

# **QUALIFICATION HANDBOOK**

## **SVQ Processing Operations for the Extractives and Minerals Processing Industries at SCQF Level 5**

*Qualification reference number: GM3D 45*

## **SVQ Processing Operations for the Extractives and Minerals Processing Industries at SCQF Level 6**

*Qualification reference number: GM3E 46*

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Document control and history	
Document status:	External
Owner:	RM
Version and date:	Version 1 – June 2017
Summary of revisions:	Revisions to V1: N/A

## 1. Introduction

1.1 These qualifications have been developed to seek to ensure that those that wish to seek employment as operatives within the extractives and minerals processing industries meet minimum requirements of technical competence and health and safety for operatives and for those with additional site responsibilities.

1.2 These requirements have been specified in the National Occupational Standards (NOS) developed by the Standard Setting Organisation (SSO) MPQC in liaison with employers and industry/ sector representatives. This qualification is based upon those NOS and incorporates the Qualification Structure approved by SQA Accreditation.

1.3 Successful completion of these qualifications will allow candidates to show they have sufficient knowledge, understanding and skills to demonstrate competence at the appropriate level in operating extractives plant machinery and for additional site responsibility (at the higher level).

1.4 This Handbook provides the information required to assist approved centres in delivering the qualifications and preparing candidates for assessment. This includes some template forms that may be used / adapted by centres. Note that you are able to create your own, or use existing forms for this purpose.

This document should be read in conjunction with QFI's policies and the Centre Handbook.

## 2. Qualification objective(s)

2.1 The qualifications are suitable for apprentices / those already in employment/ those seeking employment that wish to develop their knowledge and skills in processing operations.

2.2 In order to do this, the qualifications cover technical and health and safety standards, and support roles relating to processing operations.

## 3. Progression

3.1 These qualifications are primarily designed to allow candidates to progress to employment in roles relating to the operation of extractives plant machinery. Both are included in the two main registration schemes – CPCS and the MPQC Scheme. Successful completion may therefore lead to employment as an operative of extractives plant, with additional site responsibility at SCQF level 6.

3.2 Candidates must complete all mandatory units to achieve each qualification. Additional units are optional and not required to achieve either qualification.

3.3 Candidates may progress from one qualification to the other, i.e. from SCQF level 5 to SCQF level 6.

3.4 Candidates may also wish to progress to higher level qualifications such as those aimed at supervisory/ management roles, e.g.

- SVQ 3 Occupational Work Supervision (Construction) at SCQF Level 6
- SVQ 3 Construction Contracting Operations at SCQF level 6

3.5 Candidates may also choose to undertake qualifications in more generic subjects such as a health and safety in the workplace, e.g.

- Award in Health and Safety in a Construction Environment at SCQF level 4

## 4. Entry requirements

4.1 Candidates must be at least 18 years of age to be able to undertake these qualifications.

4.2 Those that will be driving construction vehicles as part of their chosen pathway/ additional units must hold a full driving licence.

4.3 There are no other specific entry requirements, though the National Careers Service does recommend physical fitness.

4.4 Candidates taking either of these qualifications must be made fully aware of what these entail. Centres must be satisfied that candidates have the appropriate experience and skills, and will have sufficient assessment opportunities within their job role to provide evidence of competence. Where this may not be the immediate case, Centres are advised to require candidates to check with their employer whether they are able to go out with departmental or immediate job role boundaries to gain the necessary assessment opportunities.

4.5 A sample induction checklist is included at Appendix 1.

## 5. Qualification structures

5.1 The structure for these qualifications is set by the Standard Setting Organisation MPQC and approved by SQA Accreditation.

5.2 To achieve the SVQ Processing Operations for the Extractives and Minerals Processing Industries at SCQF Level 5 candidates must achieve all **5 mandatory units**

5.3 Candidates may also take additional optional units that are appropriate to their circumstances. Additional units are not however required to achieve the qualification.

## SVQ Processing Operations for the Extractives and Minerals Processing Industries at SCQF Level 5

### Mandatory units

Candidates must complete the following units

SSC code	Title of mandatory unit	SCQF level	SCQF credits
MPQPO02	Confirm to efficient working practices	5	4
MPQPO13	Run and control the operations of processing plant	6	45
MPQPO06	Confirm to general workplace safety and security	6	3
MPQPO16	Monitor and maintain environmental conditions in your area of responsibility	5	3
MPQPO07	Process materials to specification	5	45

### Optional units

Candidates may complete any of the following units according to their circumstances. Note that optional units are not required to achieve the qualification.

SSC code	Title of optional unit	SCQF level	SCQF credits
MPQPO09	Receive, store and handle materials for processing	5	5
MPQPO10	Carry out routine maintenance on plant and equipment	5	6
MPQPO05	Use tools and equipment for routine and predictable minerals processing requirements	4	5
MPQPO08	Carry out simple scientific or technical tests using manual equipment	6	7
MPQPO11	Contribute to the deployment of plant and equipment for processing operations	7	77
MPQPO12	Solve processing problems	6	34
MPQPO14	Carry out sampling operations for scientific or technical tests	6	5
MPQPO18	Position mobile processing plant for operational performance	5	4

All units are included in Appendix 2 of this document. 5.4 To achieve the SVQ Processing Operations for the Extractives and Minerals Processing Industries at SCQF Level 6 candidates must achieve all **7 mandatory units**

5.5 Candidates may also take additional optional units that are appropriate to their circumstances. Additional units are not required to achieve the qualification.

## SVQ Processing Operations for the Extractives and Minerals Processing Industries at SCQF Level 6

### Mandatory units

Candidates must complete the following units

SSC code	Title of mandatory unit	SCQF level	SCQF credits
MPQPO11	Contribute to the deployment of plant and equipment for processing operations	7	77
MPQPO12	Solve processing problems	6	34
MPQPO13	Run and control the operations of processing plant	6	45
MPQPO06	Conform to general workplace safety and security	6	3
MPQPO15	Lead the work of teams and individuals to achieve their objectives in the extractive and mineral processing industry	7	25
MPQPO17	Manage physical resources for processing activities	6	6
MPQPO16	Monitor and maintain environmental conditions in your area of responsibility	5	3

### Optional units

Candidates may complete any of the following units according to their circumstances. Note that optional units are not required to achieve the qualification.

SSC code	Title of optional unit	SCQF level	SCQF credits
MPQPO09	Receive, store and handle materials for processing	5	5
MPQPO10	Carry out routine maintenance on plant and equipment	5	6
MPQPO05	Use tools and equipment for routine and predictable minerals processing requirements	4	5
MPQPO08	Carry out simple scientific or technical tests using manual equipment	6	7

MPQPO07	Process materials to specification	5	45
MPQPO03	Supervise health, safety and environmental practice in extractives industries sites	7	19
MPQPO12	Solve processing problems	6	34
MPQPO14	Carry out sampling operations for scientific or technical tests	6	5
MPQPO18	Position mobile processing plant for operational performance	5	4

All units are included in Appendix 2.

## 6. Assessment

### 6.1 Roles and responsibilities

There are a number of people involved in the assessment process and the role of each needs to be clearly understood by each.

- Candidates – must familiarise themselves with the content of the units that they are taking and how these are to be assessed. They should co-operate with the assessment process, looking for opportunities to evidence the elements and gathering evidence where this arises. Candidates must take on board feedback from their assessor and work with their assessor to develop realistic plans for assessment. An Assessment Plan and Review template is included at Appendix 3.
- Assessors - must familiarise themselves with the content of the units that they are assessing and how these are to be assessed. They must assist candidates in identifying assessment opportunities, gathering, and presenting evidence. Assessors must assess all elements and record these assessments. Templates for recording elements, and for unit achievement, are at Appendix 4. Assessors must feedback and work with candidates to identify any gaps and develop realistic plans for assessment. They must also work with the Internal Verifier and External Verifier to ensure a common standard of assessment.
- Internal Verifiers – sometimes known as Internal Quality Assurers (IQAs), their role is to ensure that the assessment process is appropriate, consistent, fair and transparent; that assessors receive on-going support and that they are assessing to a common standard; and that awards are valid, reliable and consistent. IVs must develop a strategy that includes standardisation activities such as reviewing samples of evidence from each assessor, and countersigning the decisions of unqualified assessors.

