



Australian Government

FBPTEC4023 Control and monitor fermentation

Release: 1

FBPTEC4023 Control and monitor fermentation

Modification History

Release	Comments
Release 1	This version released with FBP Food, Beverage and Pharmaceutical Training Package version 3.0.

Application

This unit of competency describes the skills and knowledge required to produce fermented foods or beverages.

This unit applies to those workers who have responsibility for overseeing the production of fermented food and/or beverages and the quality assurance requirements associated with those products.

No licensing or certification requirements apply to this unit at the time of publication. However, legislative and regulatory requirements for food processing exist so local requirements must be checked. All work must comply with Australian food safety standards and relevant codes of practice.

Pre-requisite Unit

Nil

Unit Sector

Technical (TEC)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare for fermentation	1.1 Identify and address requirements of Food Standards Code and local health department, for product 1.2 Identify hazards in the fermentation process and manage risks 1.3 Clean and sanitise equipment and environment 1.4 Confirm availability of raw materials and starter, as required

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.5 Check quality of raw materials meets specification for end product
2. Ferment food or beverage	2.1 Inoculate food or beverage product with starter, as required and mix 2.2 Add ingredients and adjuncts, specific to product 2.3 Set time, temperature and humidity for fermentation 2.4 Control process parameters to facilitate fermentation 2.5 Conduct in-production tests to monitor progress of fermentation 2.6 Analyse test results and adjust process as required 2.7 Stop fermentation process when food or beverage reaches target food safety parameters, and desired texture, taste and appearance 2.8 Record details of process for traceability, in line with organisational and regulatory requirements 2.9 Prepare product for packaging
3. Conduct final product testing	3.1 Collect and dispatch microbiological samples to check final product is safe for market 3.2 Conduct physical tests to check final product is safe for market 3.3 Conduct chemical tests to check final product is safe for market 3.4 Record results of tests in line with regulatory requirements 3.5 Take appropriate action based on test results
4. Conduct housekeeping activities	4.1 Clean equipment and work area in line with workplace procedures 4.2 Conduct routine maintenance activities 4.3 Dispose of waste in line with regulatory requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Numeracy skills	Convert units involving multiples and submultiples

Skill	Description
	• Use fractions, decimals, proportions and percentages to determine responses to results • Use volumes (ml, L) and weights (mg, g, kg) to describe product quantities • Calculate dose (mg), average mass, mass percentage, density, moisture, relative and absolute humidity • Determine ratios, such as mass to mass, mass to volume and volume to volume percentages • Calculate concentration, such as g/100mL, mg/L and dilution ml/L • Calculate salinity and water activity (Aw)
Get the work done	• Think through options to identify and respond to atypical results of tests • Trace and source obvious cause of artefact or malfunction

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPTEC4023 Control and monitor fermentation	Not applicable	New unit	No equivalent unit

Links

Companion Volumes, including Implementation Guides, are available at VETNet: -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4>

Assessment Requirements for FBPTEC4023 Control and monitor fermentation

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Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has controlled and monitored the fermentation of six different products, utilising three different fermentation categories from the following list:

- yeast
- bacteria
- fungi
- yeast and bacteria symbiotic culture of bacteria and yeast (SCOBY)
- combinations of fermentation organisms above relevant to product.

For each category utilised, there should be two products that show consistent colour, smell, texture, taste and appearance.

There must also be evidence that the individual can identify contamination or spoilage in each of the three categories chosen.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- different starter organisms for fermentation
- licensing requirements for the production and sale of fermented food and beverage products
- specific starters used for different products, including yeast, bacteria, fungi, and yeast and bacterial SCOBY, or combinations of these relevant to product
- ideal temperature to promote successful fermentation, relevant to product
- specific starters used for different products, including SCOBY for kombucha
- natural starters versus commercial starters, and which are allowed under the Food Standards Code
- typical adjuncts added to the fermentation process

- essential ingredients for fermentation, including salt and sugar
- typical microbiological, chemical and physical tests carried out in production and on end products
- acceptable parameters for typical test results
- interpretation of test results, including simple calculations
- risks of pathogens, fungi, parasites and bacteria associated with fermentation processes
- instruments and measurements used for typical tests including thermometer probe, pH meter, hygrometer
- calibration requirements of measuring and testing equipment
- aerobic/anaerobic requirements for specific fermentation processes
- how to sanitise equipment and where necessary, ingredients
- how changes in pH indicate success or otherwise of the fermentation process
- air circulation requirements of specific products
- possible effects of temperature fluctuations, relative humidity and air circulation on product
- methods for controlling atypical outcomes of tests, relevant to process
- Food Standards Code and local health department requirements in relation to production and sale of fermented food and beverages, including local licensing requirements
- tensions between the Food Standards Code and the fermentation process
- waste handling and disposal requirements
- safe handling and transport procedures for samples to be tested at laboratory
- record keeping requirements for traceability of product.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
 - skills must be demonstrated in a workplace setting or an environment that accurately represents a real fermented food or beverage production environment
- resources, equipment and materials:
 - raw materials and equipment to ferment food and/or beverage
 - testing equipment
- specifications:
 - specification for product.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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