



Australian Government

FBPFST4006 Apply food preservation technologies

Release: 1

FBPFST4006 Apply food preservation technologies

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 apply food preservation technologies and to review their effectiveness and efficiency based on an understanding of food science and technology.

The unit applies to individuals who oversee the preservation of food. It covers low and high temperature preservation as well as the evaluation of alternative preservation methods, including irradiation and high pressure processing.

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. Apply high temperature preservation methods for food	1.1 Establish the need for heat treatment of foods 1.2 Implement preparatory procedures for heat treatment processes 1.3 Develop a process chart for the implementation of high temperature preservation

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 Apply and monitor heat treatment processes 1.5 Assess the physical, biochemical and microbiological changes to a food product after heat treatment
2. Apply low temperature preservation methods for food	2.1 Establish the need for chilling or freezing treatments of foods 2.2 Implement preparatory procedures for chilling or freezing treatment processes 2.3 Develop a process chart for the implementation of low temperature preservation 2.4 Apply and monitor chilling or freezing processes for food preservation 2.5 Assess the physical, biochemical and microbiological changes to a food product after chilling or freezing treatment processes
3. Evaluate alternative existing technologies for food preservation	3.1 Establish the need for irradiation and high pressure preservation techniques 3.2 Develop a process chart for the implementation of irradiation or high pressure preservation 3.3 Review the effectiveness and consumer acceptance of irradiation 3.4 Assess the physical, biochemical and microbiological changes to a food product after irradiation or high pressure treatment

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 food preservation technologies - Interpret food safety guidelines, codes of practice, standards and regulations
Writing	Document effectiveness and efficiency of food preservation technologies

Skill	Description
Numeracy	- Analyse process controls for food preservation operations - Source, collect and organise a range of data relevant to food preservation technologies
Navigate the world of work	Monitor adherence to legal and regulatory standards and responsibilities for self and others

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPFST4006 Apply food preservation technologies	FDFEST4006A Apply food preservation technologies	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 FBPFST4006 Apply food preservation technologies

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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 implemented two food preservation processes, including:

- heat treatment, and
- chilling or freezing.

For each process, the individual must:

- identify the effects of the preservation process on the food
- identify processing/operating parameters required of each process to meet safety and production requirements
- identify a food suited to the preservation process
- review the effectiveness of the treatment.

There must also be evidence that the individual has:

- evaluated the effects of irradiation or high pressure preservation on one food item.

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:

- heat treatment principles, including:
- the relationship between high temperature and deactivation and destruction of microorganisms
 - the differences between blanching, steaming, canning and other methods of heat application to food
 - the effects of application of heat on qualities and properties of food stuffs

- biochemical, microbiological and physical changes to food as a result of heat application
- critical quality defects that can occur as a result of heat treatment
- how operating conditions, including temperature fluctuations or water/steam contacts with food, affect the nutritional/chemical composition of food
- how product parameters, including type, size, shape and chemical and biological composition affect the effectiveness of heat treatment on food
- the calculation and interpretation of F_0 , Lethality and F_h values
- low temperature processes, including:
 - the different techniques adopted in industry for freezing food products
 - appropriate freezing techniques, including freeze drying, for specific food products
 - industrial refrigerants currently used today to maintain low temperatures in chillers and freezers
 - the efficiency, cost and environmental impact of such refrigerants
 - biochemical, microbiological and physical changes to food as a result of slow or quick freezing
 - critical quality defects that can occur as a result of freezing and long term freezing of foods
 - how operating conditions, including temperature fluctuations, humidity and air velocity, affect the effective chilling and freezing and refrigeration of food
 - how product parameters, including type, size, shape and chemical and biological composition affect the effective chilling and freezing of foods
 - the appropriate freezing techniques for the major types of foods that can be frozen without loss of quality: fruits, vegetables, seafood, meats, baked goods and ready-to-eat food
 - refrigerants used in the past, including chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), and the ones currently used, including HCFC-123 and various blends
 - why certain refrigerants are a problem for the environment, including depletion of the ozone layer and 'Greenhouse' effect
- irradiation equipment, including:
 - types of foods suitable for irradiation
 - consumer acceptance and issues with irradiation
 - the most suitable irradiation techniques for specific food products
 - physical changes caused by irradiation of food
 - impact of irradiation on different species of microorganisms
 - enzymatic and other chemical changes caused by irradiation
 - potential quality defects that arise as a result of irradiation of food
 - processing/operating parameters of irradiation equipment as required to meet safety and production requirements
 - irradiation equipment safety and operation
 - labelling and other regulatory requirements of irradiation of food

- high pressure equipment, including:
 - types of foods suitable for high pressure processing
 - the most suitable high pressure techniques for specific food products
 - possible physical changes caused by high pressure processing of food
 - the impact of high pressure preservation technology on different species of microorganisms
 - enzymatic and other chemical changes caused by high pressure processing
 - potential quality defects that arise as a result of high pressure processing of food
 - operating procedures of high pressure processing equipment as required to meet safety and production requirements.

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 applying food preservation technologies
 - food preservation equipment, manufacturers' advice and operating procedures
 - 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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