

Title	Describe evaporation and spray drying of dairy products in a dairy processing operation		
Level	3	Credits	5

Purpose	People credited with this unit standard are able to describe: the purposes of evaporation and spray drying, and common uses of the main classes of spray dried dairy products; the main components and controls of the evaporation process; the main components and controls of spray drying; and the properties and company food safety requirements of spray dried dairy products, in a dairy processing operation.
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Classification	Dairy Processing > Milk Products
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Available grade	Achieved
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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 purposes of evaporation and spray drying, and common uses of the main classes of spray dried dairy products in a dairy processing operation.

Performance criteria

- 1.1 Describe the purposes of evaporation and spray drying in terms of preservation, reduction of volume, and tailoring for customer applications.
- 1.2 Describe the relationship between the main unit operations in the milk powder process in terms of the purpose of each stage.
- Range operations include but are not limited to – milk treatment, evaporation, spray drying.

- 1.3 Describe common uses of the main classes of spray dried dairy products in terms of food ingredients and consumer applications.

Range uses may include but are not limited to – skim milk powders, whole milk powders, whey protein concentrates, milk protein concentrates;
evidence of two uses is required.

Outcome 2

Describe the main components and controls of the evaporation process in a dairy processing operation.

Performance criteria

- 2.1 Describe the main components of a falling film evaporator in terms of their functions.

Range components may include but are not limited to – preheating system, calandria, vapour recompression, separator vessels, condenser, vacuum systems;
evidence of two components is required.

- 2.2 Describe the main controls of an evaporator in terms of their primary functions.

Range controls may include but are not limited to – thermal vapour recompression, mechanical vapour recompression, temperature, vacuum, total solids;
evidence of at least two controls is required.

Outcome 3

Describe the main components and controls of spray drying in a dairy processing operation.

Performance criteria

- 3.1 Describe the main components of a spray drier in terms of their functions.

Range components may include but are not limited to – atomisers, primary drying chambers, secondary drying, powder and air separation;
evidence of two components is required.

- 3.2 Describe the main controls of a spray drier in terms of their primary functions.

Range controls may include but are not limited to – moisture, inlet & outlet temperature, atomiser amps, nozzle pressure;
evidence of two controls is required.

Outcome 4

Describe the properties and company food safety requirements of spray dried dairy products in a dairy processing operation.

Performance criteria

- 4.1 Describe spray dried dairy products in terms of product composition and physical characteristics.
- 4.2 Describe spray dried products in terms of company food safety requirements.

Planned review date	31 December 2025
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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
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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 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.