

		Curriculum Document		
Curriculum Code	Curriculum Title		Logo	
716106000	Sugar Processing Machine Operator			
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Development Quality Partner	AgriSETA	info@agriseta.co.za	012 301 5600	

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SECTION 1: CURRICULUM SUMMARY

1. Occupational Information

1.1 Associated Occupation

716106: Sugar Processing Machine Operator

1.2 Occupation or Specialisation Addressed by this Curriculum

716106000: Sugar Processing Machine Operator

1.3 Alternative Titles used by Industry

- Sugar Front End Operators
- Sugar Process Operators (Raw House)
- Sugar Process Operators (Refinery)
- Services Operators (Steam generation)

2. Curriculum Information

2.1 Curriculum Structure

This qualification is made up of the following compulsory Knowledge and Practical Skill Modules:

Knowledge Modules:

- 716106000-KM-01, Occupational Safety, Health and Environmental Protection, NQF Level 2, Credits 4
- 716106000-KM-02, Sugar processing equipment and technology, NQF Level 3, Credits 24
- 716106000-KM-03, Basic business studies, NQF Level 2, Credits 4
- 716106000-KM-04, Quality assurance, NQF Level 3, Credits 8

Total number of credits for Knowledge Modules: 40

Practical Skill Modules:

- 716106000-PM-01, Operate pre-set sugar processing equipment, NQF Level 2, Credits 12
- 716106000-PM-02, Operate programmable sugar processing equipment, NQF Level 3, Credits 24
- 716106000-PM-03, Operate a bank of inter linked equipment that functions in sequence in a sugar mill, NQF Level 03, Credits 8
- 716106000-PM-04, Meet occupational health, safety, environment and quality standards, NQF Level 03, Credits 8

Total number of credits for Practical Skill Modules: 52

This qualification also requires the following Work Experience Modules:

- 716106000-WM-01, Pre-set sugar processing equipment operation, NQF Level 2, Credits 20
- 716106000-WM-02, Operation of programmable sugar processing equipment or equipment set-up in series, NQF Level 3, Credits 24
- 716106000-WM-03, Operation of a bank of equipment set-up in series, NQF Level 3, Credits 8
- 716106000-WM-04, Occupational health, safety, environment and quality standards, NQF Level 3, Credits 8

Total number of credits for Work Experience Modules: 60

2.2 Entry Requirements

NQF Level 1 with Mathematics

3. Assessment Quality Partner Information

Name of body: AgriSETA

Address of body: AgriSETA House 529 Belvedere Road Arcadia 0083

Contact person name: QCTO Manager

Contact person work telephone number: 012 301 5600

4. Part Qualification Curriculum Structure

SECTION 2: OCCUPATIONAL PROFILE

1. Occupational Purpose

attends to the operation of equipment used in an sugar processing plant and maintains the consistent availability of processed material to required standards and volumes.

2. Occupational Tasks

- Operate pre-set sugar processing equipment in a sugar mill (NQF Level 2)
- Operate programmable sugar processing equipment in a sugar mill (NQF Level 3)
- Operate a bank of inter linked equipment that functions in sequence in a sugar mill (NQF Level 3)
- Perform work activities in accordance with occupational safety, health and quality requirements (NQF Level 3)

3. Occupational Task Details

3.1. Operate pre-set sugar processing equipment in a sugar mill (NQF Level 2)

Unique Product or Service:

Pre-set equipment operation is attended to

Occupational Responsibilities:

- Attend to the operation of pre-set sugar processing equipment

Occupational Contexts:

- Pre-set equipment operation in a sugar processing plant in accordance with standard procedures

3.2. Operate programmable sugar processing equipment in a sugar mill (NQF Level 3)

Unique Product or Service:

Operation of programmable sugar processing equipment is attended to

Occupational Responsibilities:

- Operate programmable sugar processing equipment

Occupational Contexts:

- Programmable sugar processing equipment operation in a sugar mill

3.3. Operate a bank of inter linked equipment that functions in sequence in a sugar mill (NQF Level 3)

Unique Product or Service:

A bank of inter linked equipment operating in series is attended to

Occupational Responsibilities:

- Operate a bank of equipment setup in series

Occupational Contexts:

- Interlinked equipment operating in series

3.4. Perform work activities in accordance with occupational safety, health and quality requirements (NQF Level 3)**Unique Product or Service:**

Occupational safety, health, environment and quality standards are maintained

Occupational Responsibilities:

- Maintain occupational safety and health standards
- Conduct In-line quality assurance

Occupational Contexts:

- Safety, health, environment and quality standards are met

SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS

SECTION 3A: KNOWLEDGE MODULE SPECIFICATIONS

List of Knowledge Modules for which Specifications are included

- 716106000-KM-01, Occupational Safety, Health and Environmental Protection, NQF Level 2, Credits 4
- 716106000-KM-02, Sugar processing equipment and technology, NQF Level 3, Credits 24
- 716106000-KM-03, Basic business studies, NQF Level 2, Credits 4
- 716106000-KM-04, Quality assurance, NQF Level 3, Credits 8

1. 716106000-KM-01, Occupational Safety, Health and Environmental Protection, NQF Level 2, Credits 4

1.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of general and sugar processing specific safe work practices in an industrial environment.

