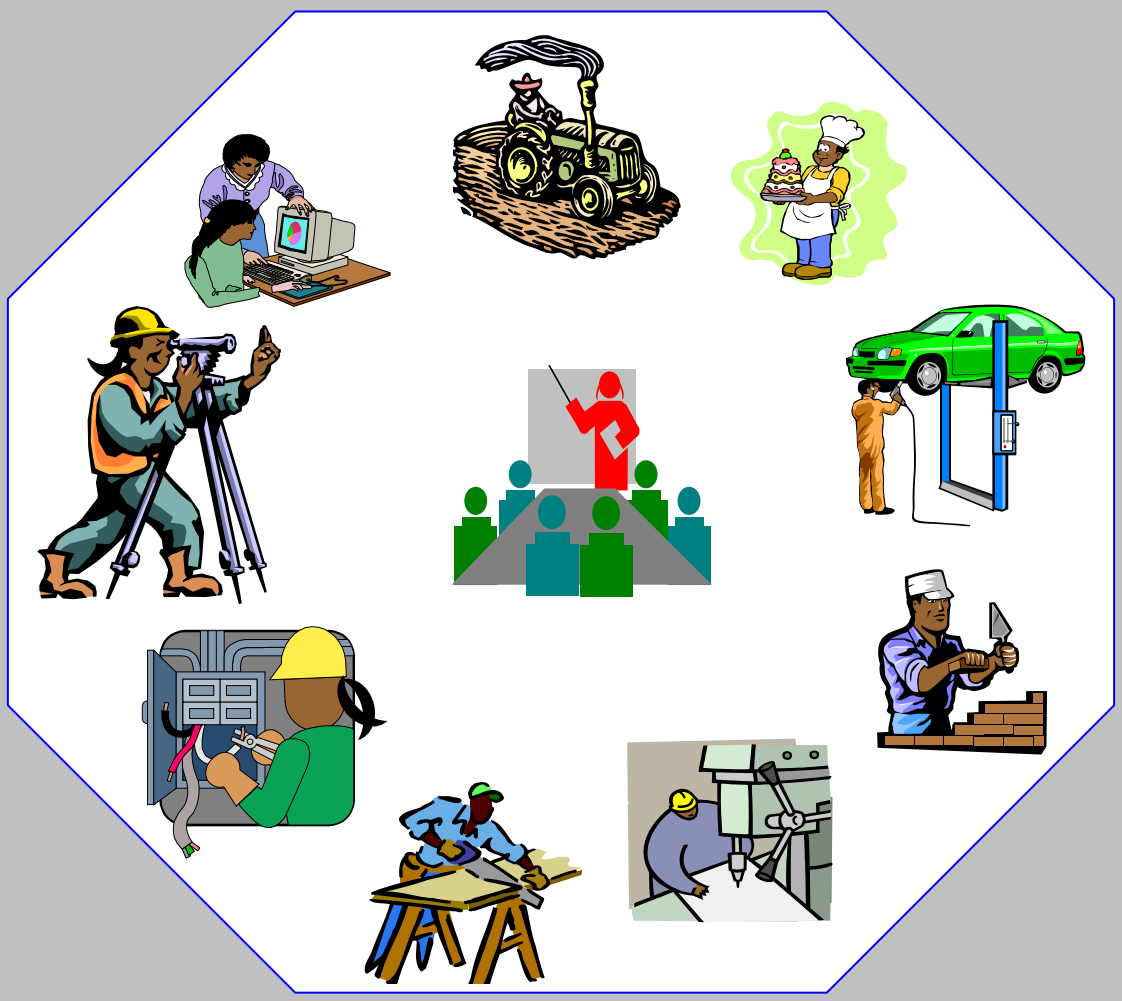
Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

BASIC CEMENT PRODUCTION EQUIPMENT OPERATION

NTQF Level I



Ministry of Education

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Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopia Occupational Standards (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF).They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title, NTQF level
- Unit code
- Unit title
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the respective occupation with all the key components of a Unit of Competence:

- the chart with an overview of all Units of Competence for the respective occupation including the Unit Codes and the Unit Titles
- the contents of each Unit of Competence (competence standard)
- occupational map providing the technical and vocational education and training (TVET) providers with information and important requirements to consider when designing training programs for this standards, and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Basic Cement Production Equipment Operation

Occupational Code: IND BEO

NTQF I

IND BEO1 01 0111 Attend Process Equipment	IND BEO1 02 0111 Operate Auxiliary Equipment	IND BEO1 03 0111 Use and Maintain Refractory Tools and Equipment
IND BEO1 04 0111 Undertake Minor Maintenance	IND BEO1 05 0111 Operate Bulk Materials Handling Equipment	IND BEO1 06 0111 Read Dials and Indicators
IND BEO1 07 0111 Transfer and Store Materials for Production	IND BEO1 08 0111 Apply Workplace Procedures	IND BEO1 09 0111 Contribute to the Application of Proactive Maintenance Strategy
IND BEO1 10 0111 Make Measurements	IND BEO1 11 0111 Operate Local Control System	IND BEO1 12 0111 Receive and Dispatch Goods
IND BEO1 13 0111 Apply Quality Standards	IND BEO1 14 0111 Work With Others	IND BEO1 15 0111 Receive and Respond to Workplace Communication
IND BEO1 16 0111 Demonstrate Work Values	IND BEO1 17 0111 Develop Understanding of Entrepreneurship	IND BEO1 18 1012 Apply 5S Procedures

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Attend Process Equipment**
Unit Code	**IND BEO1 01 0111**
Unit Descriptor	This unit covers the competence needed in the use of production processing equipment. This competence is typically performed by all operators working as part of a work team.

Elements	Performance Criteria
1. Identify equipment controls and procedures	1.1 Work requirements are identified from workplace approved operating procedures. 1.2 Operating procedures are checked and controlled to identify approved adjustments and operating parameters. 1.3 Actions to be used are established in the event of faulty production from operating procedures. 1.4 Procedures for obtaining materials for the process are identified. 1.5 Hazards and environmental issues are identified that might surround the operation.
2. Get ready for work/job	2.1 Ancillary ***tools and equipment*** are assembled 2.2 Inspection procedures are identified. 2.3 Any finishing activities are identified. 2.4 Plan to avoid any ***hazards*** connected with materials and process by observation of the equipment, workplace reference materials, including materials safety data sheets and equipment instructions. 2.5 Appropriate measures are taken to minimize risks from the identified hazards. 2.6 The location and function of equipment emergency stops are established and guards are ensured in place. 2.7 Requirements are identified and noted for checking: material inputs and outputs, auxiliary supplies and equipment, Product quality requirements for the relevant process stage. 2.8 Access to any required supplementary equipment is obtained or arranged for product quality testing or routine lubrication and adjustment.
3. Maintain operations	3.1 Process operations are checked, noting product quality, production outputs and waste, in accordance with workplace practices.

	3.2 Product outputs are collected, conformity is checked, adjustments are made to the equipment (where appropriate) and product is stored. 3.3 Material is collected which is able to be reprocessed and reused, and waste and scrap is dealt in accordance with workplace procedures (where applicable). 3.4 Readouts are checked against standard statistical process information and production data is entered into the control system. 3.5 Equipment and work area is cleaned up and waste is managed in accordance with workplace procedures.
4. Identify product quality requirements	4.1 Process is monitored and conditions are noted which may affect product quality standards. 4.2 Process is reported variations within workplace procedures. 4.3 Authorized changes are noted and implemented in standard operating procedures and specifications.

Variable	**Range**
tools and equipment	May include but not limited to: • hand carts and trolleys • hoists/lifting equipment not requiring any special permits or licenses • basic hand tools • relevant personal protective equipment
Hazards	May include but not limited to: • automated or rotating equipment • dusts/vapors • hazardous materials • manual handling hazards • knife hazards. • Hot material
Process problems	May include but not limited to: • equipment malfunctions • material clogging • power failures • air, oil or lubricant difficulties
product problems	May include but not limited to: • variations in materials • contamination of materials • malformed or incomplete products

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • understanding the importance of critical material properties, quantities and operating principles of machineries • recognizing potential situations requiring action and implementing appropriate action
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • applying and/or explaining: ➢ impact of incorrect or faulty materials ➢ production workflow sequences and materials demand ➢ focus of operation of work systems and equipment ➢ correct selection and use of equipment, materials, processes and procedures ➢ hazards of the materials and process and appropriate hazard control procedures • distinguishing between causes of faults such as: ➢ wrong raw materials/additives ➢ incorrect quantity of materials/additives ➢ contaminated materials/additives ➢ product variations from specification
Underpinning Skills	Demonstrates skills to: • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators • writing • Basic numeracy
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Written Test / Oral Questioning • Observation / Demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Operate Auxiliary Equipment**
Unit Code	**IND BEO1 02 0111**
Unit Descriptor	This Competence covers the operation of auxiliary equipment and the resolving of routine problems to procedure in the production process.

