



Australian Government

FBPGRA4002 Supervise testing processes for wheat and flour

Release: 1

FBPGRA4002 Supervise testing processes for wheat and flour

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 establish and supervise specific quality and testing processes for wheat and flour in a flour mill to ensure compliance with regulatory and commercial requirements.

The unit applies to individuals who set tests to be undertaken, establish acceptable limits and maintain accuracy in the mill testing regime. The emphasis in this unit is on the grain and flour specific quality and testing processes used in flour milling.

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. Identify specification for mill products and performance	1.1 Identify customer specification according to customer order 1.2 Review range and availability of suitable grain to meet performance requirements 1.3 Set target range for grain and flour tests to achieve customer

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	specification, consistency and maximum yield 1.4 Identify mill critical control points according to operating procedures 1.5 Identify regulatory requirements relevant to mill and mill products including safe work practices, food safety and environmental requirements
2. Establish sampling procedures and tests for grain	2.1 Determine tests and sampling procedures for received grain 2.2 Determine tests and sampling procedures for grists 2.3 Determine tests and sampling procedures for grain conditioning
3. Establish sampling procedures and tests for flour	3.1 Determine flour tests to be undertaken at each reduction stage 3.2 Determine number of samples to be taken to ensure representative results are achieved 3.3 Determine reference tests required for milling 3.4 Establish procedures for storage and labelling of samples according to work health and safety and environmental requirements
4. Establish statistical process control procedures for mill	4.1 Establish procedures for recording test results and monitoring period 4.2 Establish normal distribution standard deviation targets for each test 4.3 Monitor standard deviations for out of control results 4.4 Review results against reference tests 4.5 Determine root cause of out of control results
5. Establish procedures for test equipment maintenance and accuracy	5.1 Establish maintenance schedules for test equipment in conjunction with suppliers and maintenance staff 5.2 Identify schedule and staff for calibration of test equipment 5.3 Ensure written procedures for each test identify actions to be followed in the event of actual or suspected equipment malfunction according to workplace practices 5.4 Arrange for testing of control samples at commencement of each shift or run 5.5 Record test results and establish monitoring procedures to identify operator or equipment test result variations not related to variation in wheat or flour

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	5.6 Arrange for operator training or equipment variation as appropriate according to workplace needs

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
Reading	- Interpret maintenance schedule and procedures for test equipment - Interpret manuals, diagrams, drawings and other technical information
Writing	- Establish maintenance schedules for test equipment - Compile reports to disseminate information about equipment and milling performance to a range of audiences
Numeracy	- Apply basic statistical skills sufficient to calculate averages, means and population and sample standard deviations from given data - Determine calibration procedures and schedule for test equipment
Navigate the world of work	- Challenge and develop own management style and innovative practices - Monitor adherence to legal and regulatory standards and responsibilities for self and others - Consider own role in terms of contribution to broader goals of the work environment and adapt and renegotiate role and responsibilities when this has the potential to increase effectiveness
Interact with others	- Identify training for operators, where required - Completing workplace documentation use appropriate language and communication skills to facilitate discussions - Provide information about innovative practices, processes and products - Clarify the purpose and possible actions to be taken as a result of work related communications
Get the work done	Supervise wheat and flour related tests including tests for moisture, contamination/purity, protein level , protein quality, ash content, colour, starch proportion, gluten elasticity and

Skill	Description
	- extensibility - Identify current innovative practice and organisational trends - Use a computer, keyboard and software to collect and file research data - Source, collect and organise a range of data about wheat and flour quality

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPGRA4002 Supervise testing processes for wheat and flour	FDFGR4002A Supervise testing processes for wheat and flour	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 FBPGRA4002 Supervise testing processes for wheat and flour

Modification History

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

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:

- identified and interpreted customer requirements
- identified regulatory requirements for mill operation
- identified mill critical control points
- established sampling procedures and tests for grain
- determined sampling procedures and rates for tests
- established procedures for test equipment maintenance and accuracy
- established procedures for storage and labelling of samples
- integrated testing regime with HACCP system
- maintained integrity of mill testing regime through use of control and reference tests and appropriate calibration and maintenance of test equipment
- 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:

- effect of reduction and break stages on flour characteristics, including:
 - protein level
 - protein quality
 - ash content
 - colour
 - starch proportion
 - dough rheology
- test and test procedures appropriate to grain, including:
 - sample appearance and smell

- sieving for sample purity
- near infrared test (NIR) and other tests for moisture, protein content, colour and grain hardness
- difference between 'as is' and 'dry weight' and moisture corrected moisture results and conversion of other parameters
- gluten washing test for protein quality
- Hagberg Falling Number test, including conversion of results to Perten Liquefaction Numbers
- Kern chondrometer test and other specific weight tests
- tests and test procedures related to flour, including:
 - NIR tests for flour moisture, protein content, colour, water absorption and ash content
 - colour testing using Kent-Jones and Martin flour colour grader
 - Pekar test
 - laboratory sieve tests
 - Brabender Extensograph and Farinograph test for dough stretching
 - viscosity tests
 - starch damage tests
 - Chittick test for carbon dioxide release
 - baking tests
- reference tests used for calibration, including:
 - oven test for moisture
 - Zeleny test for protein quality
 - Single Kernel Characterisation System (SKCS) test
 - Stenvert test for hardness
 - electrophoresis test for variety
 - image analysis for particle size and colour
 - muffle furnace test for ash content
 - fibre tests
- expected extraction rate for different stages of the milling process
- Australian grain characteristics relevant to milling, including:
 - variety
 - wheat segregations, including soft, Australian Premium White (APW), Hard and Prime Hard (PH)
 - other Australian grain segregations
- typical composition of bread, biscuit and cake-making flours, including moisture, sugar, starch, protein, fibre and mineral matter
- flour characteristics giving rise to faults in bread, pasta or other flour based products, including:
 - incorrect flour strength
 - incorrect alpha-amylase activity
 - incorrect amount of damaged starch

- bran contamination
- incorrect improver dosage
- heat damaged wheat
- tainted flour
- microbiology tests for grain and flour
- tests used in manufacture of by-products.

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
 - 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

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