



Australian Government

Department of Education, Employment and Workplace Relations

FDFCEL2011A Perform heat exchange operations

Release: 2

FDFCEL2011A Perform heat exchange operations

Modification History

This unit supersedes and is equivalent to FDFCELHECB Perform heat exchange operations.
April 2012: Minor typographical corrections.

Unit Descriptor

Unit descriptor	This specialist unit has been developed for the cellar stream of the wine sector. It covers the skills and knowledge required to prepare for and operate the heat exchange process.
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Application of the Unit

Application of the unit	This unit applies to the operation of heat exchange equipment used in winemaking operations. The heat exchange equipment may be used on wine, juice product or water. Heat exchange equipment includes equipment used for refrigeration and pasteurisation. The unit can apply to both manual and computer-controlled heat exchange equipment.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability skills	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

ELEMENT	PERFORMANCE CRITERIA
1. Prepare the heat exchange process for operation	1.1 Product and materials are confirmed and available to meet production requirements 1.2 Services are confirmed as available and ready for operation 1.3 Equipment is checked to confirm readiness for use 1.4 The process is set to meet production requirements
2. Operate and monitor the heat exchange process	2.1 The heat exchange process is started up according to workplace procedures 2.2 Control points are monitored to confirm performance is maintained within specification 2.3 Heat exchanged product meets specification 2.4 Equipment is monitored to confirm operating condition 2.5 Out-of-specification product, process and equipment performance is identified, rectified and/or reported
3. Shut down the heat exchange process	3.1 The process is shut down according to workplace procedures 3.2 Equipment is prepared for cleaning 3.3 Waste generated by both the process and cleaning procedures is collected, treated and disposed of, or recycled according to workplace procedures 3.4 Work is conducted in accordance with workplace environmental guidelines
4. Record information	4.1 Workplace information is recorded in the appropriate format

Required Skills and Knowledge

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

Required skills include:

Note: The following required skills should be applied as appropriate to the equipment and processes that are used in the particular winery or workplace.

Ability to:

- access workplace information to identify heat exchange requirements
- select, fit and use personal protective clothing and/or equipment
- confirm supply of necessary product, materials and services
- liaise with other work areas
- confirm equipment status and condition. This may include:
 - cleaning lines and receival tanks
 - checking receival vessel (in transfer operation)
 - checking product against processing specification
 - checking integrity of hoses and fittings
 - checking for leaks of chiller medium
 - setting temperature and tank number
 - setting pump speed
- start up the process
- monitor the process and equipment operation to identify out-of-specification results or non-compliance. This may involve monitoring:
 - flow rate
 - inlet and outlet temperatures
 - heat exchange temperature settings
 - product loss
 - dilution
 - oxidation
 - relevant product characteristics (e.g. type and temperature)
- monitor supply and flow of product and materials to and from the process
- take corrective action in response to out-of-specification results or non-compliance
- conduct product or batch changeovers
- report and/or record corrective action as required
- sort, collect, treat, recycle or dispose of waste
- shut down equipment in response to an emergency situation
- shut down equipment in response to routine shutdown requirements
- record workplace information
- maintain work area to meet housekeeping standards
- prepare equipment for cleaning. This may involve draining and/or dismantling equipment, and removing waste either manually or by rinsing, in preparation for cleaning and sanitation

- identify, rectify and/or report environmental non-compliance
- use oral communication skills/language to fulfil the job role as specified by the organisation, including questioning, active listening, asking for clarification and seeking advice from supervisor
- work cooperatively within a culturally diverse workforce

Required knowledge includes:

Note: The following required knowledge should be applied as appropriate to the equipment and processes that are used in the particular winery or workplace.

Knowledge of:

- purpose and principles of heat exchange operations
- types and operation of refrigerant systems
- link to related processes
- stages and changes which occur during heat exchange
- effect of process stages on end product
- quality characteristics and uses of heat exchanged product
- product and materials preparation requirements and effect of variation on the process
- main methods used to heat exchange product
- process specifications, procedures and operating parameters
- equipment and instrumentation components, purpose and operation
- basic operating principles of process control systems where relevant
- services used
- significance and method of monitoring control points within the process
- common causes of variation and corrective action required
- Occupational Health and Safety (OHS) hazards and controls
- lock-out and tag-out procedures
- procedures and responsibility for reporting problems
- environmental issues and controls
- shutdown and cleaning requirements associated with changeovers and types of shutdowns
- waste handling requirements and procedures
- recording requirements and procedures

Evidence Guide

EVIDENCE GUIDE
The evidence guide provides advice on assessment and must be read in conjunction with the

EVIDENCE GUIDE

performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	Assessment must be carried out in a manner that recognises the cultural and literacy requirements of the assessee and is appropriate to the work performed. Competence in this unit must be achieved in accordance with food safety standards and regulations.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of ability to: • use personal protective equipment and follow other specified OHS procedures • check supply and status of product before commencing heat exchange operation • prepare and confirm status of equipment, including lines, vessels, hoses, valves and fittings before commencing heat exchange process • monitor heat exchange process control points and equipment • take corrective action in response to out-of-specification results or non-compliance • demonstrate knowledge of OHS hazards, controls and emergency procedures • record information appropriately.
Context of and specific resources for assessment	Assessment must occur in a real or simulated workplace where the assessee has access to: • personal protective clothing and equipment as required • work procedures, including advice on company practices, safe work practices, food safety, quality and environmental requirements • instructions, information, specifications and schedules as required • equipment, services and corresponding information as required • products and materials as required • internal and external customers and suppliers as required • cleaning procedures, materials and equipment as required • documentation and recording requirements and procedures.

EVIDENCE GUIDE	
Method of assessment	This unit should be assessed together with other units of competency relevant to the function or work role.
Guidance information for assessment	To ensure consistency in one's performance, competence should be demonstrated on more than one occasion over a period of time in order to cover a variety of circumstances, cases and responsibilities, and where possible, over a number of assessment activities.

Range Statement

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. 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.	
Policies and procedures	Work is carried out in accordance with workplace procedures, licensing requirements and legislative requirements
Workplace information	Workplace information can include: • Standard Operating Procedures (SOPs) • specifications • production schedules and instructions • routine maintenance schedules • work notes • Material Safety Data Sheets (MSDS) • manufacturer instructions • verbal direction from manager, supervisor or senior operator
Equipment	Equipment may include: • a range of heat exchange units, including tube-in-tube (including pasteurisers), plate, scraped surface, in-place, counter current, primary and/or secondary refrigeration
Product and materials	Product and materials may include:

RANGE STATEMENT	
	a range of wine and/or juice product and water
Services	Services may include: - power - water (hot and cold) - compressed air - inert gas - refrigerant - steam - liquefied petroleum gas (LPG)
Confirming equipment status	Confirming equipment status involves: - checking that hygiene and sanitation standards, safety standards and pre-start requirements are met and that equipment is operational - checking the operation and calibration status of measuring instrumentation
Monitoring the process	Monitoring the process may involve: - the use of production data - checking tank levels, flow rates, incoming temperatures and outgoing temperature
Process set up, operation and monitoring functions	Process set up, operation and monitoring functions may be: manual or involve the use of a process control system
Control points	Control points refer to those key points in a work process that must be monitored and controlled. This includes: - food safety (critical) - quality and regulatory control points - inspection points
Information systems	Information systems may be: print or screen based
Work hazards	Work may involve exposure to: chemical, dangerous or hazardous substances

Unit Sector(s)

Unit sector	Wine operations
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Custom Content Section

Not applicable.