



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **FDFST4053A Implement and review manufacturing, packaging and testing of beverage products**

Release: 2

## **FDFST4053A Implement and review manufacturing, packaging and testing of beverage products**

### **Modification History**

April 2012: Minor typographical corrections.

### **Unit Descriptor**

<b>Unit descriptor</b>	This unit covers the skills and knowledge required to produce beverages using documented procedures, carry out product testing, and conduct a quality review of the process.
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### **Application of the Unit**

<b>Application of the unit</b>	<p>This unit applies to food science and technology personnel who have roles in product design, quality assurance and production management. The unit typically applies to staff who have responsibility for maintaining product safety, quality and efficiency in food production in the beverages sector. While the unit provides food science and technology skills in brewed beverages and wine, it does not provide full brewing or winemaking skills.</p> <p>This unit includes using knowledge of food science and processes to determine the required food safety, quality and performance required from food production equipment. Depending on the workplace application, liaison may be required with engineering and maintenance specialists.</p>
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### **Licensing/Regulatory Information**

Not applicable.

### **Pre-Requisites**

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## 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

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
1. Produce a range of beverage product samples	<ul style="list-style-type: none"><li>1.1 Equipment used to prepare beverage products is selected and prepared</li><li>1.2 Pre-treatments for beverage production are implemented</li><li>1.3 Appropriate processing techniques and technologies are used to produce a range of beverage product samples</li><li>1.4 Permissible additives/preservatives used in the production of beverage products are identified and used according to specifications</li><li>1.5 Data requirements appropriate for food safety, quality and production standards are identified</li><li>1.6 Data collection points consistent with equipment capabilities and data requirements are established</li><li>1.7 Procedures to deal with non-conformance in relation to process and the final product are developed</li><li>1.8 Sample products are produced using appropriate hygiene and sanitation techniques</li></ul>
2. Review packaging of beverage products	<ul style="list-style-type: none"><li>2.1 Packaging requirements for beverage products are identified consistent with regulatory, client and enterprise requirements</li><li>2.2 Test packaging of beverage products is undertaken or supervised and checked for safety and conformance to client and enterprise requirements</li></ul>
3. Assess the quality, safety and shelf life of a range of beverage products	<ul style="list-style-type: none"><li>3.1 A range of testing techniques including sensory analysis are performed to assess the safety of the beverage product</li><li>3.2 A range of testing techniques including sensory analysis are performed to assess the quality of the beverage product</li><li>3.3 A range of testing techniques are performed to determine the shelf life of the beverage product</li><li>3.4 All common hazards and critical control points (CCPs) for the production of products are identified and assessed</li></ul>
4. Review production processes	<ul style="list-style-type: none"><li>4.1 The CCPs and critical limits for product safety are reviewed</li><li>4.2 Operating procedures are reviewed for food safety and quality</li><li>4.3 The OHS plan is reviewed for processing of food products</li><li>4.4 Environmental impacts and associated costs are reviewed for processing of food products</li></ul>

## Required Skills and Knowledge

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

### Required skills include:

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#### Ability to:

- select and source raw materials for processing beverages
- prepare a detailed production flow chart for beverage production
- produce beverages based on documented procedures
- apply and interpret a range of quality tests used in the manufacture of beverages, including brix, acidity, alcohol content determination, sulphur dioxide determination, carbonisation level, sensory evaluation and packaging integrity
- organise the testing of a beverage product
- document and analyse test results
- review quality procedures based on product testing.

