FOOD PRODUCTION - BEVERAGES
Prepare and produce wort for beer fermentation

level: 3
credit: 8
planned review date: August 2008
sub-field: Food and Related Products Processing

purpose: This unit standard is for people who are currently working, or who intend to work, in jobs which require the use of automated production equipment to produce wort for beer fermentation. People credited with this unit standard are able to: use safe working practices; prepare equipment and raw materials; produce wort; and remove and finish wort.

entry information: Open.

accreditation option: Evaluation of documentation and visit by NZQA and industry.

moderation option: A centrally established and directed national moderation system has been set up by Competenz (Food and Beverage).

special notes: 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 Beer fermentation may be continuous or batch.
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3 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: brewing vessels, mash tun, lauter tun, mash filter, wort, kettle boiler, heat controllers, raking systems, stirrers, extraction fans, pipe work, pumps, valves, taps, heat exchanger, wort cooler, hot water storage tanks, hop strainer, wort filter, whirl pool.
Raw materials refer to items such as: water, hops, grains, barley, malt, corn, malted barley, rice, wheat, sugars, adjunct sugars, acids, enzymes, yeast cofactors, kettle finings, treatment agents.
Beer refers to any of: ales, lagers, stouts.
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.

4 Competence is to be demonstrated on three occasions of preparing and producing wort for beer fermentation.

Elements and Performance Criteria

element 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.
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1.3 Documentation is referred to and/or completed in accordance with organisational procedures.

**element 2**

Prepare equipment and raw materials.

**performance criteria**

2.1 Preparation of equipment and raw materials is in accordance with organisational procedures.

2.2 Equipment for wort production is in correct configuration in accordance with production specifications.

2.3 Water for wort preparation is filtered, complies with production specifications, and is correct quantity for scheduled and anticipated production in accordance with organisational procedures.

Range: specifications may include but are not limited to – pH, chlorine content, suspended solids, temperature, microbiological content.

2.4 Correct, authorised, ground grain is available in correct quantity for wort production in accordance with organisational procedures.

2.5 Correct hop variety is available, in correct form, and in sufficient quantity for scheduled and anticipated production in accordance with organisational procedures.

Range: form may include but is not limited to – pellets, leaf hops, liquid.

2.6 Additional materials are correct for recipe, and are available in sufficient quantity for anticipated and scheduled production, in accordance with organisational procedures.
2.7 Potential problems in preparing equipment and raw materials for wort production are identified, rectified and/or reported in accordance with organisational procedures.

Range: problems may include but are not limited to – grain supply, additional material supply, equipment.

**element 3**

Produce wort.

**performance criteria**

3.1 Production of wort is in accordance with organisational procedures.

3.2 Materials are added in correct sequence and quantity, in accordance with production specifications.

3.3 Raking system is operated in accordance with organisational procedures to optimise wort clarity and extract recovery.

3.4 Wort is boiled for agreed time, and manner of boiler operation maintains product integrity in accordance with organisational procedures.

3.5 Mash and lautered wort meets product specifications.

Range: specifications may include but are not limited to – pH, temperature, starch content, specific gravity, clarity, extract recovery.

3.6 Potential problems during wort production are identified, rectified and/or reported in accordance with organisational procedures.

Range: problems may include but are not limited to – related to mash tun-stirrer, valve operation, temperature, grain supply, raw material supply; related to lauter tun- flow rate, amount of fines, amount of whole grains; related to boiling: filter operation, temperature.
element 4

Remove and finish wort.

performance criteria

4.1 Removing and finishing of wort is in accordance with organisational procedures.

4.2 Wort is removed from boiling vessel in accordance with production specifications.

4.3 Finishing equipment for removing solids from boiled wort is operational, and configuration meets technical and product specifications.

4.4 Finishing equipment for removing solids from boiled wort is free from contamination in accordance with organisational procedures.

4.5 Spent grain and trub are removed from brewing vessels and disposed of in accordance with production specifications.

4.6 Wort is sterile and meets specifications for downstream operations in accordance with organisational procedures.

Range: specifications may include but are not limited to – temperature, solids content, pH, colour, specific gravity, bitterness; downstream operations may include but are not limited to – fermentation, storage.

4.7 Destination of finished wort is correct for downstream production.

4.8 Potential problems in removing and finishing wort are identified, rectified and/or reported in accordance with organisational procedures.

Range: potential problems may include but are not limited to – equipment availability, performance, product.

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.

Please Note
Providers must be accredited by the Qualifications Authority or a delegated inter-institutional body before they can register credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by the Qualifications Authority before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for providers wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

This unit standard is covered by AMAP 0111 which can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.