Elements	Performance Criteria
1. Check work requirements	1.1 Work requirements are identified from work plan or request. 1.2 Product, materials ***tools and equipment*** are checked meet requirements for job(s). 1.3 Work requirements are recognized which may not be in accordance with usual practice. 1.4 Appropriate person is asked questions to confirm unusual practice. 1.5 Housekeeping is ensured to requirements. 1.6 ***Hazards*** are identified associated with the job and appropriate action is taken. 1.7 Other pre-operational checks are performed in accordance with ***procedures***.
2. Start up item of equipment as required	2.1 Prestart checks are conducted. 2.2 Item of equipment are started up
3. Operate equipment to procedures	3.1 Equipment operating is checked within required limits. 3.2 Product is checked to meets specifications and quality standards. 3.3 Product is ensured consistently ready for next duty/ operation as appropriate. 3.4 Supply of material(s) is maintained as required. 3.5 Logs and records are completed as required. 3.6 Scrap, trim and other materials are collected and segregated as required. 3.7 Equipment and work area are kept clean. 3.8 Equipment is paused and emergency stop is perform, as required.
4. Respond to routine	4.1 Known faults/***problems*** are recognized that occur during the operation.

problems to procedures	4.2 Action on causes of routine faults are identified and taken. 4.3 Problems are logged as required. 4.4 non-routine process and quality problems is identified and appropriate action is taken

Variable	**Range**
Procedures	May include but not limited to: • All operations are performed in accordance with procedures. • Procedures means all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards
Tools and equipment	This competence includes use of equipment and tools such as: • process equipment and its major components • hand tools used in this process • material loading equipment used for loading of raw materials • relevant personal protective equipment
Hazards	Typical hazards include: • spills, slips, trips and falls • dusts/ vapors • temperature • hazardous substances • moving equipment • manual handling hazards • solar and thermal radiation
Problems	May include but not limited to: • Respond to routine problems' means 'apply known solutions to a limited range of predictable problems'. Typical process and product problems may include: • equipment malfunction • variations in process conditions • variations in materials or contamination of materials • equipment and tool • routine product faults • machine malfunction • variations in materials and/or contamination of materials
Variables	Key variables to be monitored include: • atmospheric conditions • temperature (hot/cold) variations in equipment or product • product tolerances • system/operating pressure • programming variables • operator variability • timing or product cycles

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • recognizing the importance of material properties and qualities • applying approved procedures • taking appropriate action to resolve faults or report faults to appropriate personnel • explaining and implement emergency shutdown procedures • meting production standards consistently • communicating timely upstream and downstream and reading and interpreting effective operating procedures and work instructions correctly • identifying problems and taking appropriate action (I e the problem is fixed or reported) • following all safety procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • operation of process equipment and components • production workflow sequences and materials demand • reasons for checking process control panels and reporting readings which do not conform to the work instructions • approved hazard control and safety procedures and the use of PPE in relation to handling materials and using equipment • equipment operation and cleanup; potential effects of variations in raw materials and equipment operation in relation to quality of product • waste management and importance of reusing non-conforming products wherever possible • correct selection and use of equipment, materials, processes and procedures • monitor equipment operation and product quality • identify factors which may affect product quality or production output and appropriate remedies • distinguish between possible causes of routine faults such as: ➢ incorrect quantity of materials ➢ contaminated materials/additives ➢ equipment faults/damage ➢ wrong raw materials/additives ➢ machine failure
Underpinning Skills	Demonstrates skills to: • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators • writing • basic numeracy • plan own work, including predicting consequences and

	identifying improvements • Identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance • Identify and describe own role and role of others involved directly in the process.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Written Test / Oral Questioning • Observation / Demonstration
Context of Assessment	Competence may be assessed in the work place and/or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Use and Maintain Refractory Tools and Equipment**
Unit Code	**IND BEO1 03 0111**
Unit Descriptor	This unit of competence covers the use and maintenance of common tools and equipment used for refractory operations. It involves checking that they are in a usable condition and taking appropriate action if they are not.

Elements	Performance Criteria
1. Select and set up tools and equipment	1.1 The ***information*** is checked about the required resources is accurate and available for use according to ***work practices***
	1.2 Incorrect or incomplete information is identified and the necessary corrective action is taken
	1.3 The required resources are selected and set up to conform with the information and, where they are unsuitable, take the necessary ***corrective action***
2. Use tools and equipment	2.1 Appropriate tools and equipment are used to ***OH &S procedures***
	2.2 ***Tools/equipment*** are inspected for wear/damage and rectify or report as appropriate
	2.3 Tool/equipment is cleaned and returned to correct location after use
3. Contribute to the provision of a safe work environment	3.1 Hazards are identified in work area particularly from blending/mixing
	3.2 Risks are assessed arising from those hazards
	3.3 Measures are implemented to control those risks in line with procedures and duty of care
4. Control hazards	4.1 Hazards are identified from the job to be done
	4.2 Other hazards are identified in the work area
	4.3 Risks are assessed arising from those hazards
	4.4 Measures are implemented to control those risks in line with procedures

Variable	Range
Procedures	All operations are performed in accordance with standard procedures and work instructions
Information	Information to be used includes: • organizational requirements • oral and written instructions • manufacturer's technical information
Corrective action	Corrective action to be taken includes: • correcting within your own authority • reporting to the person in charge • complying with company procedures
Work practices	Work practices include: • setting up, maintaining and using tools and equipment • interpreting information • identifying, selecting and setting up tools and equipment • identifying hazards • working as an individual organizing your own work • working as part of a team
Tools and equipment	Tools and equipment include: • manual tools and equipment • powered tools and equipment
Occupational health and safety (OHS)	All operations are subject to stringent OHS requirements and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and OHS requirements, the OHS requirements take precedence

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • recognized situations which are out of the normal, unusual/unexpected signs of problems or potential problems with the equipment/processes • took appropriate action in a timely manner • recognized hazards and took appropriate action to control risks arising from such hazards
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • the variety of equipment used • equipment application and its maintenance procedures • procedures related to this competence • typical problems with equipment applicable to this competence • procedures for reporting or dealing with typical equipment problems • materials sources • materials types/categorization • methods of production

	• familiarity with installation techniques • familiarity with principles of selection • familiarity with variety of applications
Underpinning Skills	Demonstrates skills to: • adjusting/correcting/responding to procedures • identifying and responding to problems • using tools and equipment correctly • working in a team or individually as required • inspection of tools and equipment • cleaning of tools and equipment • reading and numeracy to interpret workplace documents and technical information
Resource Implications	The following resources should be provided: • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or task
Methods of Assessment	Competence may be assessed through: • Written Test • Observation/demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Undertake Minor Maintenance**
Unit Code	**IND BEO1 04 0111**
Unit Descriptor	This unit applies to operators who are involved in providing basic maintenance and the resolving of routine problems to procedures. It does not include maintenance that would require trade level skills.

Elements	Performance Criteria
1. Identify maintenance requirements	1.1 Equipment variations/irregularities are identified using observed ***data*** and plant ***records***. 1.2 Urgency/priority of the situation is assessed. 1.3 Appropriate corrective action is identified. 1.4 Correct tools and materials are identified. 1.5 Impact of the maintenance activity is assessed and communicated to appropriate personnel. 1.6 Hazards and risk controls are identified. 1.7 Work permit requirements are identified
2. Prepare for maintenance activity	2.1 Ensure equipment is turned off and isolated as required. 2.2 Area of obstructions and hazardous materials are cleared. 2.3 Appropriate tools, parts, materials and ***procedures*** are obtained. 2.4 Appropriate work permits obtained and adhered to the requirements. 2.5 The impending ***maintenance activity*** is communicated to the appropriate personnel
3. Perform maintenance activity	3.1 All relevant information is accessed. 3.2 Maintenance activity is undertaken according to procedures. 3.3 ***Tools, equipment*** and maintenance techniques are used correctly. 3.4 Equipment is restored to normal working condition. 3.5 The work area is left in a clean and safe condition. 3.6 Ensure permits are signed off as appropriate
4. Test equipment	4.1 Equipment is tested according to procedures. 4.2 Equipment is returned to service. 4.3 Equipment is ensured to meets normal operating

	requirements
5. Record maintenance activity	5.1 Maintenance logs/plant history records are completed 5.2 Maintenance activity is reported to relevant personnel. 5.3 Outstanding maintenance requirements are identified and reported to relevant personnel.

Variable	**Range**
Context	• This competence applies to all work environments and sectors within the industry. It does not include maintenance that would require trade level skills. It is not intended that this competence would cover maintenance that is carried out in a workshop
Procedures	• All operations are performed in accordance with procedures. • Procedures mean all relevant workplace procedures, work instructions, temporary instructions, standard operating procedures, plant description manuals, manufacturer instructions, specifications, service manuals, machine circuit diagrams for hydraulic/pneumatic and electrical/electronic circuits and relevant industry and government codes and standards.
Maintenance activities	This competence unit includes minor maintenance such as the following: • operational maintenance (e g connection-disconnection of hoses, greasing, lubrication and lubricant systems, adjusting sealing glands, cleaning and changing filters, 'nipping up' flanges, changing belt conveyor idler roller, belt conveyor cleaner) • general cleaning • removal and replacement (e g gland packing, changing blades or cutters, replacing gaskets, replacing /maintaining seals, changing filter elements, servicing strainers).
Tools and equipment	This competence includes use of equipment and tools such as: • hand tools and specialized tools • measuring and aligning equipment
Hazards	Typical hazards include: • rotating and moving machinery • process materials, solids, liquids and gases under pressure or flowing • hot surfaces or materials • temporary connections or by-passes • electrical, hydraulic or pneumatic energy sources • out of specification operation
Problems	Respond to/rectify 'non-routine problems' means 'apply known solutions to a variety of predictable problems'. Typical process and product problems may include:

