



Australian Government

MEM23152 Apply principles of refrigeration food storage technology

Release: 1

MEM23152 Apply principles of refrigeration food storage technology

Modification History

Release 1. Supersedes and is equivalent to MEM23152A Apply principles of refrigeration food storage technology.

Application

This unit of competency defines the skills and knowledge required to recognise common causes of food spoilage and apply the optimum methods for commercial food preservation processes.

It applies to manufacturing, servicing and maintenance organisations undertaking refrigeration and air conditioning design, manufacture and installation.

The unit is suitable for people working as manufacturing or maintenance technicians, designers and draftspersons, and for those pursuing engineering or related technical qualifications and careers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Engineering science

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. Recognise causes of food spoilage	1.1 Obtain and implement work health and safety (WHS) and environmental requirements for the work area 1.2 Determine causes of food spoilage from observation, testing, measurements and/or supply chain tracking 1.3 Interpret and apply relevant Australian Standards, codes and regulations for food storage and handling 1.4 Consult appropriate personnel to ensure that work is coordinated

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	effectively with others 1.5 Obtain equipment and resources needed for the task in accordance with organisational procedures
2. Analyse food spoilage risks in supply chain	2.1 Identify critical points in the food supply chain and determine the associated risks 2.2 Identify and document risks and propose appropriate risk minimisation strategies 2.3 Check proposed risk minimisation strategies against relevant standards, codes and legislative requirements 2.4 Provide solutions to unplanned situations consistent with organisational procedures
3. Select optimum methods storage of perishable food	3.1 Propose options to minimise food spoilage based on analysis of the produce type, facilities available and supply chain requirements 3.2 Select optimum solutions with respect to equipment, facilities, processing techniques and cost, and discuss with appropriate personnel 3.3 Document adopted storage and handling method in accordance with organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

WHS requirements include:	• relevant legislation • protective equipment • material safety management systems • hazardous substances and dangerous goods code
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	• local safe operation procedures • awards provisions.
Environmental requirements include:	• relevant legislation, regulations and codes • correct handling and disposal of liquid and solid waste • elimination or minimisation of gas, fume, vapour and smoke emissions, including fugitive emissions • dust elimination, minimisation and control • minimisation of energy and water use • elimination or control of excessive noise • use and recycling of refrigerants.
Appropriate personnel include:	• supervisor, leading hand, foreman or manager • engineer • technician • trainer or mentor • team member • customer.
Food spoilage includes:	• physical and animal damage • chemical breakdown • enzyme activity • microorganisms • effects of: • temperature and humidity changes • freezing on fresh produce • slow freezing time and refreezing.
Organisational procedures include:	• use of tools and equipment • instructions, including job sheets, plans, drawings and designs • reporting and communication • manufacturer specifications • operational procedures • industry standards.
Resources include:	• reference manuals • data sheets • scientific calculator • stationery • access to relevant standards, codes, laws and by-laws.
Equipment includes:	• computer workstation and software, either stand alone or networked • chemical analysers • measurement instruments including thermometers and probes • hand tools.
Processing techniques	• heat processing techniques including blanching, pasteurisation,

include:	sterilisation, evaporation, dehydration, baking and roasting, steam and water • chilling processing techniques including freezing, freeze drying and freeze concentration, cryovac, and controlled atmosphere.
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Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM23152A Apply principles of refrigeration food storage technology.

Links

Companion Volume Implementation Guides are available on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM23152 Apply principles of refrigeration food storage technology

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance and include:

- identifying and interpreting relevant codes, standards and regulations
- applying compliance procedures to control and manage risks associated with food storage criteria on at least two occasions
- implementing work health and safety (WHS) procedures and practices including the use of risk control measures
- determining the main reasons for food spoilage and preventing food spoilage through microorganisms
- communicating effectively with others
- dealing with unexpected situations
- documenting findings, plans and recommendations in accordance with procedures.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- WHS requirements
- appropriate personnel to consult
- codes, standards and regulations relevant to refrigerated food storage
- refrigeration plant and principles of refrigeration food storage technology
- food spoilage and possible causes
- food preservation equipment and techniques
- microorganisms relevant to food safety and preservation
- types of heat processing techniques
- types of chilling processing techniques
- cold storage chain
- controlled atmosphere storage
- refrigerant choices

- energy usage
- insulation
- environmental requirements
- organisational procedures
- resource and equipment requirements.

Assessment Conditions

- Assessors must:
 - have vocational competency in applying principles of refrigeration food storage technology at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015 or its replacement* and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
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