



Australian Government

Department of Education, Employment and Workplace Relations

FDFPH2012A Operate a liquid manufacturing process

Revision Number: 1

FDFPH2012A Operate a liquid manufacturing process

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the skills and knowledge required to set up, operate, adjust and shut down the liquid manufacturing process
------------------------	--

Application of the Unit

Application of the unit	This unit applies to production operators working in the pharmaceutical sector. This person would typically work within defined Good Manufacturing Practice (GMP) programs and procedures. When batch or product changeover procedures are part of this work process, the procedures should be used to customise the application of this unit. Where more detailed changeovers are carried out, FDFOP2011A Conduct routine maintenance, should be considered.
--------------------------------	---

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	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 liquid manufacturing process for operation	1.1. Materials are confirmed and available to meet operating requirements 1.2. Cleaning and maintenance requirements and status are identified and confirmed 1.3. Machine components and related attachments are fitted and adjusted to meet operating requirements 1.4. Processing/operating parameters are entered as required to meet safety and production requirements 1.5. Equipment performance is checked and adjusted as required 1.6. Pre-start checks are carried out as required by workplace requirements
2. Operate and monitor the liquid manufacturing process	2.1. Raw materials are delivered to the process in the required quantities and sequence to meet recipe specifications 2.2. The process is started and operated according to workplace procedures 2.3. Equipment is monitored to identify variation in operating conditions 2.4. Variation in equipment operation is identified and maintenance requirements are reported according to workplace reporting requirements 2.5. The process is monitored to confirm that specifications are met 2.6. Out-of-specification product/process outcomes are identified, rectified and/or reported to maintain the process within specification 2.7. The liquid mix is transferred to the required production or storage location 2.8. Spillages are reported and removed according to standard operating procedures 2.9. The work area is maintained according to housekeeping and environmental standards 2.10. Workplace records are maintained according to workplace recording requirements
3. Shut down the liquid manufacturing process	3.1. End-of-batch procedures are completed in accordance with batch instructions and standard operating procedures (SOPs) 3.2. The process is shut down according to workplace procedures

ELEMENT	PERFORMANCE CRITERIA
	3.3.Maintenance requirements are identified and reported according to workplace reporting requirements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Ability to:

- access workplace information to identify liquid manufacturing process requirements
- select, fit and use personal protective clothing and/or equipment
- confirm supply of necessary materials and services to the liquid manufacturing process
- conduct pre-start checks, such as inspecting equipment condition to identify any signs of wear, selecting appropriate settings and/or related parameters, cancelling isolation or lockouts as required, confirming line clearance and cleaning status, ensuring equipment is correctly configured for processing requirements, positioning sensors and controls correctly, ensuring any scheduled maintenance has been carried out, and confirming that all safety guards are in place and operational
- add/load materials in correct quantities and sequence, such as monitoring automatic ingredient addition and/or manual addition
- start, operate, monitor and adjust liquid manufacturing process equipment to achieve required outcomes, including monitoring control points and conducting inspections as required to confirm process remains within specification
- take corrective action in response to out-of-specification results
- monitor supply and flow of materials to and from the liquid manufacturing process
- pace the liquid manufacturing process to meet production requirements
- respond to and/or report equipment failure within level of responsibility
- locate emergency stop functions on equipment
- follow isolation and lock out/tag out procedures as required to take liquid manufacturing process and related equipment off-line in preparation for cleaning and/or maintenance within level of responsibility
- demonstrate batch/product changeovers
- follow end-of-batch procedures, including line clearance and cleaning, yield calculation, materials reconciliation and product labelling
- complete workplace records as required
- maintain work area to meet housekeeping standards
- use process control systems according to enterprise procedures
- collect samples and conduct tests according to enterprise procedures
- conduct routine maintenance according to enterprise procedures
- 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 SKILLS AND KNOWLEDGE

Required knowledge

Knowledge of:

- purpose and basic principles of the liquid manufacturing process, including the characteristics and basic function of raw materials used, and method and sequence of addition required to achieve required mix characteristics, and where required, the characteristics of solutions, suspensions and emulsions
- basic understanding of specific gravity and bulk density as appropriate for ingredients used
- basic operating principles of liquid manufacturing equipment, such as main equipment components, status and purpose of guards, equipment operating capacities and applications, the purpose and location of sensors and related feedback instrumentation, and awareness of calibration schedules for scales and related weighing/measuring equipment
- services required and action to take if services are not available
- stages and changes which occur during liquid manufacturing
- quality characteristics and legal requirements to be achieved by the liquid manufacturing process
- the flow of the liquid manufacturing process and the effect of outputs on downstream pharmaceutical processes
- operating requirements and parameters and corrective action required where operation is outside specified operating parameters
- typical equipment faults and related causes, including signs and symptoms of faulty equipment and early warning signs of potential problems
- methods used to monitor the liquid manufacturing process, such as inspecting, measuring and testing as required by the process
- inspection or test points (control points) in the liquid manufacturing process and the related procedures and recording requirements, including monitoring:
 - flow rates
 - materials addition sequence
 - times/temperatures and agitator speeds
 - required characteristics of manufactured liquid
- GMP requirements associated with the liquid manufacturing process and related control measures
- common causes of variation and corrective action required
- product/process changeover procedures and responsibilities
- occupational health and safety (OHS) hazards and controls, including the limitations of protective clothing and equipment relevant to the work process
- end-of-batch procedures, including procedures for calculating yield, materials reconciliation and action required if yield/reconciliation is not within prescribed limits, and product labelling responsibilities and procedures
- requirements of different shutdowns as appropriate to the liquid manufacturing

REQUIRED SKILLS AND KNOWLEDGE

- process and workplace production requirements, including emergency and routine shutdowns and procedures to follow in the event of a power outage
- line clearance, cleaning and sanitation procedures
- isolation, lock out and tag out procedures and responsibilities
- procedures and responsibility for reporting production and performance information
- environmental issues and controls relevant to the liquid manufacturing process, including waste collection and handling procedures related to the process
- basic operating principles of process control, where relevant, including the relationship between control panels and systems and the physical equipment
- sampling and testing associated with process monitoring and control 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:

- conduct pre-start checks on equipment used for liquid manufacturing process
- start, operate, monitor and adjust process equipment to achieve required quality outcomes
- take corrective action in response to typical faults and inconsistencies
- complete workplace records as required
- apply safe work practices and identify OHS hazards and controls
- safely shut down equipment
- apply food safety procedures to work practices.

Context of and specific resources for assessment

Assessment must occur in a real or simulated workplace where assessee has access to:

- personal protective clothing and equipment
- work procedures, including advice on safe work practices, GMP, quality and environmental requirements
- information on equipment capacity and operating parameters
- production schedule/batch instructions
- specifications, control points and processing parameters
- liquid manufacturing process and related equipment and services
- materials required for the liquid manufacturing process
- sampling schedules and test procedures and equipment as required
- documentation and recording requirements and procedures

EVIDENCE GUIDE	
	• cleaning procedures, materials and equipment as required.
Method of assessment	This unit should be assessed together with core units and other units of competency relevant to the function or work role. Examples could be: • 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	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.

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 according to company policies and procedures, regulatory and licensing requirements, legislative requirements, and industrial awards and agreements
Legislative requirements	Legislative requirements are typically reflected in procedures and specifications. Legislation relevant to this industry includes: • relevant Good Manufacturing Practice (GMP) codes • the Therapeutic Goods Act and/or other relevant legislation • legislation covering environmental management, OHS, anti-discrimination and equal opportunity
Workplace information	Workplace information may include: • SOPs • specifications • production schedules and instructions • manufacturers' advice • standard forms and reports
Liquid manufacturing	Liquid manufacturing equipment may include: • tanks • mixers • homogenisers • thermal jackets • mills • filters • vacuum systems • pumps • stirrers and impellers • purified water systems

RANGE STATEMENT	
	materials handling equipment
Stock	Stock for the liquid manufacturing process: is supplied from the dispensing process and from bulk containers
Operation of equipment and processes	Operation of equipment and processes may require: the use of process control panels and systems
Work	Work may involve: exposure to dangerous and hazardous substances
Shutdown procedures	Shutdown procedures may include: cleaning (in some cases cleaning may be carried out by a dedicated cleaning crew)
Services	Services may need to be confirmed. These depend on the nature of the process. Typical examples include: - power - steam - water - vacuum - gases - compressed and instrumentation air

Unit Sector(s)

Unit sector	Pharmaceutical manufacturing
--------------------	------------------------------

Competency field

Competency field	
-------------------------	--

Co-requisite units

Co-requisite units		