	• out-of-specification product or variations • response of equipment to materials variations • equipment in need of maintenance
Variables	Key variables to be monitored include: • equipment performance (e g speed, output, variations) • equipment component performance • sequences and timing of operations • materials changes (desired and not desired)
Data and Records	Typical information sources, observed data and plant records may include: • plant data • log sheets • operational and performance reports • physical aspects such as noise, smell, feel and pressure condition monitoring information • planned maintenance schedules • procedures • manufacturer specifications, instructions, service manuals and other information

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • understood the procedures and know the importance of critical operational systems • recognized potential situations requiring action and then implement appropriate action • recognized early warning signs of equipment in need of attention/with potential problems • undertaken and analyzed appropriate equipment tests appropriately • proposed for equipment repair based upon the most appropriate and cost effective method to return equipment to full performance in a timely manner • completed maintenance activities safely and to procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • basic cement technology • principles of operation of the equipment to be maintained • function and troubleshooting of major internal components and their problems • appropriate testing procedures and use of equipment for a range of equipment faults • typical causes of equipment failures and the service conditions which may increase maintenance • types and nature of maintenance (preventative, predictive, corrective) uses, benefits and limitations • urgency and timeliness factors in maintenance

	• maintenance planning/scheduling/records systems • identification of tools, materials and spare parts • basic techniques for using and handling tools • physical measurement, alignment and clearance principles
Underpinning Skills	Demonstrates skills to: • read and interpret typical equipment specifications schematics and diagrams • writing • basic numeracy is required, to interpret plant data and maintenance schedules • plan own work, including predicting consequences and identifying improvements • identify factors which may affect product quality or production output and appropriate remedies • identify when the operator is able to rectify faults and when assistance is required
Resource Implications	The following resources should be provided: • access to relevant workplace or appropriately simulated environment where assessment can take place • materials relevant to the proposed activity or task
Methods of Assessment	Competence may be assessed through: • Written Test / Oral questioning • Observation/demonstration
Context of Assessment	Competence may be assessed in the work place and/or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Operate Bulk Materials Handling Equipment**
Unit Code	**IND BEO1 05 0111**
Unit Descriptor	This unit of competence covers the operation of the range of equipment used to store and convey bulk, particulate materials.

Elements	Performance Criteria
1. Operate conveyors	1.1 The type and number of conveyors is recognized 1.2 Hazards are identified and implemented hazard controls according to ***procedures*** 1.3 The conveyor is started up and shut down in a manner appropriate to the conveyor type and duty 1.4 Routine checks, logs and paperwork, taking action on unexpected observations, readings and trends are completed 1.5 Correct material from and to the correct location is conveyed as required
2. Manage bulk material storages	2.1 Type of storage facility is recognized 2.2 quality, quantity and location of bulk materials stored are monitored 2.3 Stock into, out of and between storage are transferred as required 2.4 Internal and external customers are supplied with correct quality and quantity in a timely manner 2.5 Effective use of storage capacity available are made taking account of safety issues
3. Rectify problems	3.1 The range of faults are identified that can occur during the operation 3.2 Fault causes are determined and rectified in accordance with established enterprise procedures 3.3 ***equipment*** failure causes are b identified and rectified in accordance with established enterprise procedures 3.4 Make sure appropriate records and log books of equipment operations are maintained to meet enterprise requirements 3.5 Non-routine ***problems*** are identified and reported according to procedure

4. Carry out maintenance procedures	4.1 Maintenance need is recognized according to procedure 4.2 Materials handling equipment are isolated and prepared for maintenance/vessel entry as required 4.3 Minor maintenance is completed according to procedures 4.4 Plant back is received from maintenance and safe operation is checked 4.5 Plant is prepared for the introduction of materials and for operation
5. Control hazards	5.1 Hazards are identified in the material handling work area 5.2 Risks are assessed arising from those hazards 5.3 Measures are implemented to control those risks in line with procedures 5.4 Emergency is shut down as required

Variable	**Range**
Procedures	• All operations are performed in accordance with standard procedures and work instructions
Equipment	Equipment may include: • mechanical conveyors/feeders: ➢ travelling stackers ➢ reclaimer ➢ belt ➢ bucket conveyor ➢ air slide ➢ drag chain conveyor ➢ trough chain conveyor ➢ vibrating ➢ apron conveyor ➢ screw • pneumatic conveyors: ➢ dense phase ➢ disperse phase ➢ pressure • bulk storage: ➢ piles ➢ bunkers ➢ silos ➢ bins/hoppers ➢ weigh bins/loss in weight bins
Particulate solids	Particulate solids may include: • cement • sand • clay

	• lime stone • gypsum • pumice • clinker • raw meal • coal Particulate solid properties include: • particle size and shape: reactivity, solubility, color, health and safety • angle of repose - storage and transport • angle of slide - transport • dusts - hazards and good practice
Typical problems	Typical problems may include: • contamination of stored stock • rat holing and bridging in silos/bins/hoppers • routing issues • equipment problems
Personal protective Equipment	• All operations must be performed using the appropriate personal protective equipment (PPE), including breathing protection
Occupational health and safety (OHS)	• All operations are subject to stringent OHS requirements and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and OHS requirements, the OHS requirements take precedence

Evidence Guide	
Critical aspects of competence	Assessment requires evidence that the candidate: • recognized early warning signs of equipment in need of attention/with potential problems • took action to ensure equipment is returned to full performance in a timely manner • recognized obvious problems in other plant areas and made an appropriate contribution to a solution • followed items initiated through until final resolution has occurred
Underpinning Knowledge and Attitude	Demonstrates knowledge of: • hazards associated with the process • application of the hierarchy of control in controlling the hazards • principles of operation • physics of operation • properties of particulates • density and bulk density

	• methods of resolving problems • distinguish between causes of problems such as: ➢ material ➢ instrument ➢ equipment (electrical/mechanical) ➢ maintenance • isolate problem to item of equipment • understanding of the process sufficient to recognise non-standard situations and then determine appropriate action which is consistent with operating guidelines • relevant OHS and environmental requirements, along with an ability to implement them within appropriate time constraints and in a manner which is relevant to the operation of the bulk materials handling equipment • enterprise standard operating procedure
Underpinning Skills	Demonstrates skills to: • selecting, using and maintaining relevant personal protective equipment (PPE) • implementing good operating practice • operating bulk materials handling equipment • transferring and conveying materials to correct locations • reading and numeracy to interpret workplace documents and technical information
Resource Implications	The following resources must be provided: • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or tasks
Methods of Assessment	Competence may be assessed through: • Written test / Oral questioning • Demonstration / Observation
Context for Assessment	• Competence may be assessed in workplace or in a simulated workplace setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Read Dials and Indicators**
Unit Code	**IND BEO1 06 0111**
Unit Descriptor	This competence covers making (or taking) readings/ measurements in a variety of sites and locations, using common types of plant instrumentation. It also covers recording measurement results in a prescribed format, according to procedures and with the appropriate level of detail included in all reports.

Elements	Performance Criteria
1. Contribute to controlling hazards in work area	1.1 Hazards are identified in work area 1.2 ***Appropriate action*** is taken to control risks according to procedures.
2. Identify appropriate measuring device readings	2.1 Need for ***calibration*** is explained and where appropriate, confirm the calibration of the measuring device 2.2 Appropriate units is selected on the measuring device 2.3 Appropriate scale(s) is selected on the measuring device.
3. Perform measurements	3.1 Range of results that could be obtained are identified 3.2 Account of relevant external factors are identified and taken 3.3 Measurements are performed using appropriate techniques and instruments 3.4 Measurements outside the range of expected results are Identified 3.5 Action is taken on measurements outside expected range according to procedures
4. Record results	4.1 Readings are recorded accurately in the appropriate format and procedures 4.2 Results are recorded to the appropriate level of detail and documented in accordance with workplace standard

Variable	Range
Codes of practice	• Where reference is made to industry codes of practice, and/or Ethiopian/international standards, the latest version must be used.
Context	• This unit applies to reading process instrumentation in cement plant • Readings may need to be made at heights, in wet or restricted conditions, or close to hot or moving equipment
Dials and indicators	Typical dials and indicators include : • analogue dials, such as: ➢ pressure gauge ➢ revolution counter ➢ temperature dial ➢ voltmeter ➢ ammeter ➢ power factor meter and others • digital readouts, such as: ➢ pH meter ➢ temperature probe ➢ ammeter ➢ flow meter ➢ weigh scales and others
Calibration checks	Calibration checks could include: • checking the date that the next calibration is required, e g weigh scale, pressure gauge • using a calibration button on the instrument, e g zero button on an ammeter, calibration button on an electronic meter
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through regional state or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements the HSE requirements take precedence

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • recognized readings which are out of range or unusual/unexpected signs of problems or potential problems with the equipment/processes • took appropriate action in a timely manner • recognized hazards and took appropriate action to control risks arising from such hazards
Underpinning Knowledge	Demonstrates knowledge of: • basic units of measurement • measuring devices, including gauges, dip-sticks, thermometers and the like • graphs and scales • workplace Standard Operating Procedures (SOPs) related to this competence • typical problems with measuring equipment applicable to this competence • procedures for reporting or dealing with typical equipment problems and threats to safety
Underpinning Skills	Demonstrates skills to: • efficient and effective operation of plant/equipment • hazard analysis • completing plant records • communication • problem solving
Resource Implications	The following resources must be provided: • Workplace or assessment location • Case studies/Scenarios
Methods of Assessment	Competence may be assessed through: • Written test • Observation/ demonstration
Context of Assessment	Competence may be assessed in the workplace or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Transfer and Store Materials for Production**
Unit Code	**IND BEO1 07 0111**
Unit Descriptor	This unit of competence covers the shifting, storing and monitoring of materials. It involves shifting of materials by hand in a safe manner, checking and maintaining materials and equipment, undertaking visual checks and following workplace procedures