The learning will enable learners to demonstrate an understanding of:

- KM-01-KT01: The statutory framework of Safety, Health and Environmental Protection in the Workplace (10%)
- KM-01-KT02: General rules and principles of safe work practices (30%)
- KM-01-KT03: Sugar processing specific health, safety and environmental protection concepts (50%)
- KM-01-KT04: Environmental protection and pollution concepts (10%)

1.2 Guidelines for Topics

1.2.1. KM-01-KT01: The statutory framework of Safety, Health and Environmental Protection in the Workplace (10%)

Topic elements to be covered include:

- KT0101 Introduction to the legislative framework
- KT0102 Regulation and enforcement of the Act
- KT0103 Appointment, functions, rights and duties of Health and Safety Committees and Representatives at work
- KT0104 Duties and responsibilities of persons at work

Internal Assessment Criteria and Weight

- IAC0101 The statutory provisions of the Act can be explained
- IAC0102 Duties and responsibilities of persons at work can be explained
- IAC0103 Functions, rights and duties of appointed persons can be explained

(Weight 10%)

1.2.2. KM-01-KT02: General rules and principles of safe work practices (30%)

Topic elements to be covered include:

- KT0201 Good housekeeping practices and risks
- KT0202 Safety signs and symbols
- KT0203 Personal protective equipment
- KT0204 Machine guarding and operational safety precautions

- KT0205 Lock out procedures
- KT0206 Emergency procedures
- KT0207 Restricted entrance
- KT0208 Fire prevention
- KT0209 Incident on duty and reporting
- KT0210 Universal precautions when attending to injured persons
- KT0211 Provisions related to intoxication, unauthorised use of motorised or mobile equipment
- KT0212 Safe material lifting
- KT0213 Material stacking

Internal Assessment Criteria and Weight

- IAC0201 General rules and principles of safe work practices can be explained for different scenarios

(Weight 30%)

1.2.3. KM-01-KT03: Sugar processing specific health, safety and environmental protection concepts (50%)

Topic elements to be covered include:

- KT0301 Specific risks in a Sugar Processing Plant
- KT0302 Restricted access areas in a Sugar Processing Plant
- KT0303 Environmental pollution and preventative measures
- KT0304 Hazardous chemicals and chemical handling
- KT0305 Waste handling

Internal Assessment Criteria and Weight

- IAC0301 Risks and measures to address risks can be explained

(Weight 50%)

1.2.4. KM-01-KT04: Environmental protection and pollution concepts (10%)

Topic elements to be covered include:

- KT0401 Carbon footprint, global warming and green production principles
- KT0402 Sources of and impact of contaminants on the natural environment
- KT0403 General rules related to waste control measures
- KT0404 The impact of environmental pollution on natural resources, communities and the economy

Internal Assessment Criteria and Weight

- IAC0401 Environmental pollution risks and preventative measures can be explained

(Weight 10%)

1.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Learning resources approved by the QCTO
- Assessment documentation, instruments and standards approved by the QCTO

Human Resource Requirements:

- Facilitators with subject matter expertise in the content of the module
- A learner facilitator ratio of no more than 1:25
- Assessors with assessment practice training and subject matter expertise on the content of the module

Legal Requirements:

- Compliance with occupational health, safety and environmental protection regulations

1.4 Exemptions

- None recognised

2. 716106000-KM-02, Sugar processing equipment and technology, NQF Level 3, Credits 24

2.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of the mechanical knowledge of equipment, systems and technology used in a sugar processing plant.

The learning will enable learners to demonstrate an understanding of:

- KM-02-KT01: Equipment hygiene and cleaning (10%)
- KM-02-KT02: Raw and refined sugar processing equipment and technology (30%)
- KM-02-KT03: Introduction to mechanical systems (25%)
- KM-02-KT04: Introduction to process flow and control (5%)
- KM-02-KT05: Mechanical workshop practices (10%)
- KM-02-KT06: Maintenance (10%)
- KM-02-KT07: Energy, utilities and services (10%)

2.2 Guidelines for Topics

2.2.1. KM-02-KT01: Equipment hygiene and cleaning (10%)

Topic elements to be covered include:

- KT0101 Cleaning processes (CIP)
- KT0102 Cleaning materials and chemicals
- KT0103 Equipment hygiene and product quality standards
- KT0104 Causes of equipment contamination and general preventative and cleaning practices

Internal Assessment Criteria and Weight

- IAC0101 The importance of equipment hygiene can be explained
- IAC0102 Safe handling of cleaning chemical and empty containers can be explained

(Weight 10%)

2.2.2. KM-02-KT02: Raw and refined sugar processing equipment and technology (30%)

Topic elements to be covered include:

- KT0201 Cane handling equipment
- KT0202 Cane preparation equipment
- KT0203 Juice processing equipment
- KT0204 Crystallisation and crystal recovery equipment

- KT0205 Ancillary boiler equipment

Internal Assessment Criteria and Weight

- IAC0201 Equipment components can be identified from diagrams of the equipment
- IAC0202 The working principles of the equipment can be explained
- IAC0203 The operating principles of the equipment can be explained
- IAC0204 Care for, cleaning and routine maintenance practices can be explained

(Weight 30%)

2.2.3. KM-02-KT03: Introduction to mechanical systems (25%)

Topic elements to be covered include:

- KT0301 Material handling equipment (actuators, elevators, conveyors)
- KT0302 Pumping systems (pipes, fittings, valves)
- KT0303 Drives (direct and indirect drives) (motors, turbines, hydraulic, gear boxes, clutches)
- KT0304 Scales
- KT0305 Air moving equipment (fans, compressors, vacuum pump)

Internal Assessment Criteria and Weight

- IAC0301 Equipment components can be identified from diagrams of the equipment
- IAC0302 The working principles of the equipment can be explained

(Weight 25%)

2.2.4. KM-02-KT04: Introduction to process flow and control (5%)

Topic elements to be covered include:

- KT0401 Flow diagrams and symbols
- KT0402 Instrumentation and control systems
- KT0403 Process communication (Up-stream and down-stream)

Internal Assessment Criteria and Weight

- IAC0401 Equipment and process stages can be identified from a flow diagram
- IAC0402 Instrumentation and control systems can be identified and the uses explained

(Weight 5%)

2.2.5. KM-02-KT05: Mechanical workshop practices (10%)

Topic elements to be covered include:

- KT0501 Tools and measuring equipment for lubricating and cleaning
- KT0502 Mechanical workshop safety
- KT0503 Basic engineering symbols
- KT0504 Use of equipment manuals
- KT0505 Properties and use of lubricants, sealants, fasteners and locking devices