- External Verifiers - sometimes known as External Quality Assurers (EQAs), are appointed by QFI and are independent of the centre. Their role is to check that internal processes are in place to ensure robust, consistent assessment. This includes sampling assessment evidence.

## **6.2 SCQF level descriptors**

These qualifications are pitched at SVQ level 2/ SCQF level 5 and SVQ level 3/ SCQF level 6. The following are descriptions of what a candidate should be able to do or demonstrate at SCQF levels 5 and 6. These are for guidance only – it is not expected that every point will be covered.

### **SCQF Level 5**

#### **Knowledge and understanding**

Demonstrate and/or work with: Basic knowledge; A range of simple facts, ideas and theories in, about, and associated with, a subject/discipline/sector; Knowledge and understanding of basic processes, materials and terminology.

#### **Applied knowledge, skills and understanding**

Relate knowledge and ideas to personal and/or practical contexts; Use a range of skills associated with the subject/discipline/sector to complete some routine and non-routine tasks; Plan and organise both familiar and unfamiliar tasks; Select appropriate tools and materials and use them safely and effectively; Adjust tools where necessary following safe practices.

#### **Generic cognitive skills**

Use a process to deal with a problem, situation or issue that is straightforward; Operate in a familiar context, but where there is a need to take account of or use additional information of different kinds, some of which will be theoretical or hypothetical.

#### **Communication, IT and numeracy skills**

Use a range of routine skills, for example: Produce and respond to detailed written and oral communication in familiar contexts; Use standard ICT applications to process, obtain and combine information; Use a range of numerical and graphical data in routine contexts that may have some non-routine elements.

#### **Autonomy, accountability and working with others**

Work alone or with others on tasks with minimum directive supervision: Agree goals and responsibilities for self and/or work team; Take lead responsibility for some tasks; Show an awareness of own and/or others' roles, responsibilities and requirements in carrying out work and contribute to the evaluation and improvement of practices and processes.

### **SCQF Level 6**

#### **Knowledge and understanding**

Demonstrate and/or work with: An appreciation of the body of knowledge that constitutes a subject/discipline/sector; A range of knowledge, facts, theories, ideas, properties, materials, terminology, practices and techniques about, and associated with,



a subject/discipline/sector; Relating the subject/discipline/sector to a range of practical and/or commonplace applications.

### **Applied knowledge, skills and understanding**

Apply knowledge, skills and understanding: In known, practical contexts; In using some of the basic, routine practices, techniques and/or materials associated with the subject/discipline/sector; In exercising these in routine contexts that may have non-routine elements; In planning how skills will be used to address set situations and/or problems and adapt these as necessary.

### **Generic cognitive skills**

Obtain, organise and use factual, theoretical and/or hypothetical information in problem solving; Make generalisations and predictions; Draw conclusions and suggest solutions.

### **Communication, ICT and numeracy skills**

Use a wide range of skills, for example: Produce and respond to detailed and relatively complex written and oral communication in both familiar and unfamiliar contexts; Select and use standard ICT applications to process, obtain and combine information; Use a wide range of numerical and graphical data in routine contexts which may have non-routine elements.

### **Autonomy, accountability and working with others**

Take responsibility for carrying out a range of activities where the overall goal is clear, under non-directive supervision; Exercise some supervisory responsibility for the work of others and lead established teams in the implementation of routine work within a defined and supervised structure; Manage limited resources within defined and supervised areas of work; Take account of roles and responsibilities related to the tasks being carried out and take a significant role in the evaluation of work and the improvement of practices and processes.

## **6.3 The assessment process**

Assessment for this qualification, and for individual units that comprise the qualification, must take place in accordance with MP Futures Assessment Strategy (2015).

This document translates the requirements of the assessment strategy and gives guidance to ensure that centres meet these.

Centres delivering the qualification must ensure that assessors and Internal Verifiers are aware of the assessment strategy and how to access this. External Verifiers may check this requirement during monitoring visits to centres.

Assessment involves the following key stages: planning; producing evidence; assessing evidence; recording. Each of these is considered in more detail below.

### **6.3.1. Planning**

The assessor must create an Assessment Plan with each candidate that he/ she will be assessing. The Assessment Plan will need to be reviewed as the candidate progresses

through the units. A template for assessment planning and review is at Appendix 3 of this document.

A wide range of assessment methods exist that can be used to assess knowledge and skills. Methods of assessment that are commonly used for assessing competence based qualifications such as N/SVQs include the following:

- Product evidence – this relates to the outcome of the candidate’s work, and the actual product that is generated as a result of their work.
- Direct observation – where an assessor (or credible witness) will directly observe the candidate undertaking certain tasks/ creating products that occur as part of their role. Observations must be referenced to the elements covered
- Question/ answer – these will often supplement the methods above, for example the assessor may ask the candidate a number of questions whilst they are undertaking a task. Questioning is a useful way to establish knowledge and to generate evidence of this
- Witness testimony – credible witnesses may be identified who can for example testify that the candidate can successfully undertake certain tasks
- Personal statement – declaration made by the candidate that should be referenced to elements

Centres should ensure that their Assessors use the methods above to assess candidates for this qualification.

Template assessment documents including an Assessor Report can be found at Appendix 3.

### **6.3.2 Producing evidence**

The methods of assessment must generate evidence to demonstrate the candidates’ competence. Evidence produced in the workplace is central to MP Futures Assessment Strategy (2015). Workplace evidence is vital to ensuring that the candidate is competent to industry standards and a suitable way of recording this must be used.

The following indicates the type of evidence generated by the methods on the section above:

- Product evidence –Photographic or video evidence is often used to record this, or it may also be recorded via the method below. Labelled photographs and/or videos that clearly show the candidate are sources of evidence for this purpose.
- Direct observation –observations must be recorded via an Assessor or other report (e.g. witness statement)
- Question/ answer –both the questions and the candidate’s responses to these must be recorded either in writing or via some audio or visual device (e.g. part of a video recording).
- Witness testimony – this may be written, audio or visual recordings
- Personal statement – the declaration made by the candidate must be recorded

All of the above must be referenced to the evidence that they cover

Templates that may be used for recording evidence are at Appendix 3.

Feedback should be given to the candidate on an on-going basis and where there are any gaps or shortfalls in evidence then these should be incorporated into the Assessment Plan.

Assessment must meet the requirements of the performance criteria, knowledge and understanding documented for each unit of assessment. Methods of assessment must ensure coverage of all elements, scope and range, and generate sufficient evidence to demonstrate competence.

A holistic approach towards the collection of evidence is encouraged. The focus should be on assessing activities generated by the whole work experience rather than focusing on specific tasks. This would show how evidence requirements could be met across the qualification to make the most efficient use of evidence.

Direct evidence produced through normal performance in the workplace is the primary source for meeting these requirements. This includes naturally occurring evidence, direct observation of activities and witness testimony as relevant, all of which must be recorded.

Workplace evidence must be supported by the required evidence of knowledge and understanding. This evidence may be identified by:

- questioning the candidate
- recognised industry education and training programme assessment or professional interview assessment that has been matched to NOS requirements
- performance evidence/ completed work

All of which must be recorded and made available for verification purposes.

Workplace evidence of skills cannot be simulated for this qualification. Simulation is allowed for the assessment of safe use of fire extinguishers; organisational procedures in case of environmental incident, accident and/or fire.

