Australian Government

Department of Education, Employment and Workplace Relations

FDFCH4004A Produce acid/heat coagulated cheeses

Release: 2

INDUSTRY SKILLS COUNCILS

Creating Australia's Future

FDFCH4004A Produce acid - heat coagulated cheese

Modification History

April 2012: Minor typographical corrections.

Unit Descriptor

This unit of competency covers the skills and knowledge required to produce a range of acid/heat-coagulated cheeses to a commercial standard.

Application of the Unit

This unit applies to production managers in cheese enterprises. The unit typically applies to managers with responsibility for developing operational procedures, controlling the cheese making process, and complying with occupational health and safety (OHS), food safety, record keeping and quality assurance requirements for acid/heat-coagulated cooked cheeses. This unit includes all aspects of acid/heat-coagulated cooked cheese production and cheese making equipment and ingredients.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Maintain sanitation in making acid/heat-coagulated cheese	1.1 All surfaces are kept clean and sanitised, except for curing boards 1.2 Stringent personal hygiene and quarantine procedures are applied 1.3 Multi-phase cleaning systems are applied to ensure sanitised surfaces and equipment 1.4 Food safety related information is recorded, as required, including milk counts and cheese bacterial counts
2. Implement procedures to prepare whey, milk/whey blends or cream for artisan acid/heat-coagulated cheese making	2.1 Raw milk or cream is sampled and composition and counts are measured/ analysed 2.2 Clarification and standardisation procedures are carried out for raw milk or cream 2.3 Fresh whey is heated to prevent further acidification if required 2.4 Raw milk or cream area is maintained separate from other operational areas
3. Promote coagulation of both curds and whey	3.1 The temperature of dairy liquid is raised to that required 3.2 The hot liquid is acidified to coagulate both casein and whey proteins 3.3 The curd is held in the curd/whey mixture after coagulation 3.4 A log of pH and temperature is maintained to monitor yield 3.5 Draining is carried out
4. Manage cooking and packaging procedures for acid/heat-coagulated cheeses	4.1 The cooking schedule is planned to ensure optimal coagulation of proteins 4.2 Draining procedures are developed to ensure cheese is at required consistency 4.3 Salting treatments are applied to ensure salt profile effects are minimised in the finished product 4.4 Cheeses are cooled before packing, if required 4.5 Aseptic conditions are maintained during cooling to minimise contamination with microbial contaminants 4.6 Packaging appropriate for acid/heat-coagulated cooked cheeses is applied 4.7 The product is labelled with complete and accurate information as specified by legislation
5. Monitor and adjust process control to produce cheese with consistent taste and quality	5.1 The process objectives of acid/heat-coagulated cooked cheese making are established 5.2 Texture of the cheese is controlled by regulating pH and fat 5.3 Cheese flavour is controlled through choice of ingredients (whey, milk, cream, acidulant and salt)

ELEMENT	PERFORMANCE CRITERIA
	5.4 Yield is optimised through establishing process control parameters
6. Carry out sensory analysis and grading of acid/heat-coagulated cheeses	6.1 The characteristic flavours and flavour defects in cheese are identified 6.2 Different textures of cheeses are recognised 6.3 Cheese is assessed for evenness of colour and finish 6.4 Organoleptic properties of acid/heat-coagulated cooked cheese are analysed to identify possible changes to process controls
7. Meet workplace requirements for food safety, quality and environmental management	7.1 Food safety related information is recorded 7.2 Records of cheese manufacture are maintained 7.3 Health and safety and environmental protection procedures are developed through a risk management approach 7.4 Waste is disposed of and environmental impacts of the cheese making operation are reviewed

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills include:

Ability to:

- acidify a heated milk mixture to promote coagulation
- carry out drainage operations
- recover curd in the cheese
- monitor storage and ripening, if applicable, conditions for acid/heat-coagulated cheese
- conduct tests for pH, moisture, fat and salt levels in cheese
- maintain records for cheese making
- use multi-phase cleaning systems
- develop safe work practices and personal hygiene and sanitation procedures
- maintain the integrity of acidifying agents
- maintain hygiene in line with Australian standards for cleaning dairy equipment
- calculate cheese yields
- develop packaging and labelling for acid/heat-coagulated cooked cheeses
- comply with environmental requirements for a processing operation.