Internal Assessment Criteria and Weight

- IAC0501 The use of technical manuals and engineering symbols can be demonstrated
- IAC0502 Workshop tools and measuring instruments can be identified and their uses explained
- IAC0503 Workshop safety practices can be explained
- IAC0504 Tools, equipment and materials used for lubrication and cleaning used for general equipment maintenance can be identified and their uses explained

(Weight 10%)

2.2.6. KM-02-KT06: Maintenance (10%)

Topic elements to be covered include:

- KT0601 Preventative maintenance
- KT0602 Care for assets

Internal Assessment Criteria and Weight

- IAC0601 The importance of preventative maintenance and care for assets can be explained

(Weight 10%)

2.2.7. KM-02-KT07: Energy, utilities and services (10%)

Topic elements to be covered include:

- KT0701 Steam
- KT0702 Electricity
- KT0703 Compressed air
- KT0704 Water

Internal Assessment Criteria and Weight

- IAC0701 The uses of energy, utilities and steam in the processing lines can be explained

(Weight 10%)

2.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Learning resources approved by the QCTO
- Assessment documentation, instruments and standards approved by the QCTO

Human Resource Requirements:

- Facilitators with subject matter expertise in the content of the module
- A learner facilitator ratio of no more than 1:25
- Assessors with assessment practice training and subject matter expertise on the content of the module

Legal Requirements:

- Compliance with occupational health, safety and environmental protection regulations

2.4 Exemptions

- None recognised

3. 716106000-KM-03, Basic business studies, NQF Level 2, Credits 4

3.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of basic business practices and insight into business dynamics.

The learning will enable learners to demonstrate an understanding of:

- KM-03-KT01: The productive work environment (40%)
- KM-03-KT02: Productivity and productivity improvement (20%)
- KM-03-KT03: The myths of the money tree (40%)

3.2 Guidelines for Topics

3.2.1. KM-03-KT01: The productive work environment (40%)

Topic elements to be covered include:

- KT0101 Overview of basic conditions of employment
- KT0102 Disciplinary codes and procedures
- KT0103 Introduction to workplace conflict and grievances
- KT0104 Teamwork
- KT0105 Interpersonal and people relations
- KT0106 Time keeping and self management
- KT0107 Basic data recording and capturing

Internal Assessment Criteria and Weight

- IAC0101 The key areas covered by basic conditions of employment can be listed
- IAC0102 Measures to address or respond to problems and conflict that commonly arise in the workplace can be explained
- IAC0103 The importance of team work can be explained

(Weight 40%)

3.2.2. KM-03-KT02: Productivity and productivity improvement (20%)

Topic elements to be covered include:

- KT0201 Productivity measurements
- KT0202 Continuous improvement
- KT0203 Productivity and profitability

Internal Assessment Criteria and Weight

- IAC0201 The concept "Productivity" can be defined and explained

(Weight 20%)

3.2.3. KM-03-KT03: The myths of the money tree (40%)

Topic elements to be covered include:

- KT0301 Budgets
- KT0302 Income and profit
- KT0303 Machine and equipment costs
- KT0304 Manpower costs
- KT0305 Material costs
- KT0306 Cost of re-work
- KT0307 Cost of energy, services and utilities
- KT0308 Down time cost

Internal Assessment Criteria and Weight

- IAC0301 The impact of costs on a business can be explained
- IAC0302 Cost concepts can be explained

(Weight 40%)

3.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Learning resources approved by the QCTO
- Assessment documentation, instruments and standards approved by the QCTO

Human Resource Requirements:

- Facilitators with subject matter expertise in the content of the module
- A learner facilitator ratio of no more than 1:25
- Assessors with assessment practice training and subject matter expertise on the content of the module

Legal Requirements:

- Compliance with occupational health, safety and environmental protection regulations

3.4 Exemptions

- None recognised

4. 716106000-KM-04, Quality assurance, NQF Level 3, Credits 8

4.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of quality assurance terms, concepts and established principles applied in sugar milling.

The learning will enable learners to demonstrate an understanding of:

- KM-04-KT01: Quality Control and Assurance (25%)
- KM-04-KT02: Sampling principles and methods (50%)
- KM-04-KT03: Principles of food safety and quality assurance (25%)

4.2 Guidelines for Topics

4.2.1. KM-04-KT01: Quality Control and Assurance (25%)

Topic elements to be covered include:

- KT0101 Quality management systems
- KT0102 Quality control and assurance
- KT0103 Quality indicators and specification
- KT0104 Key control points
- KT0105 Quality reports
- KT0106 Traceability

Internal Assessment Criteria and Weight

- IAC0101 An understanding of quality control and assurance can be demonstrated by responding to a range of questions on related concepts and practices

(Weight 25%)

4.2.2. KM-04-KT02: Sampling principles and methods (50%)

Topic elements to be covered include:

- KT0201 Representative sampling
- KT0202 Sampling techniques and equipment
- KT0203 Handling and storages of samples
- KT0204 Sample records and labels
- KT0205 Sampling frequency

Internal Assessment Criteria and Weight

- IAC0201 The concept "Representative sampling" can be defined and explained

- IAC0202 An understanding of sampling techniques and equipment used at various stages in the sugar milling process can be demonstrated
- IAC0203 Sampling handling, storage, recording and labelling practices can be demonstrated

(Weight 50%)

4.2.3. KM-04-KT03: Principles of food safety and quality assurance (25%)

Topic elements to be covered include:

- KT0301 HACCP
- KT0302 Personal hygiene
- KT0303 Food safety protective measures

Internal Assessment Criteria and Weight

- IAC0301 The focus of HACCP and measures to meet standards in a sugar mill can be explained
- IAC0302 The importance of meeting HACCP standards from a sustainable business perspective can be explained
- IAC0303 Personal hygiene measures that must be met by all employees can be listed and explained

(Weight 25%)

4.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Learning resources approved by the QCTO
- Assessment documentation, instruments and standards approved by the QCTO

Human Resource Requirements:

