



Australian Government

Department of Education, Employment and Workplace Relations

FDFCEL2003A Operate the ion exchange process

Release: 2

FDFCEL2003A Operate the ion exchange process

Modification History

This unit supersedes and is equivalent to FDFCELIONB Operate the ion exchange process.
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 ion exchange process
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Application of the Unit

Application of the unit	This unit applies to the operation of ion exchange equipment used in winemaking operations. The ion exchange equipment may be used on wine or juice products. Ion exchange equipment may include sodium and acid ion exchange columns. The unit can apply to both manual and computer-controlled ion exchange equipment.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		
	FDFCEL2019A	Carry out transfer operations

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 ion exchange process for operation	1.1 Product and materials are confirmed and available to meet ion exchange requirements 1.2 Materials are prepared to meet ion exchange requirements 1.3 Services are confirmed as available and ready for operation 1.4 Equipment is checked to confirm readiness for use 1.5 The process is set to meet ion exchange requirements
2. Operate and monitor the ion exchange process	2.1 The ion exchange process is started up according to workplace procedures 2.2 Control points are monitored to confirm performance is maintained within specification 2.3 Ion 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 ion exchange process	3.1 The process is shut down according to workplace procedures 3.2 Equipment is dismantled and 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 ion 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
- prepare materials as required
- confirm equipment status and condition
- set up and start up the process
- monitor the process and equipment operation to identify out-of-specification results or non-compliance. This may involve monitoring:
 - flow rates
 - pH levels
 - potassium levels
 - pressures
 - run times
 - resin storage
 - product loss
 - dilution
 - oxidation
 - relevant product characteristics (type)
- 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
- report and/or record corrective action as required
- conduct product or batch changeovers
- 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
- 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
- maintain work area to meet housekeeping standards
- identify, rectify and/or report environmental non-compliance
- handle inert gas according to enterprise procedures
- conduct tests according to enterprise procedures

- 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 ion exchange
- link to related processes
- stages and changes which occur during ion exchange
- effect of process stages on end product
- quality characteristics and uses of ion exchange product and materials
- product and materials preparation requirements and effect of variation on the process
- main methods used in ion exchange
- 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
- inert gas handling procedures where relevant
- testing procedures where relevant

Evidence Guide

EVIDENCE GUIDE	
<p>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.</p>	
<p>Overview of assessment</p>	<p>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.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>Evidence of ability to:</p> <ul style="list-style-type: none"> • use personal protective equipment and follow other specified OHS procedures • check supply and status of product and ion exchange agents before commencing ion exchange operation • prepare and confirm status of equipment before commencing ion exchange process • monitor ion exchange process control points and equipment during ion exchange process • conduct product and batch changeovers • 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.
<p>Context of and specific resources for assessment</p>	<p>Assessment must occur in a real or simulated workplace where the assessee has access to:</p> <ul style="list-style-type: none"> • 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

EVIDENCE GUIDE	
	<ul style="list-style-type: none"> documentation and recording requirements and procedures.
Method of assessment	<p>This unit should be assessed together with other units of competency relevant to the function or work role. An example could be:</p> <ul style="list-style-type: none"> FDFCEL2018A Carry out inert gas handling operations.
Guidance information for assessment	<p>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.</p>

Range Statement

RANGE STATEMENT	
<p>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.</p>	
Policies and procedures	<p>Work is carried out in accordance with workplace procedures, licensing requirements and legislative requirements</p>
Workplace information	<p>Workplace information can include:</p> <ul style="list-style-type: none"> Standard Operating Procedures (SOPs) specifications production schedules or instructions routine maintenance schedules work notes, Material Safety Data Sheets (MSDS) manufacturer instructions verbal direction from manager, supervisor or senior operator
Equipment	<p>Equipment may include:</p> <ul style="list-style-type: none"> sodium and acid ion exchange columns

RANGE STATEMENT	
Product and materials	Product and materials may include: <ul style="list-style-type: none"> • a range of wine and/or juice product • ion exchange agents (sodium chloride and sulphuric acid) • ion exchange resin
Services	Services may include: <ul style="list-style-type: none"> • power • water • inert gas
Confirming equipment status	Confirming equipment status involves: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • the use of production data
Process set up, operation and monitoring functions	Process set up, operation and monitoring functions may be: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • food safety (critical) • quality and regulatory control points • inspection points
Information systems	Information systems may be: <ul style="list-style-type: none"> • print or screen based
Work hazards	Work may involve exposure to: <ul style="list-style-type: none"> • chemical, dangerous or hazardous substances

Unit Sector(s)

Unit sector	Wine operations
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Custom Content Section

Not applicable.