### **6.3.3 Assessing evidence**

Evidence must be assessed against the units/ elements to establish whether the candidate is competent with regards to their performance and knowledge. In order to achieve the qualification candidates must achieve a 'pass'. The evidence must show that the candidate consistently (i.e. on more than one occasion) meets all of the elements across the scope/range of each unit.

If there is insufficient evidence to make this judgement then plans must be made as to how the candidate can produce further evidence in order to demonstrate competence.

Assessors must check that the evidence produced is sufficient in volume, relevant and current. They must also be confident that the evidence has been generated by the candidate. Assessors and candidates normally sign documentation to declare that the evidence produced is that of the candidate and no other.

### **6.3.4 Recording evidence**

Evidence (or reference to where certain evidence is located) is normally kept in a portfolio. This may be paper-based or electronic. All evidence contained within the portfolio must be clearly referenced to the units and elements. Candidates' progress can

therefore be tracked. Note that certain pieces of evidence can be recorded across more than a single element. Tracking is important to show where this is that case.

It is helpful to give each piece of evidence a number so that this can be mapped across elements. See the template forms at Appendix 4. Assessment decisions made against the evidence must also be recorded so that an IV or an EV can see these. All evidence must be kept for internal and external verification.

## **7. Assessors**

7.1 The occupational competence of assessors is defined in MP Futures Assessment Strategy (2015). For these qualifications assessors will be restricted to assessing those occupational groups in which they can demonstrate occupational competence i.e. Crushing/Screening/Washing; Drying; Concrete & Mortar Production; Asphalt/Coated Materials Production; Density/Fluid Separation; Chemical Separation; Forming; Heat Treatment; Packaging; Sawing/Splitting/Shaping; Water Monitoring; China Clay Processing.

7.2 The roles and responsibilities of assessors is outlined in the section above. Assessors must be competent to perform their role and either hold the qualifications needed to carry out assessment – or achieve within 18 months of commencing their role:

- D32 or D33
- A1
- Level 3 Award in Assessing Competence in the Work Environment
- Level 3 Award in Assessing Vocationally Related Achievement
- Level 3 Certificate in Assessing Vocational Achievement
- an appropriate Assessor qualification as identified by SQA Accreditation

Assessors must also:

- have a sound, in-depth knowledge of, and uphold the integrity of, the relevant NOS and Assessment Strategy to enable them to carry out assessment to the standards specified
- have the occupational expertise (craft/ trade specific) before commencing their role so they have up to date experience, knowledge and understanding of the particular aspects of work they are assessing
- only assess in their acknowledged area of occupational competence
- maintain the currency of this for the duration of their role
- know QFI's requirements for recording assessment decisions and maintaining assessment records

7.3 Holders of A1 and D32/33 must assess to the current National Occupational Standards (NOS) for Learning and Development.

7.4 Assessors must be registered with QFI. The Centre Handbook provides details.

7.5 The assessment decisions of unqualified assessors must be countersigned by the IV.

## **8. Internal verification**

8.1 Centres' internal assessment processes and practices must be effective and support the integrity and consistency of the qualification. This is achieved through the internal quality assurance that is undertaken by the approved centre, and the external quality assurance that is undertaken by QFI. Centres must operate explicit, written internal quality assurance procedures to ensure:

- the accuracy and consistency of assessment decisions between assessors operating at the centre
- that assessors are consistent in their interpretation and application of the qualifications or unit(s) learning outcomes

8.2 Centres must appoint IVs who will be responsible for:

- regular sampling evidence of assessment decisions made by all assessors across all aspects of assessment for the qualification. Sampling must include direct observation of assessment practice
- maintaining up-to-date records of IV and sampling activity (what was evidence was sampled or assessors / IV observed where there is more than one) and ensuring that these are available for external quality assurance
- establishing procedures to ensure that all assessors interpret the learning outcomes in the same way
- monitoring and supporting the work of assessors
- facilitating appropriate staff development and training for assessors
- providing feedback to the EV on the effectiveness of assessment
- ensuring that any corrective action required by QFI is carried out within agreed timescales.

8.3 Centres must ensure that the decisions of unqualified IVs are checked, authenticated and countersigned by an IV who is appropriately qualified and occupationally expert. QFI will monitor a centre's compliance with these requirements through monitoring visits and certification claims.

8.4 The IV is also responsible and accountable for arranging the checking and countersigning process. IVs may verify only evidence that they did not assess themselves. Further guidance on internal quality assurance/verification is provided in the Centre Handbook. Appendix 5 of this document indicates suggested content for an IV strategy, and a template for sampling assessment evidence.

## **9. Internal verifiers**

9.1 The occupational competence of assessors is defined in MP Futures Assessment Strategy (2015).

9.2 The roles and responsibilities of IVs is outlined above. IVs must be competent to perform their role and either hold the qualifications needed to carry out internal verification – or achieve within 18 months of commencing their role:

- D34
- V1
- Level 4 Award in the Internal Quality Assurance of the Assessment Process and Practice
- Level 4 Certificate in Leading the Internal Quality Assurance of Assessment Process and Practice
- an appropriate Internal Verifier qualification as identified by SQA Accreditation

9.3 It is strongly recommended that IVs also hold assessor qualifications (see section above).

9.4 Holders of V1/D34 must quality assure to the current National Occupational Standards (NOS) for Learning and Development.

9.5 IVs must be registered with QFI. The Centre Handbook provides details.

## **10. External verification**

10.1 External verification of this qualification ensures that the requirements are met for the MP Futures Assessment Strategy (2015).

10.2 Centre visits will normally take place on an annual basis, though these could be more frequent if deemed necessary as a result of QFI's risk assessments. The Centre Handbook provides further details on external verification including to prepare for centre visits.

QFI's appointed External Verifiers meet the requirements of the assessment strategy.

## **11. Certification**

11.1 Successful candidates will be issued with an SVQ certificate from QFI as an approved awarding body. Note that there is a lapsing period for these qualifications. This means that when the qualification expires, is withdrawn or replaced by a revised version, candidates registered have time from the expiry date in which to complete the

qualification. This allows sufficient time for candidate's to complete and allows for currency of evidence. Lapsing periods will be communicated to centres as required.

## **12. Equality and diversity**

12.1 These qualifications must be assessed in English.

12.2 Assessment must be inclusive and where appropriate reasonable adjustments made to ensure equality of access in line with QFI's Equality and Diversity Policy. Full details are included in the QFI Centre Handbook.

12.3 Special consideration is not normally given for competence based qualifications as it is necessary for candidates to demonstrate that they have the necessary skills and knowledge to achieve the qualification and operate safely in the workplace.

12.4 Equality data will be collected at the point of registration. This is for monitoring purposes only and will include age, gender, ethnicity, and disability.

## **13. Fees**

13.1 The current fees for these qualifications, and for individual units, are included in the QFI Fees and Invoicing document. This document also details what is/ is not included in fees.

13.2 Fees may be broken down to a reasonable level upon request to QFI.

## APPENDIX 1 - CANDIDATE TEMPLATE DOCUMENTS

### Sample Form Induction checklist

This document indicates what may be covered as part of a candidate's induction. This list is not exhaustive.

	Tick
Qualification information: <ul style="list-style-type: none"> <li>• Units</li> <li>• Structure</li> <li>• Summary of assessment</li> <li>• Awarding body</li> </ul>	
Roles and responsibilities: <ul style="list-style-type: none"> <li>• Candidate</li> <li>• Assessor</li> <li>• Internal Verifier</li> <li>• External Verifier</li> </ul>	
Training and assessment process: <ul style="list-style-type: none"> <li>• Planning</li> <li>• Collection of evidence (including methods)</li> <li>• Review of evidence</li> <li>• Feedback on evidence</li> <li>• Verification of evidence</li> <li>• Certification</li> </ul>	
Policies: <ul style="list-style-type: none"> <li>• Complaints</li> <li>• Appeals</li> <li>• Malpractice</li> <li>• Data protection</li> <li>• Health and safety</li> <li>• Equality (including reasonable adjustments/ additional support)</li> </ul>	
Forms: <ul style="list-style-type: none"> <li>• Enrolment</li> <li>• Other</li> </ul>	
I confirm that I have received this induction and the associated documents:  Candidate name: .....  Candidate signature: .....  Date: .....	