- Facilitators with subject matter expertise in the content of the module
- A learner facilitator ratio of no more than 1:25
- Assessors with assessment practice training and subject matter expertise on the content of the module

Legal Requirements:

- Compliance with occupational health, safety and environmental protection regulations

4.4 Exemptions

- None recognised

SECTION 3B: PRACTICAL SKILL MODULE SPECIFICATIONS

List of Practical Skill Module Specifications

- 716106000-PM-01, Operate pre-set sugar processing equipment, NQF Level 2, Credits 12
- 716106000-PM-02, Operate programmable sugar processing equipment, NQF Level 3, Credits 24
- 716106000-PM-03, Operate a bank of inter linked equipment that functions in sequence in a sugar mill, NQF Level 03, Credits 8
- 716106000-PM-04, Meet occupational health, safety, environment and quality standards, NQF Level 03, Credits 8

1. 716106000-PM-01, Operate pre-set sugar processing equipment, NQF Level 2, Credits 12

1.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to gain practical skills required to attend to pre-set equipment used in uncomplicated processes such as filter presses, juice heater, coolers, Oliver filters, continuous centrifuges in a controlled learning environment.

The learner will be required to:

- PM-01-PS01: Conduct pre start-up procedures of preset sugar processing equipment
- PM-01-PS02: Monitor and operate equipment preset sugar processing equipment
- PM-01-PS03: Shut down and clean preset sugar processing equipment

1.2 Guidelines for Practical Skills

1.2.1. PM-01-PS01: Conduct pre start-up procedures of preset sugar processing equipment

Scope of Practical Skill

Given a pre-set equipment in controlled operational environment, operating, procedures and instructions, the learner must be able to:

- PA0101 Use a control sheet to inspect the preset equipment for correct settings and mechanical soundness
- PA0102 Inspect and identify feeder material for availability and correctness
- PA0103 Inspect material routing for readiness

Applied Knowledge

- AK0101 Equipment mechanical inspection procedures and standards
- AK0102 Flow of material
- AK0103 Equipment settings

Internal Assessment Criteria

- IAC0104 Inspection reports are accurately completed

1.2.2. PM-01-PS02: Monitor and operate equipment preset sugar processing equipment

Scope of Practical Skill

Given pre-set, processing equipment in a controlled learning environment, the learner must be able to:

- PA0201 Perform specific operational tasks in accordance with equipment operating procedures e.g. start-up, change-over, purging, cleaning, shut down, emergency stop
- PA0202 Monitor preset equipment to maintain operation within output/product requirements and equipment specifications
- PA0203 Recognise and rectify and/or report operating problems related to different scenarios

- PA0204 Achieve required volumes and quality standards
- PA0205 Complete a production report

Applied Knowledge

- AK0201 Standard operating procedures or instructions
- AK0202 Sensory signs of operating problems
- AK0203 Material specifications
- AK0204 Indicators of the mechanical problems
- AK0205 Product/material standards and specifications
- AK0206 Production reporting requirements

Internal Assessment Criteria

- IAC0201 The equipment is operated in accordance with standard operating procedures or instructions
- IAC0202 The consequences of wrong practices, neglect and/or misinterpretation of instrument readings, incorrect settings in relation to equipment efficiency and product quality is explained correctly
- IAC0203 Production volumes and quality standards are achieved

1.2.3. PM-01-PS03: Shut down and clean preset sugar processing equipment

Scope of Practical Skill

Given cleaning material, equipment, lubricants and the required mechanical tools the learner must be able to:

- PA0301 Perform pre-set equipment shutdown procedures
- PA0302 Clean pre-set sugar processing equipment and perform housekeeping
- PA0303 Lubricate pre-set sugar processing equipment

Applied Knowledge

- AK0301 Equipment cleaning procedures
- AK0302 Equipment care and maintenance

Internal Assessment Criteria

- IAC0301 Scheduled cleaning and equipment care procedures are executed in accordance with manufacturer specifications and standard procedures

1.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Demonstrate access to:
- Pre-set equipment in an sugar processing line
- Equipment cleaning material
- Equipment components

Human Resource Requirements:

- Facilitators with module matter expertise
- A learner facilitator ratio of no more than 1:5
- Assessors with assessment practice training and subject matter expertise on the content of the module

Legal Requirements:

- Compliance with occupational health, safety and environmental protection regulations
- Personal protective equipment

1.4 Exemptions

- None recognised

2. 716106000-PM-02, Operate programmable sugar processing equipment, NQF Level 3, Credits 24

2.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to develop skills to operate programmable equipment or equipment setup and operated in series. The learner will gain the skills by operating equipment used for extraction, clarification, evaporation, sugar melting, refining processes.

The learner will be required to:

- PM-02-PS01: Conduct pre start-up procedures of programmable sugar processing equipment
- PM-02-PS02: Monitor and operate programmable sugar processing equipment
- PM-02-PS03: Shut down and clean programmable sugar processing equipment
- PM-02-PS04: Record data and maintain production records

2.2 Guidelines for Practical Skills

2.2.1. PM-02-PS01: Conduct pre start-up procedures of programmable sugar processing equipment

Scope of Practical Skill

Given a controlled operational environment, operating procedures and instructions, the learner must be able to:

- PA0101 Use a control sheet to inspect programmable equipment for correct settings and mechanical soundness
- PA0102 Inspect and identify feeder material for availability and correctness
- PA0103 Inspect material routing for readiness

Applied Knowledge

- AK0101 Programmable equipment mechanical inspection procedures and standards
- AK0102 Flow of material
- AK0103 Programmable equipment settings

Internal Assessment Criteria

- IAC0104 Inspection reports are accurately completed

2.2.2. PM-02-PS02: Monitor and operate programmable sugar processing equipment

Scope of Practical Skill

Given programmable processing equipment a controlled learning environment, the learner must be able to:

- PA0201 Set-up and start-up programmable sugar processing equipment manually and achieve normal operating conditions

