



Australian Government

Department of Education, Employment and Workplace Relations

FDFCEL2002A Perform fermentation operations

Release: 2

FDFCEL2002A Perform fermentation operations

Modification History

This unit supersedes and is equivalent to FDFCELFERA Perform fermentation 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 wine fermentation process.
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Application of the Unit

Application of the unit	This unit applies to cellar operations staff operating wine fermentation processes. Preparation and checking of product, equipment and materials before fermentation is required. The unit also covers managing the fermentation process to achieve pre-set specifications, taking samples and tests, routine and emergency shutdowns, and keeping of records. The unit can apply to both manual and computer-controlled fermentation processes.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		
	FDFCEL2017A	Prepare and make additions and finings

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 for fermentation operations	1.1 Product and materials are confirmed and available to meet production requirements 1.2 Product and materials are prepared to meet production 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 production requirements
2. Operate and monitor fermentation operations	2.1 The fermentation process is started up according to workplace procedures 2.2 Control points are monitored to confirm performance is maintained within specification 2.3 Ferment 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. Complete fermentation operations	3.1 The process is completed 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 must processing requirements
- select, fit and use personal protective clothing and/or equipment
- confirm supply of necessary product and materials and services
- liaise with other work areas
- prepare product and materials as required. This may include:
 - chilling or warming must
 - making additions of finings or enzymes
 - re-yeasting
 - adding juice
- confirm equipment status and condition. This may include checking:
 - cleaning and/or sanitising requirements have been met
 - position and alignment of valves
 - integrity of door seal
- start up the process
- monitor the process and equipment operation to identify out-of-specification results or non-compliance. This may involve monitoring:
 - fill volumes
 - programmed rotation (rotary fermenters)
 - number of pump-overs or drainer returns
 - vessel pressure
 - product loss
 - dilution
 - oxidation
 - relevant product characteristics (e.g. temperature, skin contact, moisture, fermentation activity and baumé)
- 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 and batch changeovers
- follow confined space entry policies and procedures when 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 sanitation
- identify, rectify and/or report environmental non-compliance
- perform transfer operations according to enterprise procedures
- perform sampling procedures according to enterprise procedures
- clean and sanitise according to enterprise procedures
- conduct tests according to enterprise procedures
- perform heat exchange operations according to enterprise procedures
- carry out routine maintenance 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 fermentation
- link to related processes
- stages and changes which occur during fermentation
- effect of process stages on end product
- quality characteristics and uses of fermentation product and materials
- product and materials preparation requirements and effect of variation on the process
- main methods used in fermentation operations
- techniques that may be used to manipulate the fermentation process and wine characteristics, including:
 - pressure
 - temperature
 - yeast variety or strain
 - CO₂
 - skin contact
 - type of fermentation vessel
 - additions
- 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, specifically confined space entry
- 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
- transfer operations where relevant
- sampling procedures where relevant
- cleaning and sanitation procedures
- heat exchange procedures where relevant
- testing procedures where relevant
- routine maintenance procedures where relevant

Evidence Guide

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.	
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: <ul style="list-style-type: none"> • use personal protective equipment and follow other specified OHS procedures • prepare products including checks for temperature and alcoholic strength • prepare and confirm status of equipment before commencing fermentation process • monitor fermentation process control points and equipment, including taking of samples and conducting of tests

EVIDENCE GUIDE	
	<ul style="list-style-type: none"> • 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	<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 • documentation and recording requirements and procedures.
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

RANGE STATEMENT	
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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • rotary fermenters • open fermenters • potter fermenters • swept-arm fermenters • other fermentation vessels • small oak • jetting tanks • hoses and fittings • pumps
Product and materials	Product and materials may include: <ul style="list-style-type: none"> • a range of crushed grape varieties (must) • additions, including enzymes, sulphur dioxide (in various forms), acids, diammonium phosphate, yeast, tannin, bentonite and oak chips
Services	Services may include: <ul style="list-style-type: none"> • power • water • compressed air • inert gas • refrigeration
Confirming equipment status	Confirming equipment status involves: <ul style="list-style-type: none"> • checking that hygiene and sanitation standards, safety

RANGE STATEMENT	
	<p>standards and pre-start requirements are met and that equipment is operational</p> <ul style="list-style-type: none"> checking the operation and calibration of measuring instrumentation
Monitoring the process	<p>Monitoring the process may involve:</p> <ul style="list-style-type: none"> the use of production data checking temperatures, baumés, pump-overs, cap conditions and cellar instructions
Process set up, operation and monitoring functions	<p>Process set up, operation and monitoring functions may be:</p> <ul style="list-style-type: none"> manual or involve the use of a process control system
Control points	<p>Control points refer to those key points in a work process that must be monitored and controlled. This includes:</p> <ul style="list-style-type: none"> food safety (critical) quality and regulatory control points inspection points
Information systems	<p>Information systems may be:</p> <ul style="list-style-type: none"> print or screen based
Work hazards	<p>Work may involve exposure to:</p> <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.