## APPENDIX 2 - UNITS

**MPQPO02**

### CONFORM TO EFFICIENT WORKING PRACTICES

**Overview:**

This standard is about the skills, knowledge and understanding of working practices that are conducive to effective working relationships. It is concerned with carrying out assigned duties according to procedures, working with others, communicating and reporting as required. This standard applicable to anyone working in an extractive, mineral processing or related manufacturing industries environment.

**Key words:**

Crushing; Screening; Washing; Drying; Concrete; Mortar; Asphalt; Coated Materials; Density; Fluid Separation; Chemical Separation; Forming; Heat Treatment; Sawing; Splitting; Shaping; Packaging; Water Monitoring; processing; mineral; rock; extraction; quarrying; mining; dredging; mobile; mobile plant; procedures; relationships; effective; efficient; working; communication; behaviour.

**Performance criteria - you must be able to:**

- P1 carry out the work activities allocated within agreed timescales
- P2 carry out responsibilities according to approved policies, procedures and practices
- P3 communicate with management and work colleagues to ensure that the work is carried out efficiently
- P4 work in conjunction with others to achieve work objectives
- P5 report in accordance with organisational procedures.

**Knowledge and understanding - you need to know and understand:**

- K1 the lines of authority related to your work activity
- K2 the methods of communication in your work area
- K3 the approved policies, procedures and practices for K3.1 allocation and sequencing of work K3.2 methods of work K3.3 use of resources K3.4 maintaining effective working relationships K3.5 standards of behaviour K3.6 reporting
- K4 documentation and data sources related to the work activity
- K5 the limits of your own responsibilities and authority.

**Scope/range**

1 approved policies, procedures and practices: legislative, organisational, operational, emergency, waste disposal, health and safety, and environmental as appropriate to the materials, plant or machinery and work activity.

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**MPQPO13**

## RUN AND CONTROL THE OPERATIONS OF PROCESSING PLANT

### Overview:

This standard states the skills, knowledge and understanding required to demonstrate competence in running and controlling the plant processing materials. It includes starting, operating, monitoring, identifying faults and shutting down the plant. During this work the candidate must take account of the relevant operational requirements and safe working practices. This standard is appropriate for any person, operative or supervisory, who is required to operate processing plant for any type of processing operation, plant or equipment, within the extractive, mineral processing or related manufacturing industries.

### Key words:

processing; process; extractive; mineral; operations; plant; machinery; rock; minerals; safety; equipment; crushing; screening; washing; drying; asphalt; concrete; cement; lime; density; fluid; chemical; monitoring; saw; shape; shear; packing; forming; materials.

### Performance criteria - you must be able to:

- P1 confirm that the machinery and services for the processing operations are ready and operable to meet the requirements of the specified process
- P2 carry out prestart checks and procedures
- P3 confirm that operational safeguards are in place
- P4 start the processing plant in accordance with manufacturers' instructions and safe working practices
- P5 make adjustments to the plant, equipment or machine settings within agreed tolerances and limits of responsibility to meet the specified operational requirements
- P6 run and adjust the processing plant to meet the specified quality and quantity requirements
- P7 identify problems or faults with the plant or process and take appropriate remedial action
- P8 stop and shutdown the production process in accordance with manufacturer's instructions and safe working practices
- P9 leave the work area clean, tidy and hazard free on completion of shutdown
- P10 report according to organisational requirements
- P11 carry out work activities according to approved policies, procedures and practices.

### Knowledge and understanding - you need to know and understand:

- K1 the plant and equipment used in the processing operations
- K2 how and why to carry out pre-start up checks and inspections
- K3 the reasons for and methods of sequencing start-up, processing and shut down operation
- K4 the principles and practice of using safeguards to protect self, others, equipment and the surrounding environment
- K5 the precautions to take prior to and during start up procedures
- K6 your responsibilities under health and safety legislation
- K7 the meanings and use of symbols on consoles and equipment
- K8 how to identify and interpret visual displays for monitoring and controlling equipment, flow and production rates
- K9 the plant, machinery and equipment settings for the processing operations
- K10 processing and material specifications appropriate to the processing operations
- K11 the effect on plant of varying feed and flow rates
- K12 the potential reasons for stoppages and the remedial actions to be taken
- K13 how to shut down in routine and in an emergency situation
- K14 the circumstances that would require an emergency shut down
- K15 the types of, and reasons for, faults in the processing operations
- K16 the methods of rectifying faults in processing activities
- K17 the methods of, and reasons for, isolation and immobilisation of plant, machinery, equipment and services
- K18 the methods of reporting processing operations and problems

K19 the limits of your personal responsibility

K20 the approved policies, procedures and practices in the context of your work activity and your workplace environment.

**Scope/range**

- 1 processing operations: must provide performance and knowledge evidence in relation to one or more of the following processing operations categories: Crushing/Screening/Washing; Drying; Concrete/Mortar Production; Asphalt/Coated Materials Production; Density/Fluid Separation; Chemical Separation; Forming; Heat Treatment; Sawing/Splitting/Shaping; Packaging; Water Monitoring
- 2 approved policies, procedures and practices: legislative, organisational, operational, emergency, health and safety, and environmental as appropriate to the plant or machinery and work activity.

**Glossary**

Categories of Processing Operations for the E&MPI

- 1. Crushing/Screening/Washing The reduction in size of as extracted material by mechanical crushing equipment (fixed or mobile), grading by size and water washing of that material. This would also include blending or adding water to meet customer specification.
- 2. Drying The application of heat in any type of oven to remove excess water from the as extracted or processed material
- 3. Concrete/Mortar Production The production of concrete, mortar and similar materials, by batch (wet batch or dry batch) or continuous production. It is limited to the production of the material, and does not include the subsequent use of the material to make a product, for example a concrete block by casting/forming.
- 4. Asphalt/Coated Materials Production The production of asphalt and other similar coated materials by any type of batch or continuous production
- 5. Density/Fluid Separation Includes all processes to increase the purity and quality of the rock or minerals, or to separate different minerals utilising their differing physical properties (e.g. weight, density, shape, solubility), which may be a dry process or with the assistance of a fluid (e.g. air, water, other liquids).
- 6. Chemical Separation The separation of rocks or minerals utilising their different chemical properties, or differing reactivity, which may involve the introduction of another chemical substance or substances to select the desired product. Note; this may often be combined with Density/fluid separation. This will also include those operations used to release the separated mineral from the separating additive
- 7. Forming Moulding, casting, forming, compressing or similar operations to produce a solid product of a shape to meeting customer requirements or aid transportation
- 8. Heat Treatment The application of higher levels and duration of heat to change the physical or chemical properties of the rock or mineral, e.g.s. calcining, cement production.
- 9. Sawing/Splitting/Shaping The use of specific plant/machinery to change the physical size and/or shape of a piece of (usually) dimensional stone to meet customer requirements
- 10. Packaging The partial or total enclosure of the rock or mineral, which would normally be done to aid storage or transportation, or to meet customer requirements.
- 11. Water Monitoring The extraction of a mineral from a mineral body (solid or broken) or a tip/stockpile by the use of a high pressure water jet.

**Version 1 – January 2014 – MPQC**

**CONFORM TO GENERAL WORKPLACE SAFETY AND SECURITY**

**Overview:**

This standard is about your ability to conform to the general safety and security arrangements in your area of work. It includes safe working practices, hazard and risk identification, compliance with relevant requirements, awareness of personal responsibilities and behaviour. This standard can apply to anyone working in the extractives and minerals processing environment.