- PA0202 Control the programmable equipment operation within required output/product specifications
- PA0203 Perform specific procedures related to the process (e.g. change-over, cleaning, emergency stops)
- PA0204 Adjust programmable equipment setting in response to instrument readings and required operating conditions
- PA0205 Use instrumentation readings and sensory cues to anticipate quality problems and make adjustments
- PA0206 Achieve consistent flow of material in terms of required volumes and quality standards
- PA0207 Read and explain a programmable equipment operating diagram
- PA0209 Select and apply appropriate responses to material or process deviations

Applied Knowledge

- AK0201 Standard Operating Procedures
- AK0202 Manual and automatic starting/shut down procedures
- AK0203 Equipment operating procedures and specifications
- AK0204 Product specifications
- AK0205 Standard safety procedures
- AK0206 Standard responses to common problems
- AK0207 Process flow

Internal Assessment Criteria

- IAC0201 The execution of equipment set-up, start-up, operation and shutdown in accordance with standard procedures
- IAC0202 The execution of adjustments to equipment setting in response to instrument readings and material variations are performed in accordance with standard procedures
- IAC0203 Required product volumes and quality standards are achieved
- IAC0204 The impact and implications of wrong actions in relation to equipment efficiency and product standards can be explained
- IAC0205 Responses to different emergency scenarios, risks and problems can be explained
- IAC0206 Indicators of the mechanical equipment functionality can be explained

2.2.3. PM-02-PS03: Shut down and clean programmable sugar processing equipment

Scope of Practical Skill

Given production line, quality reports and product specifications, the learner must be able to:

- PA0301 Perform equipment shutdown procedures of programmable sugar processing equipment

- PA0302 Set-up and run programmable equipment cleaning cycles

Applied Knowledge

- AK0301 Cleaning and equipment care procedures
- AK0302 Equipment shutdown procedures

Internal Assessment Criteria

- IAC0301 Equipment cleaning and care procedures are executed in accordance with standard procedures
- IAC0302 Equipment shutdown procedures are executed in accordance with standard procedures

2.2.4. PM-02-PS04: Record data and maintain production records

Scope of Practical Skill

Given cleaning and lubricating materials, standard procedures and programmable processing equipment or equipment in series in a controlled learning environment, the learner must be able to:

- PA0401 Interpret, collate, calculate, summarise and record production data to ensure availability of accurate and complete production information
- PA0402 Compile production reports to communicate required information accurately
- PA0403 Present information in simple graphical format to analyse and report production data
- PA0404 Read and respond to the essence of written instructions
- PA0405 Organise and capture data

Applied Knowledge

- AK0401 Data analysis
- AK0402 Reporting and presenting data
- AK0403 Use or purpose of data

Internal Assessment Criteria

- IAC0401 Data is analysed and reported on accurately

2.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Programmable equipment or equipment in series in an sugar processing line
- Equipment cleaning material

Human Resource Requirements:

- Facilitators with module matter expertise

- A learner facilitator ratio of no more than 1:5
- Assessors with assessment practice training and subject matter expertise on the content of the module

Legal Requirements:

- Compliance with occupational health, safety and environmental protection regulations
- Personal protective equipment

2.4 Exemptions

- None recognised

3. 716106000-PM-03, Operate a bank of inter linked equipment that functions in sequence in a sugar mill, NQF Level 03, Credits 8

3.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to develop skills to operate inter linked equipment setup and operated in series such as effluent and waste control, waste product handling systems.

The learner will be required to:

- PM-03-PS01: Conduct pre startup procedures for a bank of inter linked equipment that functions in sequence in a sugar mill
- PM-03-PS02: Monitor and control a bank of inter linked equipment that functions in sequence in a sugar mill

3.2 Guidelines for Practical Skills

3.2.1. PM-03-PS01: Conduct pre startup procedures for a bank of inter linked equipment that functions in sequence in a sugar mill

Scope of Practical Skill

Given a controlled operational environment operating procedures and instructions the learner must be able to:

- PA0101 Use a control sheet to inspect the bank of equipment for correct settings and mechanical soundness
- PA0102 Use a control sheet to inspect the material transfer pumps, pipes and valves for correct settings and mechanical soundness
- PA0103 Inspect and identify feeder material for availability and correctness
- PA0104 Inspect material routing for readiness

Applied Knowledge

- AK0101 Operating procedures for the equipment
- AK0102 Equipment inspection procedures

Internal Assessment Criteria

- IAC0101 Pre start-up procedures are performed in a structured manner in accordance with operating procedures

3.2.2. PM-03-PS02: Monitor and control a bank of inter linked equipment that functions in sequence in a sugar mill

Scope of Practical Skill

Given a bank of equipment in series in a controlled learning environment the learner must be able to:

- PA0201 Set-up and start-up the bank of equipment manually and achieve normal operating conditions
- PA0202 Monitor and control the operation of a bank of equipment working in series within required output specifications
- PA0203 Shut down the bank of equipment equipment
- PA0204 Read and explain a process flow diagram

Applied Knowledge

- AK0201 Standard Operating Procedures
- AK0202 Standard responses to common problems
- AK0203 Material flow diagrams

Internal Assessment Criteria

- IAC0201 The operation of the bank of equipment is monitored and controlled in accordance with standard procedures
- IAC0202 Indicators of the mechanical equipment functionality can be explained

3.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Learning resources approved by the QCTO
- Assessment documentation, instruments and standards approved by the QCTO

Human Resource Requirements:

- Facilitators with subject matter expertise in the content of the module
- A learner facilitator ratio of no more than 1:25
- Assessors with assessment practice training and subject matter expertise on the content of the module

Legal Requirements:

- Compliance with occupational health, safety and environmental protection regulations

3.4 Exemptions

- None are recognised

4. 716106000-PM-04, Meet occupational health, safety, environment and quality standards, NQF Level 03, Credits 8

4.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to develop skills to comply with occupational safety, health and environmental protection standards and to conduct In-line quality assurance

