shape and stability.
- Range butter packing and handling may include but is not limited to – butter pumping, buffer storage, pack filling, palletisation; evidence of two is required.
- 3.5 Describe cleaning of buttermaking equipment in terms of factors affecting cleaning performance.
- Range factors may include but are not limited to – fat recovery, clean in place, cleaning, anti-stick, sanitiser; evidence of three factors is required.
- 3.6 Describe quality control and final product grading in terms of customer product purchase specifications for the manufacture of butter products.
- Range quality control and grading include but are not limited to – trace back, sensory evaluation, statistical grading; evidence of two is required.

Planned review date	31 December 2026
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	10 January 1994	31 December 2012
Revision	2	16 September 1997	31 December 2012
Review	3	5 July 1999	31 December 2012
Revision	4	13 June 2003	31 December 2012
Rollover and Revision	5	20 June 2006	31 December 2014
Rollover	6	17 July 2009	31 December 2016
Review	7	18 June 2015	31 December 2024
Review	8	28 April 2022	N/A

Consent and Moderation Requirements (CMR) reference	0022
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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.