**Key words:**

process; processing; extractive; mineral; plant; equipment; machinery; tools; safety; welfare; health; security; weighbridge; mobile; crushing; asphalt; concrete; drying; separation; forming; sawing; shaping; shearing; rock.

**Performance criteria - you must be able to:**

- P1 identify hazards and risks associated with the work activity and environment
- P2 report and record hazards and risks to an authorised person
- P3 comply with all health and safety legislation and regulations applicable to the work activity and environment
- P4 adhere to all statutory or organisational safety notices and warning signs displayed in the work area
- P5 use personal protective equipment provided for the work activity and the work environment
- P6 maintain a clean and tidy work environment
- P7 comply with and maintain organisational workplace security arrangements P8 carry out activities according to approved policies, procedures and practices.

**Knowledge and understanding - you need to know and understand:**

- K1 the hazards and risks associated with the work activity and working environment
- K2 the methods of reporting and recording hazards and risks
- K3 the causes of accidents, incidents and ill health in the working environment
- K4 arrangements for reporting accidents and incidents
- K5 the first aid arrangements in the workplace
- K6 organisational emergency procedures
- K7 safety notices and warning signs applicable to the work activity and working environment
- K8 why and when personal protective equipment should be used
- K9 the personal protective equipment applicable to the work activity and working environment
- K10 the types of fire extinguishers and how each are used
- K11 the principles of safe manual handling
- K12 the requirements for housekeeping in the work area
- K13 how equipment is used and stored
- K14 the security arrangements for the workplace
- K15 the approved policies, procedures and practices associated with the work activity and working environment.

**Scope/range**

1 approved policies, procedures and practices; legislative, organisational, operational, health and safety, accident, emergency, first aid, security as applicable to the work activity and working environment.

**MPQPO16**

**MONITOR AND MAINTAIN ENVIRONMENTAL CONDITIONS IN YOUR AREA OF RESPONSIBILITY**

**Overview:**

Achievement of this standard demonstrates your competence in conforming to workplace environmental requirements in the context of the occupation and the work environment. It includes awareness, interpretation and carrying out of personal responsibilities in relation to environmental requirements within the workplace and the organisational operational approved policies and procedures. It also includes personal responsibilities in relation to the workplace and in reducing the environmental impact on areas surrounding and/or affected by the workplace site activities. This standard can apply to anyone working in the extractive, mineral processing and related manufacturing industries.

**Key words:**

extraction; extractives; mineral; processing; environment; waste; recycling; weighbridge; crushing; screening; washing; drying; asphalt; concrete; cement; lime; density separation; fluid separation; chemical separation; shaping; shearing; splitting; sawing; forming.

**Performance criteria - you must be able to:**

- P1 identify and monitor environmental impacts and conditions that affect the work activity
- P2 confirm environmental control measures, including those for environmental impacts, environmental aspects and incidents are available and operational, or report as unavailable or defective
- P3 ensure that environmental information in relation to the work activity, location and environmental impacts and aspects is available for use, or reported as unavailable
- P4 dispose of waste
- P5 carry out work activities according to approved policies, procedures and practices.

**Knowledge and understanding - you need to know and understand**

- K1 environmental impacts
- K2 the potential for the environmental impacts of the workplace to affect the areas surrounding or affected by the workplace activities, and the subsequent consequences
- K3 environmental monitoring arrangements associated with the work activity and working environment
- K4 how to report environmental impacts, aspects and incidents
- K5 organisational resources for addressing environmental incidents
- K6 the arrangements for the efficient use of resources in environmental incidents
- K7 the arrangements for waste disposal
- K8 the implications to yourself and the organisation of failure to comply with legislative, environmental regulatory, local authority and organisational environmental requirements
- K9 the sources of help, information and guidance in relation to environmental issues relating to the workplace and areas surrounding or affected by the workplace activities
- K10 the approved policies, procedures and practices in relation to the work activity and working environment.

**Scope/range**

- 1 environmental impacts: associated with the workplace, the areas surrounding and/or affected by the workplace activities, and the workplace activity, including the use of resources, dust, noise, waste, substances, transport
- 2 approved policies, procedures and practices: legislative, organisational, operational, environmental, environmental management, waste management, health and safety, use of resources in environmental incidents, as appropriate to the workplace, areas affected by the workplace and the work activity

**Scope/range related to knowledge and understanding**

- 1 resources: plant, tools, equipment, consumables, labour as applicable to the workplace, work activity and the associated environmental impacts.

**MPQP07**

**PROCESS MATERIALS TO SPECIFICATION**

**Overview:**

This standard is designed to demonstrate your competence to manage the quality and quantity of rock, minerals or mineral products being processed. For quality this would involve you monitoring the material inputs, the transformation process and the quality of outputs. You will be working to a processing specification and this will involve the regular visual monitoring of the transformation process at specified stages and intervals to ensure outputs remain within specified qualitative parameters. Monitoring the quantity of materials processed is also included. During this work account must be taken of the relevant operational requirements and safe working practices. This standard is appropriate for any person, operative or supervisory, who is required to process materials, by any type of plant or equipment, within the extractive, mineral processing or related manufacturing industries.

**Key words:**

processing; process; extractive; mineral; operations; plant; machinery; rock; minerals; safety; equipment; crushing; screening; washing; drying; asphalt; concrete; cement; lime; density; fluid; chemical; monitoring; saw; shape; shear; packing; forming.

**Performance criteria - you must be able to:**

- P1 confirm that the materials for processing are of the type and condition specified
- P2 check there are sufficient materials available to complete the required processing operations
- P3 check that material handling equipment appropriate to the materials and process are available and operational
- P4 check material inputs are of the quality and quantity to be processed
- P5 confirm that instructions and specifications for the processing operations are available
- P6 confirm that all services necessary for the processing operations are operational
- P7 check that all control instrumentation and monitoring devices are displaying the expected information for the processing operations
- P8 check that feed rates of materials comply with the specification and are within the capacity of the processing plant
- P9 monitor the process, dealing with faults and variances in the processing operations or the quantity or quality of materials
- P10 complete reports P11 carry out work activities according to approved policies, procedures and practices.

**Knowledge and understanding - you need to know and understand**

- K1 the instructions and specifications relative to the processing requirement
- K2 how to interpret processing specifications
- K3 the types of materials to be processed and their characteristics
- K4 the conditions that must be maintained for processing the materials
- K5 the provisions that must be made for maintaining the condition of materials before, during and after processing
- K6 the visual indicators regarding the condition of material inputs and outputs
- K7 your responsibilities under health and safety legislation
- K8 the hazards and risks associated with the materials involved in the processing operations, and how these are controlled
- K9 the provisions that must be made for safe handling of materials
- K10 the environmental considerations associated with the processing operations
- K11 the on-line services necessary for maintaining the processing operations
- K12 the types of process control instrumentation and their purpose
- K13 the types and purposes of process monitoring devices, and methods for verifying accuracy of these

K14 the methods of identifying faults and variances during processing operations  
 K15 the precautions to be taken during processing operations  
 K16 the means and method of monitoring quantity and quality  
 K17 the methods of recording quantities and quality of materials processed  
 K18 the approved policies, procedures and practices in the context of your operations, your work activity and your workplace environment.

**Scope/range**

1 processing operations: must provide performance and knowledge evidence in relation to one or more of the following processing operations categories: Crushing/Screening/Washing; Drying; Concrete/Mortar Production; Asphalt/Coated Materials Production; Density/Fluid Separation; Chemical Separation; Forming; Heat Treatment; Sawing/Splitting/Shaping; Packaging; Water Monitoring  
 2 approved policies, procedures and practices: legislative, organisational, operational, emergency, health and safety, and environmental as appropriate to the plant or machinery and work activity.