The learner will be required to:

- PM-04-PS01: Comply with occupational safety, health and environmental protection standards
- PM-04-PS02: Conduct In-line sugar quality assurance

4.2 Guidelines for Practical Skills

4.2.1. PM-04-PS01: Comply with occupational safety, health and environmental protection standards

Scope of Practical Skill

Given occupational safety and health procedures, inspection sheets and personal protective equipment the learner must be able to:

- PA0101 Use a control sheet to inspect equipment and protective devices for safe operating conditions
- PA0102 Select, use and care for personal protective equipment

Applied Knowledge

- AK0101 Safety inspection procedures and standards
- AK0102 Personal protective equipment

Internal Assessment Criteria

- IAC0101 Safety checks and inspections are performed in accordance with manufacturer specifications and standard procedures
- IAC0102 Personal protective equipment is selected and used correctly
- IAC0103 Operating risks and measures to prevent these can be explained

4.2.2. PM-04-PS02: Conduct In-line sugar quality assurance

Scope of Practical Skill

Given a production line, quality reports and product specifications the learner must be able to:

- PA0201 Integrate various sources of information (instrument/PLC readings, quality reports, sensory cues) to determine quality standards
- PA0202 Conduct in-process sampling and product evaluation to maintain quality control standards
- PA0203 Complete in-process quality reports

Applied Knowledge

- AK0201 Quality control procedures
- AK0202 Product quality specification
- AK0203 In-process sampling and evaluation techniques

Internal Assessment Criteria

- IAC0201 In-line quality control procedures are adhered to
- IAC0202 Deviations from required quality standards are recognised and reported

4.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Learning resources approved by the QCTO
- Assessment documentation, instruments and standards approved by the QCTO

Human Resource Requirements:

- Facilitators with subject matter expertise in the content of the module
- A learner facilitator ratio of no more than 1:25
- Assessors with assessment practice training and subject matter expertise on the content of the module

Legal Requirements:

- Compliance with occupational health, safety and environmental protection regulations

4.4 Exemptions

- None recognised

SECTION 3C: WORK EXPERIENCE MODULE SPECIFICATIONS

List of Work Experience Module Specifications

- 716106000-WM-01, Pre-set sugar processing equipment operation, NQF Level 2, Credits 20
- 716106000-WM-02, Operation of programmable sugar processing equipment or equipment set-up in series, NQF Level 3, Credits 24
- 716106000-WM-03, Operation of a bank of equipment set-up in series, NQF Level 3, Credits 8
- 716106000-WM-04, Occupational health, safety, environment and quality standards, NQF Level 3, Credits 8

1. 716106000-WM-01, Pre-set sugar processing equipment operation, NQF Level 2, Credits 20

1.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Gain experience in attending to the operation of single-stage equipment in a feed milling operation. The learner will gain experience in the operation of pre-set equipment used in uncomplicated processes such as a carbonatation filter presses, juice heater, coolers, Oliver filters, continuous centrifuges as an extension of the practical skills gained during practical training.

The learner will be required to:

- WM-01-WE01: Operate pre-set equipment under close direction and supervision of an experienced operator for a period of two weeks
- WM-01-WE02: Operate pre-set equipment within normal operational and reporting structures for a period of six weeks

1.2 Guidelines for Work Experiences

1.2.1. WM-01-WE01: Operate pre-set equipment under close direction and supervision of an experienced operator for a period of two weeks

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Attend to the execution of specific operating procedures under direct supervision such as pre-operational safety and mechanical inspections, equipment, start up, shut-downs, shift hand-over, cleaning and lubrication, removal and fitting of components
- WA0102 Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation under direct supervision
- WA0103 Adhere workplace policies and procedures under direct supervision such as housekeeping standards, safety inspections, general work rules, hygiene standards, scheduled maintenance, equipment lockout

Supporting Evidence

- SE0101 Report by mentor

1.2.2. WM-01-WE02: Operate pre-set equipment within normal operational and reporting structures for a period of six weeks

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0201 Attend to the execution of specific operating procedures such as pre-operational safety and mechanical inspections, equipment, start up, shut-downs, shift hand-over, cleaning and lubrication, removal and fitting of components

- WA0202 Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation
- WA0203 Adhere to workplace policies and procedures such as housekeeping standards, safety inspections, general work rules, hygiene standards, scheduled maintenance, equipment lockout
- WA0204 Attend to equipment during days or times when limited support is available

Supporting Evidence

- SE0201 Equipment records showing operation and utilisation of equipment
- SE0202 Production records - quantity and quality

1.3 Contextualised Workplace Knowledge

1 Equipment cleaning and housekeeping procedures

2 Data reporting systems

3 Equipment operating parameters

4 Production targets and schedules of work

5 Safe working procedures

6 Standard operating procedures

7 SHEQ procedures and standards

8 Workplace specific processes and technology

1.4 Criteria for Workplace Approval

Physical Requirements:

- A sugar mill

Human Resource Requirements:

- A person with 3 years experience in a supervisory or managerial role on a sugar mill trained as a workplace mentor must be available for every 5 learners

Legal Requirements:

- Workplace compliance with occupational health safety and environmental protection requirements

1.5 Additional Assignments to be Assessed Externally

None specified

2. 716106000-WM-02, Operation of programmable sugar processing equipment or equipment set-up in series, NQF Level 3, Credits 24

2.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Gain experience in the operation of programmable sugar processing equipment or equipment set-up in series. The learner will gain experience in the operation of equipment such as equipment used for extraction, clarification, evaporation, sugar melting, refining processes, as an extension of the practical skills gained during practical training.