Elements	Performance Criteria
1. Plan operations	1.1 Type and quantity of product or material is correctly identified to be moved. 1.2 ***Hazards*** are identified during material and product handling 1.3 The safest and most efficient and appropriate movement route is identified.
2. Transfer products or materials	2.1 Materials or product are transferred using appropriate ***equipment*** or manually to ***storage facilities*** according to enterprise requirements and using good occupational health and safety (OHS) procedures 2.2 Specified products or ***materials*** are loaded by ***tools*** and equipments at specific points during the manufacturing process, according to procedures and ***OHS*** State regulations.
3. Store, stack and/or relocate products or materials.	3.1 Products or materials are stacked according to ***procedures*** and OHS State regulations. 3.2 Products or materials are stored in correct locations. 3.3 All necessary documentation/records are completed.
4. Monitor material in storage	4.1 supplies of materials are checked and maintained 4.2 physical and chemical state of stored materials are checked 4.3 Bins/hoppers/tanks are visually checked from contamination 4.4 Equipment used to keep stored materials is checked in required state 4.5 action is taken according to the procedures to keep required level and quality of stored materials

Variable	Range
Procedures	All operations are performed in accordance with standard procedures and work instructions
Equipment and storage facilities	Equipment and storage facilities may include: • motorized rail and road vehicles • mechanical handling equipment including front end loaders • computers • mechanical and computerized measuring devices • bunkers, silos, bins/hoppers, weigh bins, tanks and portable tanks • flammable stores • relevant personal protective equipment
Tools	This competence includes tools such as: • hand carts Spade • self-propelled trolleys • wheelbarrows • block and tackle
Materials	Materials may include: • materials supplied from an external source • materials/chemical mix produced internally for secondary process
Typical problems	Typical problems may include: • material specifications • contamination of stored stock • quality of received materials • equipment failure • load too heavy or large for safe, easy moving • load in awkward position for safe, easy moving • clash of work priorities • correct equipment not available • appropriate action for problems outside of area of responsibility may be reporting to an appropriate person • appropriate action for solving problems within area of responsibility includes asking questions and seeking assistance from appropriate persons/sources
Hazards	Typical hazards include: • spills • dusts/vapors • hazardous materials explosives and chemicals • manual handling hazards Hot materials
OHS	All operations are subject to stringent OHS requirements and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and OHS requirements, the OHS requirements take precedence

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • stored materials are safely and efficiently specification • transferred materials correctly to designated locations • anticipated problems (e.g. supply and demand of materials, contamination) and took appropriate action • performed appropriate manual handling and lifting/moving techniques • performed appropriate lifting/moving equipment • performed relevant inventory systems
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • principles of safe and efficient storage • material characteristics • impact of contamination • hazard identification • transfer system • testing procedures • distinguishing between causes of faults such as: ➢ different materials ➢ equipment (electrical, mechanical and manual) ➢ contamination
Underpinning Skills	Demonstrates skills to: • recognize variance from specifications and then determining an appropriate action that is consistent with operating guidelines • implement enterprise's standard procedures and work instructions and relevant regulatory requirements within appropriate time constraints and in a manner relevant to the operation of the process • read and numeracy to: • interpret workplace documents and technical information • check quantity of materials to be transferred and stored
Resource Implications	The following resources must be provided: • Workplace or assessment location • Case studies/Scenarios
Methods of Assessment	Competence may be assessed through: • Written test / Oral questioning • Demonstration / Observation
Context of Assessment	Competence may be assessed in the work place and/or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Apply Workplace Procedures**
Unit Code	**IND BEO1 08 0111**
Unit Descriptor	This competence covers the skills and knowledge required to complete own work activities

Elements	Performance Criteria
1. Identify industry sector	1.1 The industry sector is identified. 1.2 The major competitors in the industry and their products are recognized. 1.3 Career opportunities within the industry sector are identified. 1.4 The major external issues facing the industry are explained
2. Identify products and customers.	2.1 Company products are identified. 2.2 Needs of external customers are identified in line with organization priorities. 2.3 Needs of internal customers are identified. 2.4 The role of quality processes are identified in meeting product standards. 2.5 Your role in meeting customer requirements are identified
3. Recognise plant structure and processes	3.1 Key production sites/areas are identified. 3.2 Role of individual in organizational structure is explained. 3.3 The production process are described within own work area and relationship with other parts of the production process
4. Identify workplace role and responsibilities	4.1 Company objectives are identified. 4.2 Organizational policies and guidelines are identified in relation to job role. 4.3 Key responsibilities are described including OHS of own section/team and functional area. 4.4 Task requirements and work role are identified. 4.5 Individual role is explained in achieving section/team, plant and company objectives.
5. Follow workplace procedures	5.1 Existing sources of work instructions are identified relevant to job role. 5.2 Work instructions are followed in undertaking tasks.

	5.3 Work instructions are followed for recording process. 5.4 Advice from relevant personnel is sought in clarifying work instructions when appropriate
6. Recognise quality requirements	6.1 Instances of variation in quality are identified from specifications or work instructions. 6.2 Basic quality concepts are identified to work activities. 6.3 Organization procedures are followed for reporting and managing variations. 6.4 ***Problems*** with materials/product quality are reported to supervisors. 6.5 Organization procedures are explained for identifying and suggesting improvements to improve product quality. 6.6 Work is done within the organization quality system.
7. Plan and organize a personal daily routine	7.1 Daily routine are planed to take into account rosters**, industrial agreements and workplace procedures.** 7.2 Clarifications of requirements of tasks are seen when appropriate. 7.3 Achievable time and other performance measures are agreed. 7.4 Tasks are completed and identified and variations to plan are reported.

Variable	**Range**
Context	• This is a general competence that is performed by all operators in all areas of operation. • In large plants with multiple processes, it may apply to just one process in a plant if those processes do not interact with each other.
Procedures	• All operations are performed in accordance with procedures. • Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards

Industrial Agreements, standards and workplace procedures	This competence includes use of: • organization goals, objectives and targets • business and performance plans • access and equity principles and practice • equal opportunity and anti-discrimination principles and practice • OHS policies, procedures and programs • quality and continuous improvement processes and standards

	• workplace procedures • ethical standards • workplace agreements and awards • unions and industry associations
Problems	Respond to routine problems' means 'apply known solutions to a limited range of predictable problems

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • understood relevant organizational policies, plans and procedures • identified production processes relevant to work role • identified work requirements and relevant workplace documents • requested advice, effectively question and follow instructions • identified quality standards • recognized industry sector and major issues facing the industry • identified main internal and external customers • identified role of individual and team/section in terms of meeting company objectives (including safety objectives) and customer requirements • identified and followed relevant workplace policies and procedures • performed tasks in accordance with safety requirements/the quality system/workplace procedures • completed appropriate documentation as defined by procedures correctly
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • products and functions of the organization and the employee's role in completing tasks to meet customer, company and section/function objectives

Underpinning Skills	Demonstrates skills to: • read and interpret typical product specifications, job sheets and material labels as provided to operators • writing • basic numeracy
Resource Implications	The following resources must be provided: • workplace or assessment location • materials, tools and equipment
Methods of Assessment	Competence may be assessed through: • Written test • Observation and Demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Contribute to the Application of Proactive Maintenance Strategy**
Unit Code	**IND BEO1 09 0111**
Unit Descriptor	This unit covers the knowledge and skills required to make a positive contribution to proactive maintenance strategies which include things like plant uptime and Overall Equipment Efficiency (OEE).

Elements	Performance Criteria
1. Maintain equipment/ plant	1.1 Keep equipment/plant is cleaned within area of responsibility 1.2 Ensure equipment/plant is serviced and adjusted as required in accordance with ***procedures*** and own level of responsibility 1.3 Manufacturer manuals/specifications are accessed where required to expand knowledge on the maintenance of equipment/plant 1.4 documentation on equipment/plant operation and maintenance are accessed and updated as appropriate to workplace procedures
2. Monitor operation of equipment/plant	2.1 key conditions of the equipment/plant is checked regularly as defined in the procedures 2.2 Equipment/plant ***overall equipment efficiency*** is check regularly 2.3 Any deviation from conditions specified is noted in procedures 2.4 Any previous occurrences of this deviation is identified
3. Identify deviations and patterns	3.1 Any previous occurrences of a deviation is identified 3.2 Any related deviations which have occurred are identified 3.3 Any unusual occurrence is identified which may be related to a deviation
4. Take action appropriate to competence and authority on deviation	4.1 Liaise with relevant people regarding the deviation and the solution 4.2 Implement solution/assist with the implementation of the solution as appropriate

Variable	Range
Uptime	• Uptime refers to the overall availability of the plant - it is the inverse of downtime or the unavailability of the plant. Ideal uptime is 100%.
Overall Equipment Efficiency (OEE)	Overall Equipment Efficiency (OEE) is the combination of the main factors causing loss of productive capacity from equipment/plant and is: OEE = availability x performance x quality rate where: • availability takes into account losses due to breakdown, set up and adjustments • performance takes into account losses due to minor stoppages, reduced speed and idling • quality rate takes into account t losses due to rejects, re-works and start up waste
Procedures	• Procedures include all work instructions, standard operating procedures, formulas/recipes, batch sheets, temporary instructions and similar instructions provided for the smooth running of the plant. They may be written, verbal, computer based or in some other form. • For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice and government regulations

Evidence Guide	Description
Critical Aspects of Competence	Assessment requires evidence that the candidate: • recognized deviations and appropriate solutions implemented
Underpinning Knowledge	Demonstrates knowledge of: • normal behavior of the equipment/plant • indicators of abnormal performance • principles of operation sufficient to recognise problems and propose solutions • appropriate cleaning and adjusting for the equipment/plant/area as required by procedures
Underpinning Skills	Demonstrates skills to: • mathematical literacy • analysis • problem solving • communication
Resource Implications	The following resources must be provided: • workplace or assessment location • materials, tools and equipment

Methods of Assessment	Competence may be assessed through: • Written test • Observation and Demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Make Measurements**
Unit Code	**IND BEO1 10 0111**
Unit Descriptor	This unit covers the making or taking of measurements in a variety of sites and locations.