**Glossary**

Categories of Processing Operations for the E&MPI

1. Crushing/Screening/Washing The reduction in size of as extracted material by mechanical crushing equipment (fixed or mobile), grading by size and water washing of that material. This would also include blending or adding water to meet customer specification.
2. Drying The application of heat in any type of oven to remove excess water from the as extracted or processed material
3. Concrete/Mortar Production The production of concrete, mortar and similar materials, by batch (wet batch or dry batch) or continuous production. It is limited to the production of the material, and does not include the subsequent use of the material to make a product, for example a concrete block by casting/forming.
4. Asphalt/Coated Materials Production The production of asphalt and other similar coated materials by any type of batch or continuous production
5. Density/Fluid Separation Includes all processes to increase the purity and quality of the rock or minerals, or to separate different minerals utilising their differing physical properties (e.g. weight, density, shape, solubility), which may be a dry process or with the assistance of a fluid (e.g. air, water, other liquids).
6. Chemical Separation The separation of rocks or minerals utilising their different chemical properties, or differing reactivity, which may involve the introduction of another chemical substance or substances to select the desired product. Note; this may often be combined with Density/fluid separation. This will also include those operations used to release the separated mineral from the separating additive
7. Forming Moulding, casting, forming, compressing or similar operations to produce a solid product of a shape to meeting customer requirements or aid transportation
8. Heat Treatment The application of higher levels and duration of heat to change the physical or chemical properties of the rock or mineral, e.g.s. calcining, cement production.
9. Sawing/Splitting/Shaping The use of specific plant/machinery to change the physical size and/or shape of a piece of (usually) dimensional stone to meet customer requirements
10. Packaging The partial or total enclosure of the rock or mineral, which would normally be done to aid storage or transportation, or to meet customer requirements.
11. Water Monitoring The extraction of a mineral from a mineral body (solid or broken) or a tip/stockpile by the use of a high pressure water jet.

**MPQPO09**

**RECEIVE, STORE AND HANDLE MATERIALS FOR PROCESSING**

**Overview:**

This standard states the skills, knowledge and understanding required to demonstrate competence in the receiving, storing and handling of materials for processing operations in the extractive, minerals processing and related manufacturing industries. It covers receiving materials and placing them into intermediate storage, handling and using materials. During this work the candidate must take account of the relevant operational requirements and safe working practices. Materials in this sense refers to both the rocks and minerals to be processed, any additive materials or any other consumables required for the processing plant to operate or to produce a processed material This standard is appropriate for any person, operative or supervisory, who is required to receive, store or handle any materials, for any type of processing operation, plant or equipment, within the extractive, mineral processing or related manufacturing industries.

**Key words:**

processing; process; extractive; mineral; operations; plant; machinery; rock; minerals; safety; equipment; crushing; screening; washing; drying; asphalt; concrete; cement; lime; density; fluid; chemical; monitoring; saw; shape; shear; packing; forming; materials.

**Performance criteria - you must be able to:**

- P1 identify materials as the required type and quantity to meet specifications and production schedules
- P2 check that material handling equipment appropriate to the materials are available and operational
- P3 carry out handling of the materials
- P4 store materials
- P5 rectify spillages or loss of materials
- P6 take safeguards to protect yourself, others, the processing operations, the materials and the surrounding environment when handling materials
- P7 check stocks, rotating, using or disposing stock as appropriate
- P8 maintain records of materials according to organisational requirements
- P9 carry out work activities according to approved policies, procedures and practices.

**Knowledge and understanding - you need to know and understand:**

- K1 the types and uses of materials required for the processing operations
- K2 the methods of handling and storing materials
- K3 how and why to check and rotate stocks of materials
- K4 the methods and procedures for the identification and disposal of surplus, poor quality, waste, out of specification or out of date materials
- K5 the precautions to be taken when handling materials
- K6 your responsibilities under health and safety legislation
- K7 the hazards, risks, environmental aspects and impacts associated with the materials involved in the processing operations, and how these are controlled
- K8 emergency procedures in the event of spillage of materials, bodily contact, inhalation or ingestion
- K9 the types and uses of personal protective equipment associated with the work activity and materials
- K10 the approved policies, procedures and practices in the context of your operations, your work activity and your workplace environment.

**Scope/range**

1 processing operations: must provide performance and knowledge evidence in relation to one or more of the following processing operations categories: Crushing/Screening/Washing; Drying; Concrete/Mortar Production; Asphalt/Coated Materials Production; Density/Fluid Separation; Chemical Separation; Forming; Heat Treatment; Sawing/Splitting/Shaping; Packaging; Water Monitoring



- 2 approved policies, procedures and practices: legislative, organisational, operational, emergency, health and safety, and environmental as appropriate to the plant or machinery and work activity
- 3 materials: rocks, minerals, dusts, sands, gravels, additives, processing materials and consumables, or other materials (solid, liquid or gasses) as appropriate to the work activity.

### **Glossary**

#### Categories of Processing Operations for the E&MPI

1. **Crushing/Screening/Washing** The reduction in size of as extracted material by mechanical crushing equipment (fixed or mobile), grading by size and water washing of that material. This would also include blending or adding water to meet customer specification.
2. **Drying** The application of heat in any type of oven to remove excess water from the as extracted or processed material
3. **Concrete/Mortar Production** The production of concrete, mortar and similar materials, by batch (wet batch or dry batch) or continuous production. It is limited to the production of the material, and does not include the subsequent use of the material to make a product, for example a concrete block by casting/forming.
4. **Asphalt/Coated Materials Production** The production of asphalt and other similar coated materials by any type of batch or continuous production.
5. **Density/Fluid Separation** Includes all processes to increase the purity and quality of the rock or minerals, or to separate different minerals utilising their differing physical properties (e.g. weight, density, shape, solubility), which may be a dry process or with the assistance of a fluid (e.g. air, water, other liquids).
6. **Chemical Separation** The separation of rocks or minerals utilising their different chemical properties, or differing reactivity, which may involve the introduction of another chemical substance or substances to select the desired product. Note; this may often be combined with Density/fluid separation. This will also include those operations used to release the separated mineral from the separating additive.
7. **Forming** Moulding, casting, forming, compressing or similar operations to produce a solid product of a shape to meeting customer requirements or aid transportation
8. **Heat Treatment** The application of higher levels and duration of heat to change the physical or chemical properties of the rock or mineral, e.g.s. calcining, cement production.
9. **Sawing/Splitting/Shaping** The use of specific plant/machinery to change the physical size and/or shape of a piece of (usually) dimensional stone to meet customer requirements
10. **Packaging** The partial or total enclosure of the rock or mineral, which would normally be done to aid storage or transportation, or to meet customer requirements.
11. **Water Monitoring** The extraction of a mineral from a mineral body (solid or broken) or a tip/stockpile by the use of a high pressure water jet.

**MPQPO10**

**CARRY OUT ROUTINE MAINTENANCE ON PLANT AND EQUIPMENT**

**Overview:**

This standard is designed to demonstrate your competence to carry out routine maintenance on plant and equipment used to process or store rocks, minerals, or mineral products. It recognises your competence to follow instructions and adopt safe working practices to prepare for and carry out routine maintenance operations to plant and equipment in general use. During this work you must take account of the relevant operational requirements and safe working practices. This standard is appropriate for anyone carrying out routine and basic maintenance on processing and related plant and equipment in the extractives industries. It is not appropriate for engineering personnel.

**Key words:**

processing; process; extractive; mineral; operations; plant; machinery; rock; minerals; safety; equipment; crushing; screening; washing; drying; asphalt; concrete; cement; lime; density; fluid; chemical; monitoring; saw; shape; shear; packing; forming; materials; maintenance.