The learner will be required to:

- WM-02-WE01: Attend to the operation of programmable equipment for a period of two weeks under direct supervision
- WM-02-WE02: Attend the operation of programmable equipment within normal operational and reporting structures for a period of eight weeks

2.2 Guidelines for Work Experiences

2.2.1. WM-02-WE01: Attend to the operation of programmable equipment for a period of two weeks under direct supervision

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Attend to the execution of specific operating procedures under direct supervision such as pre-operational safety and mechanical inspections, start-up, shut down, shift hand-over, emergency equipment stops or shut-downs, equipment adjustments to settings
- WA0102 Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation; under direct supervision

Supporting Evidence

- SE0101 Report by mentor

2.2.2. WM-02-WE02: Attend the operation of programmable equipment within normal operational and reporting structures for a period of eight weeks

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0201 Attend to the execution of specific operating procedures such as pre-operational safety and mechanical inspections, start-up, shut down, shift hand-over, emergency equipment stops or shut-downs, equipment adjustments to settings
- WA0202 Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation

- WA0203 Attend to equipment operation during days or shifts when limited support is available

Supporting Evidence

- SE0201 Equipment records showing operation and utilisation of equipment
- SE0202 Equipment maintenance and repair records
- SE0203 Production records - quantity and quality
- SE0204 Completed standard documentation and reports

2.3 Contextualised Workplace Knowledge

1 Equipment cleaning and housekeeping procedures

2 Data reporting systems

3 Equipment operating parameters

4 Production targets and schedules of work

5 Safe working procedures

6 Standard operating procedures

7 Workplace specific equipment settings

8 SHEQ procedures and standards

9 Workplace specific processes and technology

2.4 Criteria for Workplace Approval

Physical Requirements:

- A sugar mill

Human Resource Requirements:

- A person with 3 years experience in a supervisory or managerial role on a sugar mill trained as a workplace mentor must be available for every 5 learners

Legal Requirements:

- Workplace compliance with occupational health safety and environmental protection requirements

2.5 Additional Assignments to be Assessed Externally

None specified

3. 716106000-WM-03, Operation of a bank of equipment set-up in series, NQF Level 3, Credits 8

3.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Gain experience in the operation of programmable sugar processing equipment or equipment set-up in series. The learner will gain experience in the operation of equipment such as equipment used for sugar by-products, effluent and waste control as an extension of the practical skills gained during practical training.

The learner will be required to:

- WM-03-WE01: Attend to the operation of banks of equipment set up in series for a period of one week under direct supervision
- WM-03-WE02: Attend the operation of a bank of equipment set up in series within normal operational and reporting structures for a period of two weeks

3.2 Guidelines for Work Experiences

3.2.1. WM-03-WE01: Attend to the operation of banks of equipment set up in series for a period of one week under direct supervision

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Attend to the execution of specific operating procedures such as pre-operational safety and mechanical inspections, start-up, shut down, shift hand-over, emergency equipment stops or shut-downs, equipment adjustments to settings
- WA0102 Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation; under direct supervision

Supporting Evidence

- SE0101 Report by mentor

3.2.2. WM-03-WE02: Attend the operation of a bank of equipment set up in series within normal operational and reporting structures for a period of two weeks

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0201 Attend to the execution of specific operating procedures such as pre-operational safety and mechanical inspections, start-up, shut down, shift hand-over, emergency equipment stops or shut-downs, equipment adjustments to settings
- WA0202 Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation; under direct supervision

- WA0203 Attend to equipment operation during days or shifts when limited support is available

Supporting Evidence

- SE0201 Equipment records showing operation and utilisation of equipment
- SE0202 Equipment maintenance and repair records
- SE0203 Completed standard documentation and reports

3.3 Contextualised Workplace Knowledge

1 Equipment operating parameters

2 Safe working procedures

3 Standard operating procedures

4 Workplace specific equipment settings

5 Workplace specific processes and technology

3.4 Criteria for Workplace Approval

Physical Requirements:

- A sugar mill

Human Resource Requirements:

- A person with 3 years experience in a supervisory or managerial role on a sugar mill trained as a workplace mentor must be available for every 5 learners

Legal Requirements:

- Workplace compliance with occupational health safety and environmental protection requirements

3.5 Additional Assignments to be Assessed Externally

None specified

4. 716106000-WM-04, Occupational health, safety, environment and quality standards, NQF Level 3, Credits 8

4.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

adhere to occupational health, safety, environment and quality standards in an operational environment

The learner will be required to:

- WM-04-WE01: Perform safety inspections and adhere to workplace safety, health and environmental protection procedures
- WM-04-WE02: Control in-line quality measures in sugar processing environment

4.2 Guidelines for Work Experiences

4.2.1. WM-04-WE01: Perform safety inspections and adhere to workplace safety, health and environmental protection procedures

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Adhere to workplace occupational safety, health and environmental protection procedures during the execution of operator functions

Supporting Evidence

- SE0101 Report by workplace mentor

4.2.2. WM-04-WE02: Control in-line quality measures in sugar processing environment

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0201 Attend to quality testing practices and procedures and reports such as attending quality review meetings, collection, labelling and administration of samples, in-process quality testing, establishing conformance to quality specification of materials and product (sensory cues, basic testing equipment)

Supporting Evidence

- SE0201 Quality reports and record

4.3 Contextualised Workplace Knowledge

1 SHEQ procedures and standards

2 Workplace quality reports

3 In line quality control procedures

4 Product specifications

4.4 Criteria for Workplace Approval

Physical Requirements:

Human Resource Requirements:

Legal Requirements:

4.5 Additional Assignments to be Assessed Externally

None specified

SECTION 4: STATEMENT OF WORK EXPERIENCE

Curriculum Number:	716106000
Curriculum Title:	Sugar Processing Machine Operator

Learner Details	
Name:	
ID Number:	

Employer Details	
Company Name:	
Address:	
Supervisor Name:	
Work Telephone:	
E-Mail:	

716106000-WM-01, Pre-set sugar processing equipment operation, NQF Level 2, Credits 20