Required knowledge includes:

Knowledge of:

- the main components of milk, whey and cream for making acid/heat-coagulated cheese
- specifications of product at each stage of cheese making
- standardisation of dairy liquids for acid/heat-coagulated cheese
- types of acid used for coagulation
- microbial contaminants of cheese (lipolytic bacteria, yeasts, moulds, bacillus, listeria, E. coli, salmonella, coliforms and staphylococci) and their impact on cheese quality
- sampling and testing procedures for microbes
- yeasts and moulds and other microorganisms of significance in cheese making
- contamination/food safety risks associated with the process and related control measures
- techniques used to monitor the cheese making process, such as inspecting, measuring and testing, as required by the process
- common causes of variation and corrective action required for each cheese making process
- organoleptic properties and their relationship to processes and ingredients in cheese making
- sampling procedures
- contamination risk of inoculants and contaminants
- food safety and quality assurance standards and procedures
- cleaning and sanitation procedures and Australian standards
- routine maintenance procedures
- product/batch changeover procedures
- OHS hazards and controls

- hygiene procedures including washing and decontamination
- Food Standards Code
- procedures for recording production and performance information
- environmental issues and controls relevant to the process, including waste collection and handling procedures related to the process.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to produce acid/heat-coagulated cheeses to a commercial standard. Assessment cannot take place on fully integrated industrial equipment.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Critical aspects of assessment must include evidence of the ability to produce acid/heat-coagulated cheeses to a commercial standard, including:
	• establishing procedures for:
	  • sanitation, food safety, quality assurance and environmental management in acid/heat-coagulated cheese production
	• developing and implementing work instructions to:
	  • prepare dairy liquids for cheese making
	  • coagulate dairy liquid through adding acid to heated milk
	  • carry out cooking processes
	  • package and label acid/heat-coagulated cheeses
	  • carry out sensory analysis of acid/heat-coagulated cheeses
	  • review process control based on sensory analysis.

Context of and specific resources for assessment	Assessment of performance requirements in this unit should be undertaken within the context of cheese production. Competency is demonstrated by performance of all stated criteria, including the critical aspects and knowledge and skills elaborated in the Evidence Guide, and within the scope as defined by the Range Statements applicable to the workplace environment. Assessment must occur in a real or simulated workplace where the assessee has access to: • production process and related equipment, manufacturers' advice and product specifications • sampling and testing equipment and procedures • methods and related software systems, as required, for collecting data and calculating yields, efficiencies and material variances appropriate to the type of cheese and the production environment.

Method of assessment	The following assessment methods are suggested: • observation of candidate making acid/heat-coagulated cheeses • written and/or oral questioning to assess knowledge and understanding • workplace samples of acid/heat-coagulated cheeses with documented procedures • composition analyses of milk and cheese samples • third-party supporting statement.
Guidance information for assessment	Evidence should be gathered over a period of time against a number of batches of acid/heat-coagulated cooked cheeses. Part of the evidence requirements for this unit requires that samples of at least three batches of acid/heat-coagulated cheeses be produced to a commercial standard, in a real or simulated environment. Students must be assessed on their ability to control all aspects of cheese making including sanitation and materials storage and handling.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Legislation	Legislative requirements are typically reflected in procedures and specifications. Legislation relevant to this industry includes: • the Food Standards Code, including labelling, weights and measures legislation • legislation covering food safety, environmental management, OHS, anti-discrimination and equal opportunity.
Policies and procedures	Work is carried out according to: • company procedures • regulatory and licensing requirements • legislative requirements • industrial awards and agreements
Cheese tests	Cheese tests may include: • testing for pH levels, moisture levels, salt levels, fat and protein levels • microbiological testing • chemical testing • physical testing of cheese throughout production • testing for organoleptic properties.
Cheese types	Cheese types may include: • any type of heat/acid precipitated (acid/heat-coagulated) cheeses (e.g. Ricotta (Italy) and Channa (India).
Clarification procedures for raw milk	Clarification procedures for raw milk may include: • cloth filters • centrifugal clarifiers and separators • bactofugation • membrane (micro) filtration.
Milk standardisation requirements	Milk standardisation requirements may: • include standardisation of fat and protein, and casein/fat rations • require the addition of whey, skim milk or skim milk solids, or the separation of cream.
Key composition of cheese	Key composition of cheese includes:

	• salt • moisture • fat • pH (acidity).
Process control parameters to optimise yield	Process control parameters to optimise yield include: • milk temperature • pH of hot curd-whey mixture • recovery of protein • draining.
Principles of optimising yield	Principles of optimising yield include: • standardise milk (P/F) to obtain maximum value for milk components • minimise fat and protein losses in the whey.
Packaging	Packaging may include: • vacuum and/or gas flush in gas and moisture proof film • plastic rigid containers • oxygen permeable wrap (e.g. greaseproof paper).
Multi-phase cleaning systems	Multi-phase cleaning systems require: • cleaning with a chlorinated alkaline detergent with a chelator, followed by water and acid rinses.
Records of cheese manufacture	Records of cheese manufacture may include: • timing of operations • temperature logging • milk and curd pH profile • recovery of curd-whey • milk composition • cheese microbial counts • hooped yield • curing and grading data.
Food safety related information	Food safety related information may include: • milk counts • cheese bacterial counts • manufacture and storage details.

Unit Sector(s)

Cheese.