### Required knowledge includes:

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#### Knowledge of:

- the range of beverage products, including beers, wines spirits, fruit juice products, carbonated beverages, fortified non-alcoholic beverages, tea and coffee
- the different styles of beers generally manufactured
- the different styles of red, white, sparkling and fortified wines generally manufactured
- manufacturing processes used in the production of various styles of wines
- the different types of fruit juices products generally manufactured
- manufacturing process for the production of various types of fruit juices
- manufacturing processes for a variety of carbonated and non-carbonated beverages
- the variety of styles of teas and coffees generally available
- manufacturing processes for the production of various styles of tea and coffee
- common spoilage and food poisoning organisms associated with beverage production
- brewing processes used in the production of various styles of beverages
- fermentation processes in various styles of beverage production
- quality tests used in the manufacture of beverages, including brix, acidity, alcohol content determination, sulphur dioxide determination, carbonisation level, sensory evaluation and packaging integrity
- stages of production, CCPs and critical limits for production processes
- packaging procedures
- quality and continuous improvement processes.

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>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.</p>	
<p>Overview of assessment</p>	<p>A person who demonstrates competency in this unit must be able to produce a range of beverage product samples, and to provide information and data for reviewing the production system</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>Critical aspects of assessment must include evidence of the ability to produce and bottle a range of beverage samples, to assess the quality of the beverage products based on product testing, and to review the production process used for food product safety and quality and for environmental impact.</p> <p>Competency includes the candidate's ability to review manufacturing processes for a range of products drawn from:</p> <ul style="list-style-type: none"> <li>• mineral water products</li> <li>• bottled water products</li> <li>• flavoured water products</li> <li>• sports and energy drinks</li> <li>• standard styles of tea/coffee</li> <li>• decaffeinated tea/coffee</li> <li>• flavoured products</li> <li>• still, sparkling and fortified beverages/wine.</li> </ul>
<p>Context of and specific resources for assessment</p>	<p>Assessment of performance requirements in this unit should be undertaken within the context of food technology. 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.</p> <p>Assessment must occur in a real or simulated workplace where the assessee has access to:</p> <ul style="list-style-type: none"> <li>• Production process and related equipment, manufacturers' advice and operating procedures</li> <li>• Methods and related software systems as required for collecting data and calculating yields, efficiencies and material variances appropriate to production</li> </ul>

<b>EVIDENCE GUIDE</b>	
	<p>environment</p> <ul style="list-style-type: none"><li>• Tests used to report relevant product/process information and recorded results</li></ul>

<b>EVIDENCE GUIDE</b>	
Method of assessment	Evidence may include product samples, third party report, portfolio, work documentation produced by the candidate, and written and/or oral questioning to assess knowledge and understanding of the performance criteria and critical aspects for assessment. Assessment should also include wherever possible observation of the candidate overseeing or conducting a range of beverage manufacturing processes and tests.
Guidance information for assessment	Evidence should be gathered over a period of time in a range of actual or simulated environments.

## Range Statement

<b>RANGE STATEMENT</b>	
<p>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.</p>	
<b>Policies and procedures</b>	Work is carried out according to company procedures, regulatory and licensing requirements, legislative requirements, and industrial awards and agreements.
<b>Occupational health and safety requirements</b>	<ul style="list-style-type: none"> <li>• OHS legislation, regulations and Codes of practice</li> <li>• Safety Data Sheets (SDSs) for hazardous substances</li> </ul> Enterprise specific OHS requirements.
<b>Regulations</b>	<ul style="list-style-type: none"> <li>• Australian and international standards including:</li> <li>• professional association regulations</li> <li>• industry guidelines and codes of practice</li> <li>• industry regulations</li> <li>• Australian and New Zealand Food Standards Code</li> <li>• ISO Standards</li> <li>• Codex Alimentarius</li> <li>• export requirements</li> <li>• State food safety regulations</li> <li>• International, Australian and State environmental protocols and regulations regarding effluent.</li> </ul>



**RANGE STATEMENT**

<b>Beverage products</b>	Include carbonated drinks, fruit juices and drinks, fermented and alcoholic beverages, soups, water products, teas and coffees.
<b>Materials equipment and systems</b>	Beverage processing chemicals, beverage processing equipment filling and washing equipment.
<b>Testing techniques</b>	Testing techniques include sensory (organoleptic) testing, spectroscopy, titration, chromatography, microbiological testing and extraction.

**Unit Sector(s)**

<b>Unit sector</b>	Technical
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