



Australian Government

MSMBIO302 Ferment biomaterial to produce bioproducts

Release: 1

MSMBIO302 Ferment biomaterial to produce bioproducts

Modification History

Release 1. New unit

Application

This unit describes the skills and knowledge to undertake bioprocessing using microbial fermentation to prepare biological material for downstream processes.

This unit applies to using bioprocessing to produce a range of commercial bioproducts, such as biofuel, livestock feed and fertiliser.

This unit applies to plant operators and technicians working as part of a team within clearly established parameters and standard operating procedures.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Bioprocessing

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare for fermentation	1.1 Identify and follow work and safety requirements 1.2 Read and interpret requirements of product specification 1.3 Gather and prepare all materials and documentation 1.4 Clean, sanitise and set up processing area and equipment as required by standards operating procedures 1.5 Check and adjust process control software parameters
2. Operate and monitor bioreactor	2.1 Complete routine checks, logs and paperwork taking appropriate action on unexpected readings 2.2 Monitor and control equipment, critical parameters, sensors and processes to optimise quality and efficiency

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	2.3 Identify and resolve problems and hazards with the process and equipment 2.4 Operate and adjust equipment to ferment materials to produce beer in accordance with specification
3. Finalise fermentation process	3.1 Finalise beer to specification 3.2 Sample and test beer for downstream processes 3.3 Pump beer to downstream processes 3.4 Complete required documentation

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Writing skills to complete workplace documentation.

Other foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Release 1. New unit.

Links

Companion Volume implementation guides are found in VETNet. -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027>

Assessment Requirements for MSMBIO302 Ferment biomaterial to produce bioproducts

Modification History

Release 1. New unit.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- followed fermentation processes to produce at least 1 batch of beer to specification.
-

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- bioprocessing concepts, drivers, trends and targets
- principles and processes of fermentation, including standard operating procedures
- advantages and disadvantages of fermentation
- bioproducts and biproducts derived from fermentation, including production requirements and sampling and testing methods
- biological material / biomass, including:
 - pre-fermentation processes, including liquefaction and saccharification
 - fermentation processes
 - feedstock types, sources and uses
 - cultures, microorganisms and additives and their role in fermentation
- process control software and documentation
- fermentation equipment and tools and standard operating procedures, including:
 - critical parameters
 - sensors
 - factors affecting efficient operation of the separation equipment
 - external factors impacting process, including time, temperature, humidity
 - correct methods of starting, stopping, operating and controlling the equipment
 - work health and safety (WHS) procedures including personal protective equipment (PPE) requirements
- fermentation hazards, risks and control measures including:
 - fire and explosion
 - hearing
 - respiratory
 - chemicals

- boilers
- manual handling
- confined space
- falls
- cleaning and sanitising procedures and why they are important.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet. -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027>