



Australian Government

Department of Education, Employment and Workplace Relations

FDFOP2066A Operate a wort production process

Release: 1

FDFOP2066A Operate a wort production process

Modification History

New Unit.

Unit Descriptor

This unit covers the milling and mashing of malted grain, wort separation, wort treatment and the addition of adjuncts in beer production.

Application of the Unit

This unit applies to operators and other personnel responsible for wort production in a brewery. It applies to wort production in both large and small enterprises. Work is undertaken to specifications and requirements developed by brewers, supervisors or other qualified personnel. The unit includes complying with quality and standard operating procedures and conducting of routine changeovers.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

FDFOP2071A Identify key stages and beer production equipment in a brewery

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. 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 wort production process for operation	1.1 Production requirements are checked 1.2 Availability of required materials is confirmed 1.3 Availability of services is confirmed 1.4 Pre-operational checks of equipment are conducted 1.5 The wort production process is set to meet production requirements
2 Operate and monitor the wort production system	2.1 The wort production system is started up according to company procedures 2.2 Control points are monitored to confirm performance is maintained within specification 2.3 Required tests are undertaken 2.4 System and sub-system outputs meet specification 2.5 Equipment is monitored to confirm operating condition 2.6 Out-of-specification wort, process and equipment performance is identified, rectified and/or reported 2.7 Production and other workplace information is recorded in the appropriate format
3 Shut down the wort production system	3.1 The wort production system is shut down according to company procedures 3.2 Equipment is cleaned and maintained to meet cleaning schedules and procedural requirements 3.3 Waste generated by both the process and cleaning procedures is collected, treated and disposed of or recycled according to company procedures
4 Contribute to continuous improvement of the wort production system	4.1 Quality or process outputs are assessed against specifications 4.2 Opportunities for improvement are identified and investigated 4.3 Proposals for improvements are developed and implemented within company planning arrangements and according to company procedures

Required Skills and Knowledge

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

Required skills includes:

Ability to:

- set up and start the milling process
- set up and start the mashing and lautering process
- set up and start the wort separation process
- set up and start the wort boiling and cooling process
- add raw materials e.g. hops, malt
- operate a heat exchange procedure
- operate a cool wort aeration procedure
- transfer fluids and materials between vessels
- handle dangerous goods
- operate and monitor equipment associated with wort production
- monitor control points
- identify OHS hazards and controls
- select, fit and use personal protective clothing and equipment
- undertake shutdowns and changeovers
- comply with procedures and responsibilities for reporting problems
- comply with environmental procedures and controls
- follow waste handling requirements and procedures
- record required production data
- undertake routine maintenance procedures
- collect samples and conduct tests according to enterprise procedures
- clean and sanitise equipment according to enterprise procedures
- maintain work area to meet housekeeping standards
- use oral communication skills/language competence 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:

Knowledge of:

- purpose and principles of the wort production process
- relationship between the wort production process and the fermentation process
- stages and changes which occur during wort production
- requirements of wort production
- purpose of malt, hops, water, adjuncts and the preparation procedure
- correct procedures for handling dangerous goods
- dust explosion hazards and control procedures

- quality characteristics to be achieved
- wort process specifications, procedures and operating parameters
- the importance of temperature, temperature control systems and temperature intervals during wort production
- Purpose of equipment and instrumentation components
- significance and methods of monitoring control points within the wort production process
- common causes of variation and corrective action required
- cleaning requirements associated with changeovers and types of shutdowns
- procedures for reporting problems
- sampling and testing procedures where relevant
- cleaning and sanitation procedures where relevant

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"> • access workplace information to identify production requirements for the wort production process • interpret the schedules and specifications • confirm the supply of necessary materials and services to the wort production process • confirm equipment status and condition • set up and start specified equipment including any process control systems • monitor the wort production process and equipment operation to identify out-of-specification results • monitor supply and flow of materials to and from the process • take corrective action in response to out-of-specification results or non-compliance • conduct product/beer type changeovers • maintain workplace records.
<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 • work procedures including advice on safe work practices, food safety and environmental requirements • production schedule, batch instructions • material data safety sheets where appropriate • information on specifications, control points and production parameters • wort production equipment • wort production raw materials/ingredients • services as required • stock required for the wort production process • stock flow system

	<ul style="list-style-type: none"> • related work areas and communication system • routine preventative maintenance schedule as required • cleaning schedule as required • sampling and testing schedules as required • documentation and recording requirements and procedures.
Method of assessment	<p>This unit should be assessed together with core units and other units of competency relevant to the function or work role. Examples could be:</p> <ul style="list-style-type: none"> • FDFOP2003A Clean equipment in place • FDFOP2004A Clean and sanitise equipment • FDFOP2011A Conduct routine maintenance • FDFOP2013A Apply sampling procedures • FDFOP2030A Operate a process control interface • MSL973001A Perform basic tests.
Guidance information for assessment	<p>To ensure consistency in one's performance, competency 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

<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>	
<p>Wort production process</p>	<p>The wort production process may include:</p> <ul style="list-style-type: none"> • receiving raw ingredients • measuring raw ingredients • milling malted grain to produce grist • whirlpool (wort calcification) • mashing conversion to create fermentable wort • wort separation • boiling • cooling process • wort oxygenation • production quality checks • transferring to fermentation vessels.
<p>Materials and ingredients</p>	<p>Materials and ingredients used in wort production may include:</p> <ul style="list-style-type: none"> • malted cereals • hops • water • liquid and solid adjuncts such as sugars • process aids • oxygen.
<p>Services</p>	<p>May include:</p> <ul style="list-style-type: none"> • power • gas • water • steam • compressed air • refrigeration.
<p>Required tests</p>	<p>Required tests may include:</p> <ul style="list-style-type: none"> • starch testing (mash tun) • gravity (cool wort) • acidity (cool wort) • colour spectrometer (cool wort) • bitterness (cool wort).

<p>Wort production equipment</p>	<p>Wort production equipment may include:</p> <ul style="list-style-type: none"> • brew house mill • malt batch weighers • storage systems (silos etc.) • whirlpools • mash tuns • mash conversion vessels and mash cookers • lauter tuns • automated hops addition systems • heat exchangers • aeration equipment • filters • coppers and kettles • valves • pumps • water treatment systems • tanks • mixing, blending and cleaning equipment • spent grain handling equipment • equipment accessories • monitoring instruments (starch, gravity, acidity, colour and bitterness) • transfer systems and equipment.
<p>Control points</p>	<p>Refers to the key points in a work process which must be monitored and controlled. This includes food safety, (critical), quality, and regulatory control points as well as inspection points. Monitoring may involve the use of production data such as performance control charts.</p> <p>Process operation and monitoring functions may be manual or involve the use of a process control system.</p>
<p>Equipment is monitored</p>	<p>Equipment monitoring includes ensuring that hygiene and sanitation standards are met, all safety guards are in place, and that equipment is operational. It may also include the calculation of raw materials.</p>
<p>Workplace information may include:</p>	<p>Standard Operating Procedures (SOPs); specifications and production schedules.</p> <p>Information systems may be print or screen based.</p>

Unit Sector(s)

Operations.