



Australian Government

FBPFST4008 Preserve food in cans or sealed containers

Release: 1

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Modification History

Release	Comments
Release 1	This version released with the FBP Food, Beverage and Pharmaceutical Training Package Version 2.0.

Application

This unit of competency describes the skills and knowledge required to process low acid foods and preserve food in hermetically sealed containers or hermetically sealed packaging.

The unit applies to individuals who have responsibility for maintaining product safety, quality and the production environment in processing and sealing food into airtight containers. Airtight containers are described as two- and three-piece cans used in food production, as well as pouches and other sealed containers.

No occupational 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

Food science and technology (FST)

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. Supervise the preparation of the packaging materials for thermal processing	1.1 Identify suitable containers for thermal processing 1.2 Assess the container's properties, function, and integrity 1.3 Set up the container closing mechanism and undertake a trial operation

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.4 Measure and calculate the characteristics of the container
2. Supervise food preparation and filling of containers	2.1 Identify the quality requirements of raw materials for processing 2.2 Ensure procedures for dicing and slicing are correctly performed 2.3 Implement the blanching process using either steam, water, microwaves or hot gas 2.4 Apply filling procedures for syrups and brines to produce the specified headspace 2.5 Weigh containers with headspaces and record drained and net weights 2.6 Carry out exhausting to remove all gases from the headspace and oxygen from the container 2.7 Monitor closing of the container
3. Ensure hermetic sealing of processed food product	3.1 Ensure materials are cooked and prepared in an aseptic environment, according to food safety requirements 3.2 Place materials into containers and hermetically seal
4. Eliminate harmful microorganisms in the hermetic sealing or canning of low acid foods	4.1 Identify microorganisms relevant to preserving of low acid foods 4.2 Interpret the D-value of microorganisms 4.3 Assess the types of microbial spoilage important in thermal processing 4.4 Document the process for eliminating the risk of microbial spoilage in a food product
5. Assess the impact of acidification in relation to hermetic sealing or canning of low acid foods	5.1 Measure the acidity of a range of foods 5.2 Identify the relationship between acidity and growth of microorganisms 5.3 Establish critical control points (CCPs) for acidified foods
6. Monitor retort operation	6.1 Load containers onto baskets 6.2 Ensure retorts are sealed 6.3 Ensure air trapped inside the retort is removed prior to processing 6.4 Build up pressure in the retort and maintain sterilisation temperature 6.5 Cool the container in chlorinated water

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
7. Review thermal processing operation	7.1 Review CCPs for thermal processing operation 7.2 Review data to ensure adherence within critical limits for each CCP 7.3 Review operating procedures to ensure a quality product

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
Reading	- Interpret manuals, diagrams, drawings and other technical information relevant to processing and sealing food into airtight containers - Interpret food safety guidelines, codes of practice, standards and regulations
Numeracy	Compute test results and tables for preserving food in airtight containers, and recognise statistical variance and deviations
Get the work done	Take corrective action in response to out-of-specification results

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPFST4008 Preserve food in cans or sealed containers	FDFST4008A Preserve food in cans or sealed containers	Updated to meet Standards for Training Packages Minor changes to Performance Criteria to clarify intent	Equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet: -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4>

Assessment Requirements for FBPFST4008 Preserve food in cans or sealed containers

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Performance Evidence

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

There must be evidence that the individual has safely and effectively preserved two different foods in cans and/or sealed pouches, including:

- supervising the food preparation for each process
- supervising the set-up and operation of hermetically sealed packaging or canning equipment
- establishing the critical control points (CCPs) and critical limits
- calculating pressures, temperatures and cooking times to eliminate the risk of microbial spoilage for a canning or hermetic sealing operation, including:
 - calculated the Lethality value for a product
 - calculated the Fo value from available data by using the graphical integration method and the Gillespie method
 - calculated the Sterilisation value of process by using the trapezoidal method and the microorganism population method
 - calculated the Fh value for different container sizes
 - calculated the time it would take to reach a given temperature at the slowest heating point in a can
 - constructed confidence intervals for mean and standard deviation
 - computed 't-test'
 - read and interpreted 't-table'
 - determined significance of results using 't-test'
 - calculated X2
 - tested X2 significance at 95 and 99%
 - monitored preserving process and recognised a process deviation.

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:

- definition of commercial sterility
- factors that impact the thermal process
- types of thermal processing systems
- the principles and purposes for blanching
- the function and use of each system
- the parts of a retort/cooker
- principles of thermal processing, including use of a retort
- aseptic technique for packaging food under aseptic conditions
- characteristics of two-piece and three-piece (seamed) cans
- dicing, slicing, blanching and brining processes
- the types microorganisms relevant to the canning of low acid foods, including their basic structure and growth patterns
- D-value of microorganisms
- low acid foods, acidification and their relationship to the growth of organisms
- critical control points in preservation process
- the chemical properties and application of chlorine in canning, and how it affects microorganisms
- methodology for the measurement of chlorine in cooling water
- D, Z, J, Fo and Fh values
- Thermal Death Rate, Lethality value and Sterilisation value
- confidence intervals and tests of significance
- approximation
- principles of variability
- principles of variance
- relevant legislation and regulations that apply to the canning process of low acid foods
- health and safety in the workplace hazards and controls relating to work processes.

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 food processing workplace
- resources, equipment and materials:
 - personal protective equipment required for processing and sealing food into airtight containers
 - production process and related equipment, manufacturers' advice and operating procedures

- equipment and facilities for carrying out canning processes and testing of thermally processed products
- specifications:
 - methods and related software systems as required for carrying out food testing and preservation, and collecting data.

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

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