**Performance criteria - you must be able to:**

- P1 confirm the routine maintenance required for the processing operations from information and instructions
- P2 select the type, quality and quantity of materials and substances for the maintenance activity
- P3 select and check the tools and equipment required for the routine maintenance activity
- P4 carry out routine maintenance activities
- P5 use tools and equipment safely in accordance with the maintenance requirements
- P6 check and store tools and equipment after use
- P7 leave the work area clean, disposing of waste
- P8 report the maintenance activities carried out
- P9 carry out work activities according to approved policies, procedures and practices.

**Knowledge and understanding - you need to know and understand:**

- K1 the types of plant and equipment requiring routine maintenance for the processing operations
- K2 the scope and interpretation of the routine maintenance required
- K3 the different sources of information and instruction relating to the routine maintenance requirements for the plant, equipment and processing operations
- K4 the materials and substances types required for the routine maintenance activities, their purpose and methods of use or application
- K5 how to handle and store the materials and substances required for the routine maintenance activities, and any waste materials or substances
- K6 how to check, use and store maintenance tools and equipment
- K7 your responsibilities under the health and safety statutory requirements
- K8 the types and uses of personal protective equipment associated with the work activity
- K9 the reports, records or documentation to be completed or maintained
- K10 the approved policies, procedures and practices in the context of your operations, your work activity and your workplace environment.

**Scope/range**

- 1 processing operations: must provide performance and knowledge evidence in relation to one or more of the following processing operations categories: Crushing/Screening/Washing; Drying; Concrete/Mortar Production; Asphalt/Coated Materials Production; Density/Fluid Separation; Chemical Separation; Forming; Heat Treatment; Sawing/Splitting/Shaping; Packaging; Water Monitoring
- 2 approved policies, procedures and practices: legislative, organisational, operational, emergency, health and safety, and environmental as appropriate to the processing operations, plant or machinery and work activity

3 information and instruction: organisational policies and procedures; method statements; oral and written instructions; manufacturers' technical information; lubrication charts; risk assessments; permits to work; as appropriate to the processing operations, plant or machinery and work activity.

### **Glossary**

#### Categories of Processing Operations for the E&MPI

1. **Crushing/Screening/Washing** The reduction in size of as extracted material by mechanical crushing equipment (fixed or mobile), grading by size and water washing of that material. This would also include blending or adding water to meet customer specification.
2. **Drying** The application of heat in any type of oven to remove excess water from the as extracted or processed material
3. **Concrete/Mortar Production** The production of concrete, mortar and similar materials, by batch (wet batch or dry batch) or continuous production. It is limited to the production of the material, and does not include the subsequent use of the material to make a product, for example a concrete block by casting/forming.
4. **Asphalt/Coated Materials Production** The production of asphalt and other similar coated materials by any type of batch or continuous production
5. **Density/Fluid Separation** Includes all processes to increase the purity and quality of the rock or minerals, or to separate different minerals utilising their differing physical properties (e.g. weight, density, shape, solubility), which may be a dry process or with the assistance of a fluid (e.g. air, water, other liquids).
6. **Chemical Separation** The separation of rocks or minerals utilising their different chemical properties, or differing reactivity, which may involve the introduction of another chemical substance or substances to select the desired product. Note; this may often be combined with Density/fluid separation. This will also include those operations used to release the separated mineral from the separating additive
7. **Forming** Moulding, casting, forming, compressing or similar operations to produce a solid product of a shape to meeting customer requirements or aid transportation
8. **Heat Treatment** The application of higher levels and duration of heat to change the physical or chemical properties of the rock or mineral, e.g.s. calcining, cement production.
9. **Sawing/Splitting/Shaping** The use of specific plant/machinery to change the physical size and/or shape of a piece of (usually) dimensional stone to meet customer requirements
10. **Packaging** The partial or total enclosure of the rock or mineral, which would normally be done to aid storage or transportation, or to meet customer requirements.
11. **Water Monitoring** The extraction of a mineral from a mineral body (solid or broken) or a tip/stockpile by the use of a high pressure water jet.

**MPQPO05**

**USE TOOLS AND EQUIPMENT FOR ROUTINE AND PREDICTABLE MINERALS PROCESSING REQUIREMENTS**

**Overview:**

This standard is designed for the demonstration of competence in using basic tools and equipment, some of which may be power operated, for routine and predictable requirements, in support of minerals processing activities. This unit builds on general competence in complying with health and safety in the workplace and seeks to extend that into regular practices and procedures when using tools and equipment. Whether dealing with static equipment, hand operated tools or carrying out predictable and routine operations with tools and equipment and small plant, the standard identifies good practice procedures that need to be employed by habit. These standards are aimed at those using basic tools and equipment within their occupational area. This may be occasionally or more regularly, whatever the purpose and frequency of use it is intended to ensure tools and equipment are used correctly and safely. There are several categories of basic tools and equipment across all sectors. Those that typically fall into this area would be tools and equipment used for cleaning, clearing, moving materials and basic maintenance. This standard is applicable to any person working in the extractives, mineral processing and related manufacturing industries and involved in the processing of materials. It does not apply to engineering maintenance personnel and activities, specialised equipment and non-routine situations.

**Key words:**

process; processing; rock; mineral; tools; equipment; extractive.

**Performance criteria - you must be able to:**

- P1 identify and confirm the activities requiring the use of tools and equipment
- P2 carry out checks on tools and equipment
- P3 identify defects with the tools and equipment and report to an authorised person
- P4 use tools and equipment for the work activity
- P5 clean, check and store tools and equipment after use
- P6 carry out work activities according to approved policies, procedures and practices.

**Knowledge and understanding - you need to know and understand:**

- K1 how to identify, clean, check, handle, use and store the tools and equipment required for the work activity
- K2 the types of work activities and the tools and equipment required for the specific processing operations
- K3 the types of defects associated with the tools and equipment required for the work activity
- K4 the actions to be taken should tools or equipment be defective, damaged, unsuitable or inappropriate
- K5 your responsibilities under health and safety regulations
- K6 the approved policies, procedures and practices in the context of the processing operations, environment and the work activity.

**Scope/range**

1 approved policies, procedures and practices: legislative, organisational, operational, emergency, waste disposal, health and safety, and environmental as appropriate to the materials, processing operations, plant or machinery and work activity.

**MPQPO08**
**CARRY OUT SIMPLE SCIENTIFIC OR TECHNICAL TESTS USING MANUAL EQUIPMENT**
**Overview:**

This unit covers the competences you need to carry out simple scientific or technical tests using manual equipment, in accordance with approved procedures and practices. You will be expected to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. You will be expected to complete tasks and procedures and exercise autonomy and judgement subject to overall direction or guidance. You will be required to work to the relevant workplace procedures, legislation and organisational policy, and to use good scientific or technical techniques and practices. On completion of workplace activities, you will be required to show you have completed well-defined, generally routine tasks and can address straightforward problems, selecting and using the relevant scientific or technical skills and procedures. You will be expected to show you have identified, gathered and used relevant information to inform your actions and identify how effective these have been.

Your responsibilities will require you to comply with organisational policy and procedures for the scientific or technical activities undertaken, and to report any problems with the activities, materials or equipment that you cannot personally resolve, or that are outside your permitted authority, to the relevant people. You will work under a team leader, whilst taking responsibility for your own actions in the completion of tasks and procedures, whilst exercising a degree of autonomy and judgement. You will also be responsible for the quality and accuracy of the work that you carry out. Your underpinning knowledge will provide a good understanding of scientific or technical facts, procedures and ideas to complete well-defined tasks and address straightforward problems in the workplace. You will have an understanding of the workplace process used, and its application, and will know about the scientific or technical equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification. You will know how to interpret workplace information and ideas and be aware of the types of resources that are relevant to these scientific or technical activities. You will understand the safety precautions required when carrying out the scientific or technical activities. You will be required to demonstrate safe working practices throughout, and will understand the responsibility you owe to yourself and others in the workplace.