Elements	Performance Criteria
1. Identify appropriate measurements	1.1 Appropriate measuring ***tools and equipment*** is selected. 1.2 Units to be used, and the detail required are identified 1.3 Check measuring equipment is in calibration
2. Perform measurements	2.1 Range of results that may be obtained are explained 2.2 Account of relevant external factors identified and taken. 2.3 measurements are performed using appropriate techniques 2.4 Measurements are compared against the range of expected results 2.5 Numerical information is self-checked for accuracy and correctness. 2.6 The need for calibration and use calibrated equipment to make measurements is explained.
3. Record measurements as required	3.1 The result is recorded accurately in the appropriate format. 3.2 The result is recorded to the appropriate level of detail
4. Respond to routine problems in accordance with procedures	4.1 Known faults are recognized that occur during the measurement. 4.2 Action on causes of routine faults are identified and taken. 4.3 Log ***problems*** as required. 4.4 Non-routine problems are identified and reported to designated person.

Variable	Range
Context	This competence applies to all routine measurements within the process cement industry.
Procedures	All operations are performed in accordance with procedures. Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards
Tools and equipment	This competence includes use of equipment and tools such as: • measuring devices, including gauges, dip-sticks, thermometers, weighing scales, length/thickness measuring • calculators • computers for recording results • relevant personal protective equipment
hazards	Hazards Typical hazards include: • dusts/vapor • temperature • hazardous substances • manual handling hazards
Problems	Respond to routine problems means 'apply known solutions to a limited range of predictable problems'. Typical problems may include: • measuring instrument not fit for use (e g not within calibration) • appropriate measuring device not available • deviations from normal range of readings • effect of temperature on material properties • Appropriate action for non-routine problems may be reporting to designated person or other action specified in the procedures.
Variables	Key variables to be monitored include: • extent • dimension • quantity • mass • capacity • capability • Temperature • Pressure • Level

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • took accurate measures using the appropriate measuring device • applied approved procedures • met standards in taking measurements consistently • followed all safety procedures
Underpinning Knowledge	Demonstrates knowledge of: • basic units of measurement (e g kilogram, meter, second) • correct selection and use of measuring devices • application of relevant mathematical procedures, including additions, subtractions, division , fractions, percentages • use of dial, scale and digital readout • the need for calibration and methods of checking equipment is within calibration
Underpinning Skills	Demonstrates skills to: • read and interpret typical product specifications, job sheets and material labels as provided to operators • Writing • Numeracy is required to the level of basic arithmetical manipulations and the interpretation of the significance of numbers and variations of readings
Resource Implications	The following resources must be provided: • Workplace or assessment location • Tools, materials and equipment
Methods of Assessment	Competence may be assessed through: • Written test • Observation/demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Operate Local Control System**
Unit Code	**IND BEO1 11 0111**
Unit Descriptor	This unit covers the operation of a local control panel. These controllers use simple control algorithms and only a limited number of control loops. Typically it will be located on the plant, but may also be located off plant and include simple panels in a control room which are not part of the main control panel

Elements	**Performance Criteria**
1. Prepare for work	1.1 Work requirements are identified 1.2 Hazards are identified and controlled 1.3 Coordinate with appropriate personnel
2. Interface with the control panel	2.1 Process is monitored using the operator interfaces and keep appropriate personnel informed on developments 2.2 Appropriate controller modes are selected to ensure the effective control of the process 2.3 Required set point/output changes are undertaken to optimize plant and process requirements 2.4 Historical data and information is accessed 2.5 Messages and alarms are acknowledged
3. Control the process using the local control system	3.1 Relevant data and information is obtained from the control system by applying systems knowledge 3.2 The status of individual pieces of equipment is identified from the control panel and information is used to identify potential faults 3.3 Alarms are interpreted and prioritized steps to ensure control of system is maintained 3.4 Fluctuations and variations are minimized in process through the interpretation of existing trends and control schematics 3.5 Required set point/output changes are made to meet plant and process requirements 3.6 Other ***appropriate action*** is taken as required 3.7 Process variations/irregularities are recorded in accordance with procedures

4. Facilitate planned and unplanned process start-ups and shutdowns	4.1 All alarms are responded to and appropriate action is taken 4.2 Coordination is maintained with all outside services and operations in order to assist in the correct identification and reporting of faults 4.3 Planned start-up and shutdown processes is conducted to procedures 4.4 Unplanned start-up and shutdown processes is conducted to procedures 4.5 Communicate with all operational areas and personnel affected by unplanned events to ensure safety is maintained during the process 4.6 All required and stated emergency responses are implemented and ensure the outcomes of these responses are communicated to all affected areas 4.7 All required information is logged for further action to provide a historical record of all events

Variable	**Range**
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Ethiopian/international standards, the latest version must be used.
Context	This unit of competence includes all such items of equipment and unit operations, which form part of the production/ processing system. For your local control system this may include : • plant items requiring only simple control • programmable logic controllers (PLCs) • hard wired control and alarm panels • analogue control systems • personal computers with printers • fire and gas detection/protection systems • emergency shutdown systems • communications systems
Problems	Typical problems for plant may include: • variation/loss of feed • unstable control of pressure, temperature level and flows • control equipment failure • process plant trips • change in atmospheric conditions (rain, temperature, wind, lightning) • emergency situations • loss of power/utilities

Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through regional State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • recognized early warning signs of equipment/processes needing attention or with potential problems • identified and analyzed the range of possible causes can be and the most likely cause determined • taken appropriate action to ensure a timely return to full performance • recognized obvious problems in related plant areas and an appropriate contribution made to their solution
Underpinning Knowledge	Demonstrates knowledge of: • all items on a schematic of the controller and the function of each • principles of operation and location of the process/production equipment • specific plant process operations • product specifications and tolerances • systems operating parameters • basis of control for the process • emergency shutdown procedures • process specific physics, chemistry and mathematics • process drawings, eg P&ID, PFD, cause and effect • instrumentation and control systems, eg relevant primary sensing devices, final control elements, transducers/transmitters • simple control loops, including PID control, set points, controlled variable, indicated variable • effective communication techniques • Basic cement technology

Underpinning Skills	Demonstrates skills to: • instrument failure/malfunction • electrical failure/malfunction • mechanical failure/malfunction • equipment design deficiencies • product parameters (temperature, flows, pressure and levels) • an ability to communicate with other work groups and personnel during the operation and monitoring of this equipment is considered an essential element of this unit of competence
Resource Implications	The following resources must be provided: • Workplace or assessment location • Materials, tools and equipment
Methods of Assessment	Competence may be assessed through: • Written test • Observation/demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Receive and Dispatch Goods**
Unit Code	**IND BEO1 12 0111**
Unit Descriptor	This competence covers the handling of materials by an operator as an adjunct to the job of making product. It applies to a limited range of materials. It is not intended to be an alternative warehousing competence

Elements	Performance Criteria
1. Identify work requirements.	1.1 Documentation is read and interpreted. 1.2 Required schedules are identified for receipt or dispatch. 1.3 Correct product/material is identified. 1.4 Work sequence is planed using workplace and product knowledge. 1.5 Appropriate materials handling ***tools and equipment*** are selected as required. 1.6 OHS requirements are identified.
2. Move materials into/out of storage or from production	2.1 Paperwork and identity of materials is checked. 2.2 Completeness and/or damage is checked. 2.3 Action on non-conforming products/materials is taken. 2.4 Products/materials are handled and moved into/out of storage safely. 2.5 Materials are stored safely as necessary
3. Prepare goods for dispatch	3.1 Workplace ***procedures*** are identified and read for assembling and completing orders. 3.2 Goods for dispatch are selected and checked against product/material knowledge, labels and other identification systems. 3.3 Products are sorted, assembled and consolidated as necessary. 3.4 Secure order and place in storage areas, in accordance with schedule. 3.5 Order is checked against dispatch schedule and order form.
4. Complete materials movement records	4.1 Materials movement records (in or out) are completed 4.2 Records are updated as required. 4.3 other paperwork and records are completed as required

