Title	**Describe casein processing in a dairy processing operation**		
Level	**3**	**Credits**	**5**

Purpose	People credited with this unit standard are able to describe: the main types of casein made and their uses; the compositional properties of milk and their importance in milk protein product processing; the wet-side process and plant used for manufacturing milk protein products; the dry-side process and plant used for manufacturing milk protein products; and process control points and properties of milk protein products in terms of factors affecting quality and yield, in a dairy processing operation.

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;
  and any subsequent amendments.

Outcomes and performance criteria

Outcome 1

Describe the main types of casein made and their uses in a dairy processing operation.

Performance criteria

1.1 Describe the main types of casein in terms of the precipitation techniques employed in their manufacture.

Range types include but are not limited to – lactic acid, mineral acid, rennet, co-precipitates, total milk protein.

1.2 Describe uses of the main types of caseins in terms of their main edible and industrial applications.

Outcome 2

Describe the compositional properties of milk and their importance in milk protein product processing in a dairy processing operation.

Performance criteria

2.1 Describe compositional properties of milk in terms of the typical seasonal variations in composition.

Range compositional properties include but are not limited to – water, fat, protein, lactose, minerals.

2.2 Describe compositional properties of milk in terms of their influences on milk protein product processing.

Range components include but are not limited to – casein, whey proteins, minerals.

Outcome 3

Describe the wet-side process and plant used for manufacturing milk protein products in a dairy processing operation.

Performance criteria

3.1 Describe the wet-side process in terms of the main purpose(s) of each stage and the main techniques commonly employed.

Range stages include but are not limited to – pasteurisation, starter addition, pH adjustment, cooking, acidulation, washing, curd separation.

3.2 Describe the wet-side process in terms of the main processing differences between lactic acid, mineral acid, and rennet caseins.

3.3 Describe wet-side process in terms of types of plant commonly employed.

Range process includes but is not limited to – cooking, acidulation, washing, curd separation.

Outcome 4

Describe the dry-side process and plant used for manufacturing milk protein products in a dairy processing operation.

Performance criteria

4.1 Describe the dry-side process in terms of the main purpose(s) of each stage and the main techniques commonly employed.

Range process includes but is not limited to – drying, sizing, tempering, milling and sieving, blending.

4.2 Describe the dry-side process in terms of the main processing differences between lactic acid, mineral acid, and rennet caseins.

4.3 Describe the dry-side process in terms of types of plant commonly employed.

Range plant may include but is not limited to – bates driers, ring driers, pillet driers, spray driers;
evidence of one plant is required.

Outcome 5

Describe process control points and properties of milk protein products in terms of factors affecting quality and yield in a dairy processing operation.

Performance criteria

5.1 Describe process control points in terms of factors affecting quality and yield of milk protein products.

Range process control points include but are not limited to – starter preparation, silo setting, pH adjustment, cooking, acidulation, dewheying, sizing, drying, tempering, milling and sieving, blending.

5.2 Describe properties of milk protein products in terms of their influences on final product quality.

Range properties include but are not limited to – moisture, fat, ash, lactose, colour, sediment, foreign matter, solubility, viscosity, particle size.

Planned review date	31 December 2025

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	22 June 1995	31 December 2014
Review	2	5 July 1999	31 December 2014
Review	3	26 August 2002	31 December 2014
Revision	4	13 June 2003	31 December 2014
Rollover	5	17 July 2009	31 December 2016
Review	6	18 June 2015	31 December 2024
Review	7	25 March 2021	N/A
Revision	8	26 January 2023	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 the 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.