Australian Government

MEM23152A Apply principles of refrigeration food storage technology

Release 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

MEM23152A Apply principles of refrigeration food storage technology

Modification History

Release 1 (MEM05v9)

Unit Descriptor

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

Application of the Unit

The unit applies to manufacturing, servicing and maintenance enterprises incorporating refrigeration and air conditioning design, manufacture and installation.

Licensing/Regulatory Information

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

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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.

Elements and Performance Criteria

1	Recognise causes of food spoilage	1.1	Obtain and implement work health and safety (WHS) and environmental requirements for a given 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 effectively with others
		1.5	Obtain equipment and resources needed for the task in accordance with enterprise 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 enterprise 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 enterprise procedures

Required Skills and Knowledge

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

Required skills

Required skills include:

- controlling and managing risks associated with food storage
- identifying relevant codes, standards and regulations and applying compliance procedures
- determining main reasons for food spoilage
- preventing food spoilage through microorganisms
- complying with relevant legislative and regulatory requirements
- communicating effectively with others
- documenting findings, plans and recommendations
- dealing effectively with unexpected situations
- working in teams and with others

Required knowledge

Required knowledge includes:

- codes, standards and regulations relevant to refrigerated food storage
- 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
- refrigeration plant
- insulation

Evidence Guide

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.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently: • implement WHS workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range • demonstrate essential knowledge and skills of principles of refrigeration and storage technology • demonstrate competency within a timeframe typically expected of the discipline, work function and industrial environment • demonstrate the ability to apply principles of refrigeration food storage technology consistently in different contexts.
Context of and specific resources for assessment	• This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. • The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.
Method of assessment	• Assessment must satisfy the endorsed Assessment Guidelines of the MEM05 Metal and Engineering Training Package. • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge. • Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure correct interpretation and application. • Assessment may be applied under project-related conditions (real or simulated) and require evidence of process. • Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.

	• Assessment may be in conjunction with assessment of other units of competency where required.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. 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.

WHS requirements	WHS requirements include: • relevant legislation • protective equipment • material safety management systems • hazardous substances and dangerous goods code • local safe operation procedures • awards provisions
Environmental requirements	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	Appropriate personnel may include: • supervisor • leading hand • foreman • manager • engineer • technician • trainer

	• mentor • team member • customer • client

Food spoilage	Food spoilage may include:
	• physical damage
	• animal damage
	• chemical breakdown
	• enzyme activity
	• microorganisms
	• effects of:
	  • temperature change
	  • humidity change
	  • freezing on fresh produce
	  • slow freezing time
	  • refreezing

Enterprise procedures	Enterprise procedures may include: • the use of tools and equipment • instructions, including job sheets, plans, drawings and designs • reporting and communication • manufacturer specifications • operational procedures • industry standards
Resources	Resources may include: • reference manuals/data sheets • scientific calculator • stationery • access to relevant standards, codes, laws and by-laws
Equipment	Equipment may include: • computer workstation and software, either stand alone or networked • chemical analysers • measurement instruments (e.g. thermometers and probes) • hand tools
Processing techniques	Processing techniques may include: • heat processing techniques, such as blanching, pasteurisation, sterilisation, evaporation, dehydration,

	baking and roasting, steam and water • chilling processing techniques, such as freezing, freeze drying and freeze concentration, cryovac, and controlled atmosphere

Unit Sector(s)

Competency field

Unit sector Engineering science

Custom Content Section

Not applicable.