Variable	Range
Context	• This competence covers the handling of a limited range of products/materials and their moving into and out of a plant/storage. It is NOT intended for people who, as a major function, operate a warehouse. The appropriate Transport and Distribution competencies should be used here. • This competence may require the operation of for klift trucks or other regulated load shifting devices which are NOT included in this competence, and so would be a co-requisite competence. • The terms order request, documentation, labels, transportation requirements 'paperwork' and 'records' mean any and all relevant information and data whether it is manual, paper based, electronic or verbal, either in person or by phone/radio. • This competence does not imply that moving materials into and from storage/plant are conducted equally, or even using similar techniques. Customers may be internal or external and the loading/unloading of products/materials may mean getting them onto/off a truck or simply from/to the next department.
Procedures	• All operations are performed in accordance with procedures. • Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards
Tools and equipment	This competence includes use of equipment and tools such as: • mobile plant/fork lifts • manual handling equipment • hand tools • shrink wrappers • tape machine labelers • loose bulk packing equipment • computers, bar code readers • bag filling equipment • pallets • wrapping machines • personal protective equipment (PPE) • distribution equipment, elevated platforms and communication equipment
Hazards	Typical hazards include: • inappropriate movements and postures • physical and atmospheric hazards of materials • height or depth of storage receptacles • stationary and moving machinery, parts or components • noise, light, energy sources

	• humidity, air temperature, radiant heat • manual handling hazards
Problems	Respond to routine problems' means 'apply known solutions to a limited range of predictable problems'. Typical process and product problems may include: • special storage requirements including moisture and contamination control • handling of incomplete loads (either in or out) • handling of materials which do not meet specifications • conflicting priorities • incomplete or incorrect paperwork • product requirements • job priority • product/material variations
Variables	Key variables to be monitored include: • types of products or materials to be received/dispatched • handling heights • types of equipment • types of workplace documentation • atmospheric conditions

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • met packaging standards consistently • read and interpreted procedures and work instructions correctly • recognized potential problems and taken action (I e, the problem is fixed or reported) • taken action to ensure problems are dealt with in a timely manner • recognized problems caused by product/material issues and made an appropriate contribution to a solution • followed items initiated through until final resolution has occurred • maintained effective communication between team members, shift leaders and other staff
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • product/material knowledge • inventory and ordering systems • transport requirements and restrictions for products/materials • correct OHS procedures • storage/handling principles and procedures • material hazard properties and their implications for safe handling and storage

	• significance of material to customers; transport requirements and restrictions for materials • plan own work, including predicting consequences and identifying improvements • identify and describe own role and role of others involved directly in the processing of orders and dispatching of products • use PPE, safely handle products and materials, read relevant safety information and apply safety precautions appropriate to the task • distinguish between causes of problems such as product requirements and job priority as relevant to the practical completion of the job
Underpinning Skills	Demonstrates skills to: • read and interpret typical product specifications, job sheets, procedures, material labels and safety information as provided to operators • writing • basic numeracy
Resource Implications	The following resources must be provided: • workplace or assessment location • tools, materials and equipment
Methods of Assessment	Competence may be assessed through: • Written test • Observation/Demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Apply Quality Standards**
Unit Code	**IND BEO1 13 0111**
Unit Descriptor	This unit covers the skills and knowledge required in applying quality standards in cement production operations.

Elements	Performance Criteria
1. Assess own work	1.1 Completed work is checked against workplace standards relevant to the operations being undertaken 1.2 An understanding is demonstrated on how the work activities and completed work relate to the next operation process and to the final appearance of the product 1.3 Faulty pieces or final products are identified and isolated in accordance with company policies and procedures 1.4 Faults and any identified causes are recorded and reported in accordance with workplace procedures
2. Assess quality of received articles	2.1 Received materials or final product are ***checked*** against workplace standards and specifications 2.2 Materials or products are measured using the appropriate measuring instruments in accordance with workplace procedures 2.3 Causes of any identified faults are identified and corrective actions are taken in accordance with workplace procedures
3. Record information	3.1 Basic information on the quality performance is recorded in accordance with workplace procedures 3.2 Records of work quality are maintained according to the requirements of the company
4. Study causes of quality deviations	4.1 Causes of deviations from final products are investigated and reported in accordance with workplace procedures 4.2 Suitable preventive action is recommended based on workplace ***quality standards*** and identified causes of deviation from specified quality standards of materials or final product
5. Complete documentation	5.1 Information on quality and other indicators of production performance is recorded. 5.2 All production processes and outcomes are recorded.

Variable	Range
Quality check	• Visual inspection • Physical measurements • Check against design/specifications
Quality standards	• Materials • Intermediate product • Final product • Production/servicing processes
Quality parameters	• Chemical composition • strength • setting time • Product variation • Materials • Damage and imperfections • Moisture content

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Checked completed work continuously against workplace standard • Identified and isolated faulty pieces or final product • Checked received materials, component parts or final product against workplace standards • Identified and applied corrective actions on the causes of identified faults • Measured materials, component parts or products • Recorded basic information regarding quality performance • Investigated causes of deviations of materials against standard • Recommended suitable preventive actions
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Relevant quality standards, policies and procedures • Characteristics of materials used • Safety environment aspects of operation processes • Relevant measurement techniques and quality checking procedures • Workplace procedures • Reporting procedures

Underpinning Skills	Demonstrates skills to: • Interpret work instructions, specifications, standards and patterns appropriate to the required work • Carry out relevant visual inspections of materials, component parts and final products • Carry out relevant physical measurements • Maintain accurate work records in accordance with procedures • Meet work specifications • Communicate effectively within defined workplace procedures
Resource Implications	The following resources should be provided: • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or task
Methods of Assessment	Competence may be assessed through: • Interview / Written test • Observation/Demonstration
Context for Assessment	Competence may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Work with Others**
Unit Code	**IND BEO1 14 0111**
Unit Descriptor	This unit covers the skills, knowledge and attitudes required to develop workplace relationship and contribute in workplace activities.

Element	**Performance Criteria**
1. Develop effective workplace relationship	1.1 ***Duties and responsibilities*** are done in a positive manner to promote cooperation and good relationship 1.2 Assistance is sought from ***workgroup*** when difficulties arise and addressed through discussions 1.3 ***Feedback*** provided by others in the team is encouraged, acknowledged and acted upon 1.4 Differences in personal values and beliefs are respected and acknowledged in the development
2. Contribute to work group activities	2.1 ***Support is provided to team members*** to ensure workgroup goals are met 2.2 Constructive contributions to workgroup goals and tasks are made according to ***organizational requirements*** 2.3 Information relevant to work is shared with team members to ensure designated goals are met

Variable	**Range**
Duties and responsibilities	• Job description and employment arrangements • Organization's policy relevant to work role • Organizational structures • Supervision and accountability requirements including OHS • Code of conduct
Work group	• Supervisor or manager • Peers/work colleagues • Other members of the organization
Feedback on performance	• Formal/Informal performance appraisal • Obtaining feedback from supervisors and colleagues and clients • Personal, reflective behavior strategies • Routine organizational methods for monitoring service

	delivery
Providing support to team members	• Explaining/clarifying • Helping colleagues • Providing encouragement • Providing feedback to another team member • Undertaking extra tasks if necessary
Organizational requirements	• Goals, objectives, plans, system and processes • Legal and organization policy/guidelines • OHS policies, procedures and programs • Ethical standards • Defined resources parameters • Quality and continuous improvement processes and standards

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Provided support to team members to ensure goals are met • Acted on feedback from clients and colleagues • Accessed learning opportunities to extend own personal work competencies to enhance team goals and outcomes
Underpinning Knowledge and Attitudes	• Demonstrates knowledge of: • The relevant legislation that affects operations, especially with regards to safety • Reasons why cooperation and good relationships are important • Knowledge of the organization's policies, plans and procedures • Understanding how to elicit and interpret feedback • Knowledge of workgroup member's responsibilities and duties • Importance of demonstrating respect and empathy in dealings with colleagues • Understanding of how to identify and prioritize personal development opportunities and options
Underpinning Skills	Demonstrates skills to: • Ability to read and understand the organization's policies and work procedures • Write simple instructions for particular routine tasks • Interpret information gained from correspondence • Communication skills to request advice, receive feedback and work with a team • Planning skills to organized work priorities and arrangement • Technology skills including the ability to select and use

	technology appropriate to a task • Ability to relate to people from a range of social, cultural and ethnic backgrounds.
Resource Implications	• The following resources must be provided: • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or task
Methods of Assessment	Competence may be assessed through: • Direct observations of work activities of the individual member in relation to the work activities of the group • Observation of simulation and/or role play involving the participation of individual member to the attainment of organizational goal
Context of Assessment	Competence assessment may occur in workplace or any appropriately simulated environment

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Receive and Respond to Workplace Communication**
Unit Code	**IND BEO1 15 0111**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to receive, respond and act on verbal and written communication.

