

Title	Prepare and monitor fermented beverage production using computer controlled equipment		
Level	4	Credits	12

Purpose	This unit standard is for people who are currently working, or who intend to work, in jobs which require the preparing and monitoring of fermented beverage production using computer controlled equipment. People credited with this unit standard are able to: use safe working practices; prepare fermentation equipment; prepare fermentation control equipment; operate and maintain treated wort production system; monitor and control continuous fermentation; and shut down and clean equipment.
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Classification	Food and Related Products Processing > Food Production - Beverages
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Available grade	Achieved
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Guidance Information

- 1 Legislation relevant to this unit standard includes but is not limited to the: Health and Safety in Employment Act 1992; Health and Safety in Employment Regulations 1995; Food Act 1981; Food Hygiene Regulations 1974; Food (Safety) Regulations 2002; Resource Management Act 1991; and their associated regulations and subsequent amendments.
- 2 **Definitions**
Organisational procedures refer to documents that include: worksite rules, codes, and practices; equipment operating instructions; production specifications; documented quality management systems; and health and safety requirements.
Equipment refers to items such as: vessels-hold up storage, treated wort production, yeast separator, yeast wash, yeast recovery, maturation, cold storage; pumps, pipework, hoses, deaeration, recycle lines, valves, flow meters, yeast probes, level probes, pressure transmitters, sampling points, carbon dioxide collection, ultraviolet sterilisers, heat exchanger, cooling, oxygen injection; computer keyboard, screen.
Ingredients refer to items such as: wort, oxygen, water, yeast culture.
Treated wort refers to wort which is partially fermented by yeast.
PPE refers to personal protective equipment and may include but is not limited to: protective clothing, gloves, safety glasses/headwear/footwear, hearing protection, safety devices.
- 3 Competence is to be demonstrated on three occasions of preparing and monitoring fermented beverage production using computer controlled equipment.

Outcomes and performance criteria

Outcome 1

Use safe working practices.

Performance criteria

- 1.1 PPE is used in accordance with organisational procedures.
- 1.2 Work environment is clean and free from hazards in accordance with organisational procedures.
- Range hazards to – personnel, product, plant.
- 1.3 Documentation is referred to and/or completed in accordance with organisational procedures.

Outcome 2

Prepare fermentation equipment.

Performance criteria

- 2.1 Preparation of equipment for fermentation is in accordance with organisational procedures.
- 2.2 Equipment is available, and configuration is correct in accordance with production specifications and organisational procedures.
- 2.3 Equipment is clean and free from contamination in accordance with organisational procedures.
- Range contamination may include but is not limited to – wild yeast, product residue, foreign objects.
- 2.4 Oxygen supply to wort treatment system is certified, and is sufficient for anticipated and scheduled production in accordance with organisational procedures.
- 2.5 Potential problems in preparing equipment for fermentation are identified, and solutions are implemented to optimise performance, in accordance with organisational procedures.
- Range problems may include but are not limited to – supply delays, equipment malfunction.

Outcome 3

Prepare fermentation control equipment.

Performance criteria

- 3.1 Preparation of fermentation control equipment is in accordance with organisational procedures.
- 3.2 Fermentation control equipment is available, and in correct configuration for production in accordance with organisational procedures.
- 3.3 Fermentation control equipment parameters are correct in accordance with product specifications.
- Range specifications may include but are not limited to – ingredient quantities, temperature, time, carbon dioxide removal, ingredient location, yeast removal, pump speed.
- 3.4 Variations in specified technical performance of fermentation control equipment are identified, and corrective action is taken within a timeframe that optimises performance.
- Range variations may include but are not limited to – errors, quality, quantity, safety.

Outcome 4

Operate and maintain treated wort production system.

Performance criteria

- 4.1 Operation and maintenance of treated wort production system is in accordance with organisational procedures.
- 4.2 Correct authorised ingredients are available in sufficient quantity for treated wort preparation in accordance with production schedule requirements.
- 4.3 Water for preparation of treated wort meets production specifications.
- Range specifications may include but are not limited to – sterile, correct temperature, deaerated, deionised.
- 4.4 Yeast culture is authorised and at correct specific gravity in accordance with organisational procedures.
- 4.5 Yeast culture temperature and oxygenation is correct for introduction of wort in accordance with organisational procedures.
- 4.6 Wort for treatment is authorised, and is correct specific gravity and temperature in accordance with organisational procedures.

- 4.7 Wort supply to hold up vessel from wort receiver is continuous in accordance with fermentation requirements.
- 4.8 Treated wort is correct temperature and specific gravity for fermentation in accordance with organisational procedures.
- 4.9 Variations in specified technical performance of treated wort production system are identified, and corrective action is taken within a timeframe that optimises performance.
- Range variations may include but are not limited to – quality, quantity, safety.

Outcome 5

Monitor and control continuous fermentation.

Performance criteria

- 5.1 Monitoring and controlling of continuous fermentation is in accordance with organisational procedures.
- 5.2 Specific gravity and temperature of beer undergoing fermentation is in accordance with organisational procedures.
- 5.3 Yeast is removed and recycled in correct quantity and concentration to wort treatment production system.
- 5.4 Carbon dioxide is removed from fermentation vessels at correct pressure and in accordance with production specifications.
- 5.5 Product recovery is maximised in accordance with organisational procedures.
- 5.6 Beer is fermented, and mature beer is available in accordance with organisational procedures.
- 5.7 Mature beer is correct temperature and specific gravity in accordance with product and storage specifications.

Outcome 6

Shut down and clean equipment.

Performance criteria

- 6.1 Shut down and clean of fermentation equipment is in accordance with organisational procedures.
- 6.2 Wort supply to hold up vessel is isolated prior to disassembly in accordance with organisational procedures.

- 6.3 Vessel contents are directed to correct destination, and empty vessels are cleaned in correct sequence in accordance with organisational procedures.
- 6.4 Computer control is replaced by automated batch control for shut down in accordance with organisational procedures.
- 6.5 Pipework and recycle line configuration is correct for shut down and cleaning in accordance with organisational procedures.
- 6.6 Production downtime due to shut down and cleaning is minimised in accordance with organisational procedures.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	27 August 1996	31 December 2022
Revision	2	15 May 1998	31 December 2022
Review	3	19 August 2004	31 December 2022
Review	4	28 January 2021	31 December 2022

Consent and Moderation Requirements (CMR) reference	0111
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.