WM-01-WE01	Operate pre-set equipment under close direction and supervision of an experienced operator for a period of two weeks		
	Scope Work Experience	Date	Signature
WA0101	Attend to the execution of specific operating procedures under direct supervision such as pre-operational safety and mechanical inspections, equipment, start up, shut-downs, shift hand-over, cleaning and lubrication, removal and fitting of components		
WA0102	Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation under direct supervision		
WA0103	Adhere workplace policies and procedures under direct supervision such as housekeeping standards, safety inspections, general work rules, hygiene standards, scheduled maintenance, equipment lockout		
	Supporting Evidence	Date	Signature
SE0101	Report by mentor		
WM-01-WE02	Operate pre-set equipment within normal operational and reporting structures for a period of six weeks		
	Scope Work Experience	Date	Signature
WA0201	Attend to the execution of specific operating procedures such as pre-operational safety and mechanical inspections, equipment, start up, shut-downs, shift hand-over, cleaning and lubrication, removal and fitting of components		
WA0202	Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation		

WA0203	Adhere to workplace policies and procedures such as housekeeping standards, safety inspections, general work rules, hygiene standards, scheduled maintenance, equipment lockout		
WA0204	Attend to equipment during days or times when limited support is available		
	Supporting Evidence	Date	Signature
SE0201	Equipment records showing operation and utilisation of equipment		
SE0202	Production records - quantity and quality		

	Contextualised Workplace Knowledge	Date	Signature
1	Equipment cleaning and housekeeping procedures		
2	Data reporting systems		
3	Equipment operating parameters		
4	Production targets and schedules of work		
5	Safe working procedures		
6	Standard operating procedures		
7	SHEQ procedures and standards		
8	Workplace specific processes and technology		

	Additional Assignments to be Assessed Externally	Date	Signature
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716106000-WM-02, Operation of programmable sugar processing equipment or equipment set-up in series, NQF Level 3, Credits 24

WM-02-WE01	Attend to the operation of programmable equipment for a period of two weeks under direct supervision		
	Scope Work Experience	Date	Signature
WA0101	Attend to the execution of specific operating procedures under direct supervision such as pre-operational safety and mechanical inspections, start-up, shut down, shift hand-over, emergency equipment stops or shut-downs, equipment adjustments to settings		
WA0102	Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation; under direct supervision		
	Supporting Evidence	Date	Signature
SE0101	Report by mentor		
WM-02-WE02	Attend the operation of programmable equipment within normal operational and reporting structures for a period of eight weeks		
	Scope Work Experience	Date	Signature
WA0201	Attend to the execution of specific operating procedures such as pre-operational safety and mechanical inspections, start-up, shut down, shift hand-over, emergency equipment stops or shut-downs, equipment adjustments to settings		
WA0202	Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation		

WA0203	Attend to equipment operation during days or shifts when limited support is available		
	Supporting Evidence	Date	Signature
SE0201	Equipment records showing operation and utilisation of equipment		
SE0202	Equipment maintenance and repair records		
SE0203	Production records - quantity and quality		
SE0204	Completed standard documentation and reports		

	Contextualised Workplace Knowledge	Date	Signature
1	Equipment cleaning and housekeeping procedures		
2	Data reporting systems		
3	Equipment operating parameters		
4	Production targets and schedules of work		
5	Safe working procedures		
6	Standard operating procedures		
7	Workplace specific equipment settings		
8	SHEQ procedures and standards		
9	Workplace specific processes and technology		

	Additional Assignments to be Assessed Externally	Date	Signature
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716106000-WM-03, Operation of a bank of equipment set-up in series, NQF Level 3, Credits 8

WM-03-WE01	Attend to the operation of banks of equipment set up in series for a period of one week under direct supervision		
	Scope Work Experience	Date	Signature
WA0101	Attend to the execution of specific operating procedures such as pre-operational safety and mechanical inspections, start-up, shut down, shift hand-over, emergency equipment stops or shut-downs, equipment adjustments to settings		
WA0102	Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation; under direct supervision		
	Supporting Evidence	Date	Signature
SE0101	Report by mentor		
WM-03-WE02	Attend the operation of a bank of equipment set up in series within normal operational and reporting structures for a period of two weeks		
	Scope Work Experience	Date	Signature
WA0201	Attend to the execution of specific operating procedures such as pre-operational safety and mechanical inspections, start-up, shut down, shift hand-over, emergency equipment stops or shut-downs, equipment adjustments to settings		
WA0202	Attend to general interaction, reporting and communication with production personnel, quality control staff, process control personnel and maintenance specialists on equipment operation; under direct supervision		

WA0203	Attend to equipment operation during days or shifts when limited support is available		
	Supporting Evidence	Date	Signature
SE0201	Equipment records showing operation and utilisation of equipment		
SE0202	Equipment maintenance and repair records		
SE0203	Completed standard documentation and reports		

	Contextualised Workplace Knowledge	Date	Signature
1	Equipment operating parameters		
2	Safe working procedures		
3	Standard operating procedures		
4	Workplace specific equipment settings		
5	Workplace specific processes and technology		

	Additional Assignments to be Assessed Externally	Date	Signature

716106000-WM-04, Occupational health, safety, environment and quality standards, NQF Level 3, Credits 8

WM-04-WE01	Perform safety inspections and adhere to workplace safety, health and environmental protection procedures		
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	Scope Work Experience	Date	Signature
WA0101	Adhere to workplace occupational safety, health and environmental protection procedures during the execution of operator functions		
	Supporting Evidence	Date	Signature
SE0101	Report by workplace mentor		
WM-04-WE02	Control in-line quality measures in sugar processing environment		
	Scope Work Experience	Date	Signature
WA0201	Attend to quality testing practices and procedures and reports such as attending quality review meetings, collection, labelling and administration of samples, in-process quality testing, establishing conformance to quality specification of materials and product (sensory cues, basic testing equipment)		
	Supporting Evidence	Date	Signature
SE0201	Quality reports and record		

	Contextualised Workplace Knowledge	Date	Signature
1	SHEQ procedures and standards		
2	Workplace quality reports		
3	In line quality control procedures		
4	Product specifications		

	Additional Assignments to	Date	Signature
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	be Assessed Externally		
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