
DAIRY TECHNOLOGY
**Identify materials and products and
describe an evaporation process used
in the dairy industry**

level:	4
credit:	16
final date for comment:	July 2009
expiry date:	December 2010
sub-field:	Dairy Manufacturing
replacement information:	This unit standard and unit standard 21801 replaced unit standard 767.
purpose:	People credited with this unit standard are able to: identify the components of the raw material(s) and their influences on the dairy evaporation process and the product; describe the operating principles of the components of a falling film evaporator; and identify product properties and process control points that affect these properties, for an evaporated dairy product.
entry information:	Recommended: Unit 4831, <i>Explain evaporation and spray drying of dairy products in the dairy industry</i> , or demonstrate equivalent knowledge and skills.
accreditation option:	Evaluation of documentation and visit by NZQA and industry.
moderation option:	A centrally established and directed national moderation system has been set up by the New Zealand Industry Training Organisation.
special notes:	1 Definitions <i>WPC</i> refers to whey protein concentrate; <i>MPC</i> refers to protein concentrate; <i>organisational requirements</i> refer to instructions to staff on policy and procedures which are documented in memo and/or manual format and are available in the workplace. These include but are not limited to site-specific and company standard operating procedures, food safety and quality management requirements.

DAIRY TECHNOLOGY
Identify materials and products and
describe an evaporation process used
in the dairy industry

- 2 Work must be carried out in accordance with organisational requirements, production requirements, licensing requirements, legislative requirements.
- 3 Legislative requirements in this unit standard include but are not limited to compliance with Animal Products Act 1999, Animal Products (Dairy) Regulations 2005, Food Act 1981, relevant codes of practice, and subsequent amendments.

Elements and Performance Criteria

element 1

Identify the components of the raw material(s) and their influences on the dairy evaporation process and the product.

performance criteria

- 1.1 The components of the process raw material(s) are identified in terms of their proportions and factors affecting these proportions.

Range: components may include but are not limited to – fat, protein, lactose, minerals, vitamins, water;
factors influencing composition may include but are not limited to – genetic, physiological and/or seasonal, environmental, material supplier, material type and/or form, pre-evaporation processes.
- 1.2 The components and properties of the raw material(s) are identified in terms of major influences on the evaporation process and on the product.
- 1.3 Deteriorative effects on the raw material(s) are identified in terms of their relevance to product quality.

DAIRY TECHNOLOGY
Identify materials and products and
describe an evaporation process used
in the dairy industry

element 2

Describe the operating principles of the components of a falling film evaporator.

performance criteria

- 2.1 The heat transfer equation is described in terms of its relevance to heat transfer in an evaporator.
- 2.2 The components of a falling film evaporator are described in terms of their functions and principles of operation.
- Range: components may include but are not limited to – preheating system, calandria, separator vessels, condenser, vacuum systems.
- 2.3 The use of multiple effects and vapour recompression is described in terms of the optimisation of energy efficiency.
- 2.4 Evaporator cleaning is described in terms of organisational requirements.

element 3

Identify product properties and process control points that affect these properties, for an evaporated dairy product.

performance criteria

- 3.1 Potential microbial hazards in the evaporation process are identified in terms of conditions for microbial growth and possible control strategies.
- 3.2 Product attributes are identified for an evaporated dairy product, in terms of their relevance to the manufacturer and the customer.

DAIRY TECHNOLOGY
Identify materials and products and
describe an evaporation process used
in the dairy industry

3.3 Process control points are identified in terms of manufacturing requirements for an evaporated dairy product.

Range: unit operations may include but are not limited to – raw materials treatment and handling, evaporation, concentrate handling; selected products may include but are not limited to – skim milk, whole milk, a nutritional product, buttermilk, WPC, MPC, caseinate, lactose; evidence is required for one product.

3.4 Process control points for an evaporated dairy product are identified in terms of their effects on the product.

Range: effects may include but are not limited to – chemical, physical, microbiological and sensory properties.

Comments on this unit standard

Please contact the New Zealand Industry Training Organisation mail@nzito.co.nz if you wish to suggest changes to the content of this unit standard.

Please Note

Providers must be accredited by the Qualifications Authority or a delegated inter-institutional body before they can register credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by the Qualifications Authority before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for providers wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

This unit standard is covered by AMAP 0022 which can be accessed at <http://www.nzqa.govt.nz/site/framework/search.html>.