



Australian Government

FBPGRA3004 Control mill processes and performance

Release: 1

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Modification History

Release	Comments
Release 1	This version released with FBP Food, Beverage and Pharmaceutical Training Package version 1.0.

Application

This unit of competency describes the skills and knowledge required to control flour and by-product production in a flour mill.

This unit applies to a shift miller who is required to set equipment in a flour mill to control the processes and performance across the mill to achieve maximum extraction and recipe compliance. The unit applies to all industrial flour mills, including semolina mills and including mills without purifiers.

All work must be carried out to comply with workplace procedures, in accordance with State/Territory work health and safety, and food safety regulations, legislation and standards that apply to the workplace.

No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Grain processing (GRA)

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. Maintain mill flow sheet	1.1 Identify all breaking, reduction and dressing stages in mill 1.2 Show destinations for all stock separations according to operating requirements 1.3 Identify all optional and ancillary equipment required to control

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	flour and by-product production 1.4 Identify all bins, silos, chutes, conveyors and exhausts that control processes and performance across the mill
2. Prepare for flour and by-product production	2.1 Establish customer requirements for shift or production period 2.2 Follow recipe required to meet desired production quality and quantity targets 2.3 Check availability of required wheat stock 2.4 Determine if any changes to grist stock will be required and plan for changes to settings
3. Determine break system settings	3.1 Adjust break rolls for desired percentage release 3.2 Conduct visual inspection and test sieving where required to monitor release percentage 3.3 Monitor break roll passages to avoid saturation of later stages 3.4 Set bran finishers according to workplace procedures and to ensure optimum performance 3.5 Set plansifters for desired grading, including adjusting spaces between plansifters for varying grains and moisture levels 3.6 Monitor performance of break system to ensure system is free from semolina
4. Set settings for purifiers where fitted	4.1 Maintain and monitor sieve covers according to workplace procedures and to ensure optimum performance 4.2 Monitor feed rate to purifiers according to workplace procedures and to ensure optimum performance 4.3 Monitor horizontal and vertical movement of sieve covers 4.4 Set and monitor air pressure for each aspiration section 4.5 Select destinations for throughs and lifted bran and other particles 4.6 Ensure purifier stock is free from flour
5. Set settings for scratch or sizing system	5.1 Set scratch equipment or sizing rolls according to operator instructions 5.2 Monitor performance of scratch and sizing rolls
6. Set settings for reduction passages	6.1 Set each set of reduction rolls for desired flour and capacity of succeeding reduction passages

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	6.2 Monitor covers on sifters for effective dressing from each reduction roll 6.3 Monitor flake disrupters and impact detachers where fitted 6.4 Set and monitor reduction settings to achieve required starch damage 6.5 Specify collection conveyors and bins for each flour stream
7. Set settings for final production stages	7.1 Specify use of flour divides for blends 7.2 Monitor redressing equipment according to workplace procedures 7.3 Monitor weighing, infestation destroying, and metal removal equipment according to work health and safety and operating procedures 7.4 Send finished flour to packing or storage according to workplace requirements
8. Monitor mill equipment	8.1 Check flutes and rolls for wear and defects 8.2 Monitor temperature of reduction rolls and performance of water cooling if used 8.3 Check automatic roll adjustment and protection mechanisms are working correctly 8.4 Adjust mill settings when required for effect of breakdowns and urgent maintenance
9. Monitor mill performance	9.1 Ensure all grain and flour tests are carried out to required schedule and procedures 9.2 Adjust settings where required for variation in grain, grist and atmospheric conditions 9.3 Monitor milling and invisible loss per production period

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
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Skill	Description
Reading	- Interpret mill flow diagrams - Interpret food safety, food labelling and other regulations affecting flour mills
Writing	Record flour milling equipment status on paper-based and electronic media
Numeracy	Estimate break roll percentages through visual examination, hand stratification and test sieving
Navigate the world of work	- Interpret and follow regulatory requirements and seek clarification or other assistance when required - Identify and describe own skills, knowledge and experience within context of job role - Seek advice and feedback on current work performance
Interact with others	- Communicate production requirements and technical information to other employees - Use effective communication skills to allocate tasks and provide feedback to team members - Use appropriate vocabulary, including technical language directly relevant to role - Recognise personal strengths and challenges associated with interacting with others in the workplace
Get the work done	- Perform contingency planning for equipment breakdown, including failure mode effects analysis - Adjust break rolls to take into account number of break stages, grist composition, specification of finished product - Maintain a clean and hazard-free work area - Maintain hygiene standards and wear required personal protective equipment - Maintain quality specifications across flour milling operations in the workplace

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPGRA3004 Control mill processes and performance	FDFGR3004A Control mill processes and performance	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volumes, including Implementation Guides, are available at VETNet: -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4>

Assessment Requirements for FBPGRA3004 Control mill processes and performance

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Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that, on at least one occasion, the individual has:

- interpreted mill flow diagrams and production requirements
- identified customer requirements
- determined correct settings for equipment
- set and monitored break and reduction system equipment
- achieved flour recipes through correct use of grist and mill settings
- monitored equipment settings and performance
- adjusted mill settings for breakdowns and other contingencies
- set all related processes for:
 - break
 - scratch
 - sizing
 - reduction and other milling
- supervised wheat conditioning
- ensured settings take into account the capability of equipment and the need to avoid imbalances, product build ups and chokes
- ensured all grain and flour tests are carried out to required schedule and procedures
- applied safe work practices and identified work health and safety hazards and controls.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- alternative and historical milling techniques, including:
 - stone grinding
 - 'low' or one pass through grinding

- use of small manual or electric milling machines
- semolina process compared with traditional flour milling process
- conventions and techniques in drawing mill flow diagrams
- characteristics of different grist and their milling requirements
- purpose design and steps in the break process, including:
 - overall aim of removing bran from endosperm in large pieces while minimising bran powder and flour
 - roller design
 - flute design
 - roller speed
 - number of passages
 - destinations of product from each break roll
- purpose, design and principles of the purification process, including:
 - sieve design
 - role of sifting, shaking, gravity and aspiration (upward air)
 - screening decks
 - exhaust ports and chambers
 - collection of throughs
 - overtails
 - relationship of purification to later reduction stages
- scratch equipment and process to remove small pieces of bran and germ from endosperm after sizing or purification
- relationship of particle size to reduction roller efficiency
- reduction which grinds flour into required fineness while controlling damage to starch granules and minimising abrasion to any bran and germ particles present
- features and performance characteristics of milling equipment as specified in manufacturer reference material
- relationship between total dressing surface ratio to mill capacity
- calculation of break roll percentages
- techniques to avoid imbalances, product build ups and chokes
- mill balance requirements and techniques, including:
 - ensuring that stock does not return to immediate preceding passage or equipment
 - feed to first break at a constant rate
 - evenness of feed into rolls
 - maintenance of conveyor and air settings to achieve constant feed
- calculation of mill performance, including:
 - invisible loss rate
 - theoretical and actual milling loss rate.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
 - a workplace or an environment that accurately represents workplace conditions
- resources, equipment and materials:
 - personal protective equipment relevant to flour milling operations
 - break and reduction roll process and related equipment and services
 - conditioned grain suitable for the break and reduction roll process
 - sampling schedules and test procedures and equipment
- specifications:
 - work procedures, including advice on safe work practices, food safety, quality and environmental requirements
 - equipment manuals, including operating parameters
 - specifications, control points and processing parameters
 - documentation and recording requirements and procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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