Element	**Performance Criteria**
1. Follow routine spoken messages	1.1 Required information is gathered by listening attentively and correctly interpreting or understanding information/instructions 1.2 Instructions/information are properly recorded 1.3 Instructions are acted upon immediately in accordance with information received 1.4 Clarification is sought from workplace supervisor on all occasions when any instruction/information is not clear
2. Perform workplace duties following written notices	2.1 ***Written notices and instructions*** are read and interpreted correctly in accordance with **organizational guidelines** 2.2 Routine written instruction are followed in sequence 2.3 Feedback is given to workplace supervisor based on the instructions/information received

Variable	**Range**
Written notices and instructions	refers to : • Handwritten and printed material • Internal memos • External communications • Electronic mail • Briefing notes • General correspondence • Marketing materials • Journal articles
Organizational Guidelines	include: • Information documentation procedures • Company policies and procedures • Organization manuals • Service manual

Evidence Guide	
Critical aspects of Competence	Assessment requires evidence that the candidate: • Demonstrated knowledge of organizational procedures for handling verbal and written communications • Received and acted on verbal messages and instructions • Demonstrated competence in recording instructions/information
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Knowledge of organizational policies/guidelines in regard to processing internal/external information • Ethical work practices in handling communications • Communication process
Underpinning Skills	Demonstrates skills to: • Conciseness in receiving and clarifying messages/information/communication • Accuracy in recording messages/information
Resource Implications	The following resources must be provided: • Pens • Note pads
Methods of Assessment	Competence may be assessed through: • Direct Observation / Demonstration • Oral interview / Written Evaluation
Context of Assessment	Competence may be assessed individually in the actual workplace or simulation environment in accredited institutions

TOP

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Demonstrate Work Values**
Unit Code	**IND BEO1 16 0111**
Unit Descriptor	This unit covers the knowledge, skills, and attitude in demonstrating proper work values.

Elements	**Performance Criteria**
1. Define the purpose of work	1.1 One's unique sense of purpose for working and the 'whys' of work are identified, reflected on and clearly defined for one's development as a person and as a member of society. 1.2 Personal mission is in harmony with company's values
2. Apply work values/ethics	2.1 ***Work values/ethics/concepts*** are classified and reaffirmed in accordance with the transparent company ethical standards, policies and guidelines. 2.2 ***Work practices*** are undertaken in compliance with industry work ethical standards, organizational policy and guidelines 2.3 Personal behavior and relationships with co-workers and/or clients are conducted in accordance with ethical standards, policy and guidelines. 2.4 ***Company resources*** are used in accordance with transparent company ethical standard, policies and guidelines.
3. Deal with ethical problems	3.1 Company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct are accessed and applied in accordance with transparent company ethical standard, policies and guidelines. 3.2 **Work incidents/situations** are reported and/or resolved in accordance with company protocol/guidelines. 3.3 Resolution and/or referral of ethical problems identified are used as learning opportunities.
4. Maintain integrity of conduct in the workplace	4.1 Personal work practices and values are demonstrated consistently with acceptable ethical conduct and company's core values. 4.2 **Instructions** to co-workers are provided based on ethical, lawful and reasonable directives. 4.3 Company values/practices are shared with co-workers using appropriate behavior and language.

Variable	Range
Work values/ethics/ concepts	May include but are not limited to: • Commitment/ Dedication • Sense of urgency • Sense of purpose • Love for work • High motivation • Orderliness • Reliability and Dependability • Competence • Goal-oriented • Sense of responsibility • Being knowledgeable • Loyalty to work/company • Sensitivity to others • Compassion/Caring attitude • Balancing between family and work • Sense of nationalism
Work practices	• Quality of work • Punctuality • Efficiency • Effectiveness • Productivity • Resourcefulness • Innovativeness/Creativity • Cost consciousness • 5S • Attention to details
Incidents/situations	• Violent/intense dispute or argument • Gambling • Use of prohibited substances • Pilferages • Damage to person or property • Vandalism • Falsification • Bribery • Sexual Harassment • Blackmail
Company resources	• Consumable materials • Equipment/Machineries • Human • Time • Financial resources
Instructions	• Verbal • Written

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Defined one's unique sense of purpose for working • Clarified and affirmed work values/ethics/concepts consistently in the workplace • Demonstrated work practices satisfactorily and consistently in compliance with industry work ethical standards, organizational policy and guidelines • Demonstrated personal behavior and relationships with co-workers and/or clients consistent with ethical standards, policy and guidelines • Used company resources in accordance with company ethical standard, policies and guidelines. • Followed company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct/behavior
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational health and safety • Work values and ethics • Company performance and ethical standards • Company policies and guidelines • Fundamental rights at work including gender sensitivity • Work responsibilities/job functions • Corporate social responsibilities • Company code of conduct/values • Balancing work and family responsibilities
Underpinning Skills	Demonstrates skills to: • Interpersonal skills • Communication skills • Self awareness, understanding and acceptance • 3.4 Application of good manners and right conduct
Resource Implications	The following resources must be provided: • Workplace or assessment location • Case studies/Scenarios
Methods of Assessment	Competence may be assessed through: • Interview • Demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

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Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Develop Understanding of Entrepreneurship**
Unit Code	**IND BEO1 17 0111**
Unit Descriptor	This unit covers skills, knowledge and attitude required to understand the principles, functions, strategies and methods of entrepreneurship. It also covers identifying and developing the major entrepreneurial competences.

Elements	Performance Criteria
1. Describe and explain the principles, concept and scope of entrepreneurship	1.1 The principles, concept and terminology of entrepreneurship are analyzed and discussed 1.2 The different / various forms of enterprises in the community are identified and their roles understood 1.3 The identified enterprises are categorized and ***classified*** 1.4 The terms and elements involved in the concept of enterprising, both on a personal level and in the context of being enterprising in business are identified and interpreted 1.5 Functions of entrepreneurship in business and how the entrepreneurs improved business and economic environment are explained
2. Discuss how to become entrepreneur	2.1 Self-employment as an alternative option for an individual economic independence and personal growth is discussed and analyzed 2.2 Advantages and disadvantages of self-employment are discussed and explained 2.3 Entrepreneurial characteristics and traits are identified and discussed 2.4 Self-potential is assessed to determine if qualified to become future entrepreneur 2.5 Major competences of successful entrepreneurship are identified and explained
3. Discuss how to organize an enterprise	3.1 The importance and role of business entrepreneurship in the society are discussed and correlated to the operations of the economy 3.2 Facts about small and medium enterprises are discussed, clarified and understood 3.3 Key success factor in setting up small and medium business are identified and explained

	3.4 Business opportunities are identified and assessed 3.5 Business ideas are generated using appropriate tools, techniques and steps 3.6 Procedures for identifying suitable market for business are discussed and understood 3.7 ***Major factors*** to consider in selecting a location for a business are identified and discussed 3.8 Basic types of business ownership are identified and explained 3.9 Amount of money needed to start an enterprise estimated and distinction between pre operations and initial operation payments clarified 3.10 Advantages and disadvantages of using various sources of capital to start an enterprise are identified
4. Discuss how to operate an enterprise	4.1 Disadvantages and advantages of ***three alternative*** means of becoming an entrepreneur are identified and understood 4.2 Process of hiring and managing people is discussed and explained 4.3 The importance and techniques of managing time are discussed and understood 4.4 The techniques and procedures of managing sales are discussed and explained 4.5 Factors to consider in selecting suppliers and the steps to follow when doing business with them are identified and discussed 4.6 Awareness of how new technologies can affect small and medium business are developed 4.7 Characteristics of appropriate technology for use in small and medium business are identified and explained 4.8 Different types of cost that occur in a business and how to manage them are discussed and understood 4.9 Factors and procedures in knowing the cost of the enterprise are discussed and understood 4.10 Importance of financial record keeping and preparing simple financial statement are explained and understood 4.11 The application of self-management skills and negotiation skills are discussed in operating a business 4.12 Risk assessment and management of business enterprise are performed

5. Develop one's own business plan	5.1 Process of preparing/ writing a business plan is discussed and applied 5.2 Standard structure and format are applied in preparing business plan 5.3 Findings of the business plan are interpreted, assessed and analyzed 5.4 Feasibility of the business idea is made clear and understandable 5.5 Problems that may arise or encounter when starting a business are identified and understand 5.6 Techniques and procedures in obtaining and sourcing information are discussed and understood

Variables	**Range**
Classification	• Private vs public • Profit vs non-profit • Formal vs Non-formal • Individual vs Community • Local vs Foreign • Business vs Social • Small vs Large • Manufacturing vs Service • Consumer vs Industrial
Major factors	• Economics (local economy) • Population • competition
Three alternative	• Buying an existing business • Starting a new business • Operating a franchising business

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • explained principles and concept of entrepreneurship • discussed how to become entrepreneur • discussed how to organize an enterprise • discussed how to operate an enterprise • develop business plan
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Entrepreneurship principles, concepts and terminologies • Entrepreneurial competence • Entrepreneurial motivation

	• Risk assessment and evaluation • Principles and process of negotiations • Self-management and self-employment • Managing sales, people and time • Factors in setting up small and medium business • Small and Medium Enterprise • Business plan development • Discussion techniques and procedures
Underpinning Skills	Demonstrate skills in: • Planning and Leading • Presentation skills • Using technology • Managing money • Preparing simple financial statement • Selecting suppliers
Resource Implications	The following resources must be provided: • Tools, equipment and facilities appropriate to the proposed activities • Materials relevant to the proposed activities
Methods of Assessment	Competence may be assessed through: • Interview/Written Test • Demonstration/ Direct Observation with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

Occupational Standard: Basic Cement Production Equipment Operation Level I	
Unit Title	**Apply 5S Procedures**
Unit Code	**IND BEO1 18 1012**
Unit Descriptor	This unit of competence covers the skills, attitudes and knowledge required by an employee or worker to apply 5S procedures (structured approach to housekeeping) to their own job and work area and maintains the housekeeping and other standards set by 5S. The unit assumes the employee or worker has a particular job and an allocated work area and that processes in the work area are known by the individual.

