

Title	Describe ethanol distillation and alcohol fermentation in a dairy processing operation		
Level	3	Credits	5

Purpose	People credited with this unit standard are able to describe: the ethanol distillation process, and the alcohol fermentation process, 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

- 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;
 and any subsequent amendments.

- 2 Definition

Organisational requirements – instructions to staff on policies and procedures which are documented in memo, electronic or manual format and are available in the workplace. These requirements include but are not limited to – site specific requirements, company quality management requirements, hygiene, health and safety, regulatory and legislative requirements.

Outcomes and performance criteria

Outcome 1

Describe the ethanol distillation process in a dairy processing operation.

Performance criteria

- 1.1 Describe the distillation process in terms of the equipment used.

Range	equipment includes but is not limited to – tray and plate towers, reboilers, condensers, column sections; process includes but is not limited to – vapour, liquid flow rates, column performance.
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- 1.2 Describe the distillation process in terms of measures, composition and physical properties.
- Range physical properties include but are not limited to – density, vapour, pressure, volatility.
- 1.3 Describe the purification process in terms of its relationship to the distillation process.
- Range purification process includes but is not limited to – concentration profiles, boiling and rectifying columns, azeotropes, extractive distillation, dehydration processes.
- 1.4 Describe the distillation process in terms of process and quality control requirements.
- Range requirements include but are not limited to – automation and instrumentation, tasks, bacterial contamination, molecular sieve dehydrator technology, customer feedback.
- 1.5 Describe column performance in terms of the distillation process and outcomes.

Outcome 2

Describe the alcohol fermentation process used in a dairy processing operation.

Performance criteria

- 2.1 Describe the alcohol fermentation process in terms of the aerobic and anaerobic processes.
- 2.2 Describe the process of whey production in terms of its composition.
- Range composition includes but is not limited to – casein protein, whey protein.
- 2.3 Describe the alcohol fermentation process in terms of the microbiological processes involved.
- Range processes include but are not limited to – microbiology and microbial growth parameters, yeast physiology, yeast propagation, microbial contamination.
- 2.4 Describe the process of alcohol fermentation in terms of its relationship to the ethanol distillation process.
- Range processes include but are not limited to – batch and continuous fermentation, yield and productivity management, yeast recycling, carbon dioxide evolution.

Replacement information	This unit standard replaced unit standard 19329 and unit standard 19330.
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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	18 June 2015	31 December 2024
Review	2	25 March 2021	N/A
Revision	3	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.