Elements	Performance Criteria
1. Develop understanding of quality system	1.1 Discuss quality assurance procedures of the enterprise or organization 1.2 Understand the relationship of quality system and continuous improvement in the workplace 1.3 Identify and relate to workplace requirements the purpose and ***elements*** of quality assurance (QA) system 1.4 Explain the ***5S system*** as part of the quality assurance of the work organization
2. Sort needed items from unneeded	2.1 Identify all ***items*** in the work area 2.2 Distinguish between essential and non-essential items 2.3 Sort items to achieve deliverables and value expected by downstream and final customers 2.4 Sort items required for regulatory or other required purposes 2.5 Place any non-essential item in a appropriate place other than the workplace 2.6 Regularly check that only essential items are in the work area
3. Set workplace in order	3.1 Identify the best location for each essential item 3.2 Place each essential item in its assigned location 3.3 After use immediately return each essential item to its assigned location 3.4 Regularly check that each essential item is in its assigned location
4. Shine work area	4.1 Keep the work area clean and tidy at all times 4.2 Conduct regular housekeeping activities during shift 4.3 Ensure the work area is neat, clean and tidy at both beginning and end of shift

5. Standardize activities	5.1 Follow ***procedures*** 5.2 Follow checklists for activities, where available 5.3 Keep the work area to specified standard
6. Sustain 5S system	6.1 Clean up after completion of job and before commencing next job or end of shift 6.2 Identify situations where compliance to standards is unlikely and take actions specified in procedures 6.3 Inspect work area regularly for compliance to specified standard 6.4 Recommend improvements to lift the level of compliance in the workplace

Variable	**Range**
Elements of QA system	• corrective action • mission statements • monitoring procedures • SOPs • work instructions • PDCA concept
5S	5S is a system of work organization originally developed in Japan based around housekeeping principles. A close translation of the five stages in the housekeeping approach is: • sort • set in order • shine • standardize • sustain Japanese terms: • seiri - eliminating everything not required for the work being performed (sort) • seiton - efficient placement and arrangement of equipment and material (set in order) • seison - tidiness and cleanliness (shine) • seiketsu - ongoing, standardised, continually improving seiri, • seiton, seison • shitsuke - discipline with leadership
Items in the work area	Includes: • tools • jigs/fixtures • materials/components • plant and equipment • manuals

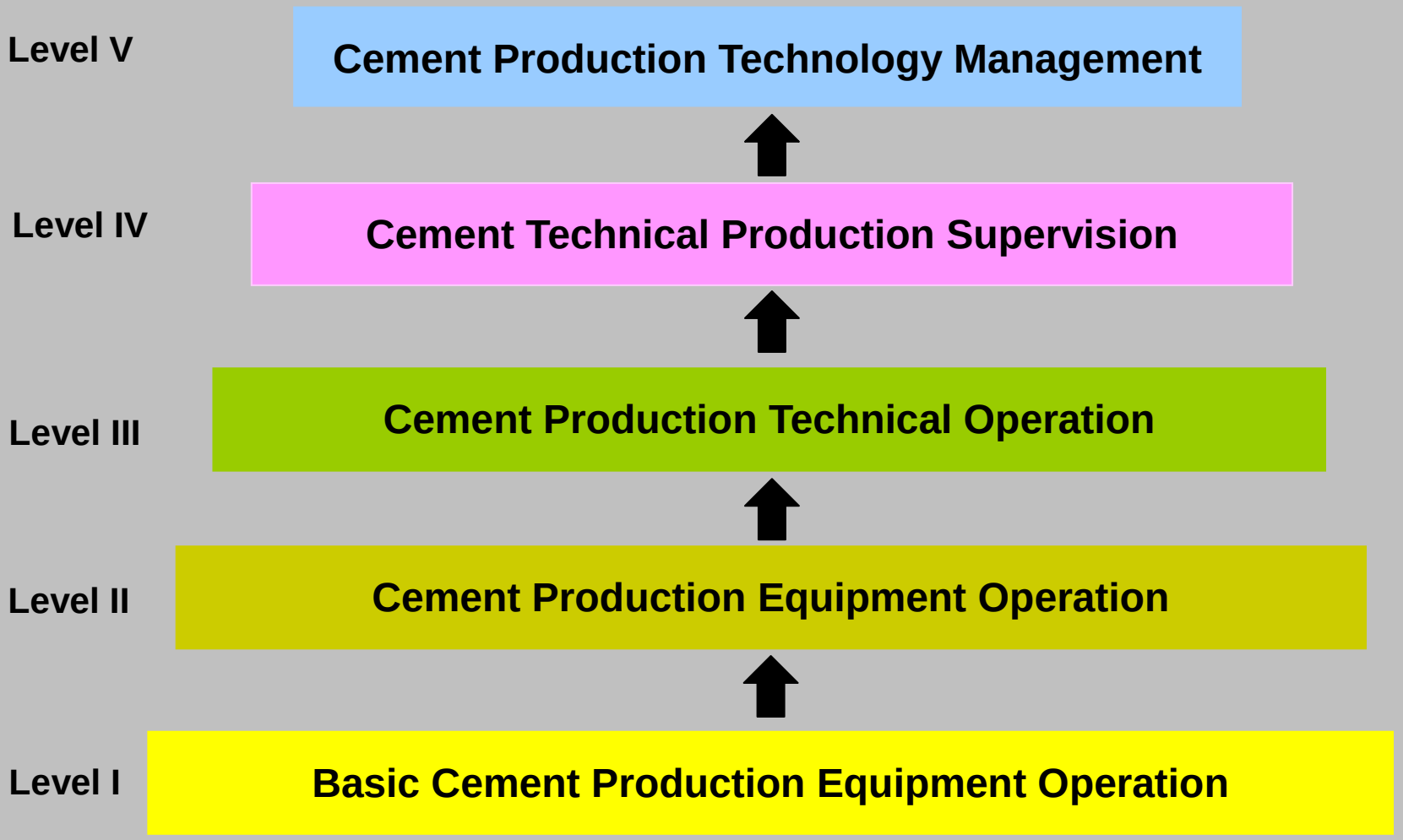
	• personal items (e.g. bags, lunch boxes and posters) • safety equipment and personal protective equipment • other items which happen to be in the work area
Sort	Sort involves keeping only what is absolutely necessary for the processes in the work area. Sort includes: • clearing the work area of all non-essential equipment and materials Non-essential items are those not required to either produce product, conduct process or operations, or make required adjustments to equipment during process or operations
Set in order	After removing unnecessary materials, the remaining materials must be those that are required immediately for either the machine or the job at hand. All of these materials/change/parts etc must have an assigned location on the production floor. Locations should be clearly marked and labeled to show what belongs where. assigning required equipment and materials appropriate locations in the work area
Shine	includes: • keeping the work area clean at all times • this should be carried out to a regular daily schedule against allowed time and, on most occasions, at the end of a job
Standardize	Once 5S is established, standardizing activities help maintain the order and the housekeeping standards. Standardizing may use procedures and checklists developed from a procedure. Standardizing includes: • activities that help maintain the order and the housekeeping standards • using procedures and checklists developed from a procedure • OHS measures such as signage, symbols / coding and labeling of work area and equipment
Procedures	Procedures may include: • work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions and similar instructions provided for the operation of the plant • good operating practice as may be defined by industry codes of practice (e.g. good manufacturing practice (GMP) and responsible care) and government regulations Procedures may be: • written, verbal, computer based or in some other format
Sustain	includes: • making sure that daily activities are completed every day

	regardless of circumstance • cleaning up after a job • undertaking inspections, including: – informal inspections carried out often, at least weekly – formal inspections carried out at least monthly • generating continuous improvement actions from daily activities • following up specific actions to generate continuous improvement

Evidence Guide	
Critical Aspects of Competence	A person who demonstrates competence in this unit must be able to provide evidence of the ability to: • identify own tasks and responsibilities and relate them to organization and customer requirements • identify and explain the stages of 5S • implement 5S in own work area • identify waste (muda) in the work area • routine practice of 5S as part of their job
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • operations and processes relevant to own job • basic principle of quality assurance system and its elements • quality procedures and continuous improvement (kaizen) • meaning and application of 5S steps to own job and work area • principles of efficient workplace organization • purposes of 5S • methods of making/recommending improvements
Underpinning Skills	Demonstrates skills to: • communicating with others to clarify issues during 5S implementation, communicate results and contribute suggestions for improvement • visualizing operations in terms of flow and contribution to customer outcomes • planning own tasks in implementation of 5S • implementing 5S in own work area according to instructions • identifying waste (muda) • organizing, prioritizing activities and items • reading and interpreting documents describing procedures • recording activities and results against templates and other prescribed formats • working with others • solving problems
Resources Implication	Access may be required to: • workplace procedures and plans relevant to work area • specifications and documentation relating to planned,

	currently being implemented, or implemented changes to work processes and procedures relevant to the candidate • documentation and information in relation to production, waste, overheads and hazard control/management • reports from supervisors/managers • case studies and scenarios to assess responses to contingencies
Methods of Assessment	A holistic approach should be taken to the assessment. Competence in this unit may be assessed by using a combination of the following to generate evidence: • demonstration in the workplace • workplace projects • suitable simulation • case studies/scenarios (particularly for assessment of contingencies, improvement scenarios, and so on) • targeted questioning In all cases it is expected that practical assessment will be combined with targeted questioning to assess underpinning knowledge.
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting. Assessment of performance must be undertaken in a workplace using or implementing 5S as competitive systems and practices.

Sector: Industry Development
Sub-Sector: Cement Production



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