**Key words:**

Laboratory; technical; LATA; scientific; tests; manual; equipment; health and safety; utilities; recording system.,

**Performance criteria - you must be able to:**

- P1 ensure that your work is carried out in accordance with workplace procedures
- P2 use safe practices and the appropriate personal protection equipment (PPE) when doing scientific or technical activities
- P3 obtain the appropriate equipment and materials for the manual tests required
- P4 conduct manual laboratory tests on samples in accordance with the correct procedures and techniques
- P5 record the results of manual tests in accordance with workplace procedures
- P6 dispose of waste items from manual laboratory tests in accordance with workplace procedures
- P7 return equipment and materials that can be used for future testing to the correct storage location
- P8 communicate the required information laboratory activities to authorised people in accordance with departmental and organisational procedures.

**Knowledge and understanding - you need to know and understand:**

Sector specific

- K1 the health and safety requirements of the area in which you are carrying out the scientific or technical activities
- K2 the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities
- K3 the scientific or technical techniques and processes you must use correctly in the workplace

**Organisation specific**

- K4 the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities
- K5 the importance of correct identification, and any unique workplace coding system
- K6 the lines of communication and responsibilities in your department, and their links with the rest of the organisation
- K7 the limits of your own authority and to whom you should report if you have problems that you cannot resolve

**Equipment/Process specific**

- K8 the minimum size/volume of sample required for the scientific or technical tests conducted
- K9 the types of sample and container used for transport and scientific or technical testing
- K10 how to assess if a sample is suitable for analysis
- K11 how to use and take a reading from manual test kits used in the workplace
- K12 the procedure to be followed when samples do not match up with the test output specification or accompanying documentation
- K13 the procedure to be followed when a broken or leaking sample is identified in the workplace
- K14 the procedure to be followed if a hazardous or high risk sample was received in the workplace
- K15 the methods used for numbering and labelling samples in the workplace
- K16 the procedures for storing tested samples when archiving is required
- K17 the factors which might adversely affect the integrity of the sample during storage or transport.

**Scope/range related to performance criteria**

1. carry out all of the following operations for manual equipment: 1.1 transport samples in the workplace, and store them appropriately 1.2 select a suitable work area for the manual tests 1.3 select and set up the necessary equipment correctly 1.4 use the necessary quantity of sample for the manual tests 1.5 dispose of waste safely and correctly 1.6 ensure that the test done meet the specification for the required quality and accuracy
2. use one of the following resources: 2.1 materials 2.2 utilities
3. check two of the following conditions for the scientific or technical test: 3.1 health and safety environment 3.2 time 3.3 recording system 3.4 cleanliness 3.5 external influence giving rise to variations
4. record details of work activities, and communicate the details to the appropriate people, using: 4.1 verbal report plus one method from the following: 4.2 written or typed report 4.3 computer-based record 4.4 specific workplace documentation 4.5 electronic mail.

**MPQPO11**

**CONTRIBUTE TO THE DEPLOYMENT OF PLANT AND EQUIPMENT FOR PROCESSING OPERATIONS**

**Overview:**

This standard states the skills, knowledge and understanding required to demonstrate your competence in the deployment of plant and equipment for minerals processing operations. This unit covers the monitoring of plant and equipment requirements and its availability; the allocation and deployment of plant and equipment on sites and the provision of information and guidance to support those who will use it. 1. Plant and equipment covered by this unit may be mobile or static and relate to extractive and mineral processing operations, including health, safety, welfare or environmental equipment required for the operation of the plant and equipment. You will require a range of knowledge and understanding including: the normal operational parameters of the plant and equipment you are allocating and deploying or re-deploying; the conditions appropriate to its safe and efficient operation and use; the servicing and maintenance schedules;; conditions applying to operators including the health and safety regulations applying to operation and maintenance. This standard is appropriate for any person, operative or supervisory, who is involved in the deployment of any type of plant or equipment, for any type of processing operation within the extractive, mineral processing or related manufacturing industries.

**Key words:**

processing; process; extractive; mineral; operations; plant; machinery; rock; minerals; safety; equipment; crushing; screening; washing; drying; asphalt; concrete; cement; lime; density; fluid; chemical; monitoring; saw; shape; shear; packing; forming; materials; maintenance.

**Performance criteria - you must be able to:**

- P1 prepare or maintain a record of plant and equipment used to support the processing operations in your area of responsibility
- P2 obtain plant and equipment and check it meets requirements
- P3 check that arrangements for the security, storage, handling and operating minimise risks of loss and damage to plant and equipment
- P4 check that schedules for routine maintenance are maintained that optimise the availability of plant and equipment
- P5 check that the materials, tools and equipment required for routine maintenance and repair are available
- P6 check that a current list of maintenance and repair companies or individuals is available
- P7 ensure proposals for improving the utilisation and maintenance of plant or equipment are passed to the appropriate people
- P8 allocate and deploy sufficient plant and equipment of the type to meet operational requirements
- P9 identify and assess potential health and safety hazards, and advise on safeguards that will reduce risk
- P10 monitor work activities to ensure that plant and equipment remains suitable for the task and take appropriate action when required
- P11 communicate instructions or information to relevant persons for the operation or deployment of plant or equipment
- P12 maintain records according to organisational requirements
- P13 carry out work activities according to approved policies, procedures and practices.

**Knowledge and understanding - you need to know and understand:**

- K1 the types and uses of plant and equipment, including their performance specifications in relation to the work activity
- K2 how to communicate plant or equipment requirements to relevant persons
- K3 how to prepare or maintain records of plant and equipment requirements
- K4 how to check that plant and equipment is fit for purpose
- K5 how to optimise the utilisation of plant and equipment
- K6 handling, storage and security arrangements for plant and equipment in your area of responsibility
- K7 maintenance scheduling

- K8 the statutory requirements of suppliers and operators for the maintenance, inspection, examination and testing of plant and equipment, and certification where required
- K9 the materials and tools required for routine maintenance of plant and equipment in your area of responsibility
- K10 the sources of plant, equipment and maintenance support
- K11 how to allocate and deploy plant to meet operational requirements
- K12 the hazards, risks, environmental aspects and impacts associated with the plant and equipment involved in the processing operations, and how these are controlled
- K13 how to assess risk
- K14 how to assess impact of variances in operating conditions on the performance of plant or equipment
- K15 how to record plant and equipment allocation, utilisation and performance
- K16 the approved policies, procedures and practices in the context of your work activity and your workplace environment.

**Scope/range**

- 1 processing operations: must provide performance and knowledge evidence in relation to one or more of the following processing operations categories: Crushing/Screening/Washing; Drying; Concrete/Mortar Production; Asphalt/Coated Materials Production; Density/Fluid Separation; Chemical Separation; Forming; Heat Treatment; Sawing/Splitting/Shaping; Packaging; Water Monitoring
- 2 approved policies, procedures and practices: legislative, organisational, operational, emergency, health and safety, and environmental as appropriate to the plant or machinery and work activity
- 3 relevant persons: supervision; maintenance staff; other operational staff.

**Glossary**

Categories of Processing Operations for the E&MPI

- 1. Crushing/Screening/Washing The reduction in size of as extracted material by mechanical crushing equipment (fixed or mobile), grading by size and water washing of that material. This would also include blending or adding water to meet customer specification.
- 2. Drying The application of heat in any type of oven to remove excess water from the as extracted or processed material
- 3. Concrete/Mortar Production The production of concrete, mortar and similar materials, by batch (wet batch or dry batch) or continuous production. It is limited to the production of the material, and does not include the subsequent use of the material to make a product, for example a concrete block by casting/forming.
- 4. Asphalt/Coated Materials Production The production of asphalt and other similar coated materials by any type of batch or continuous production
- 5. Density/Fluid Separation Includes all processes to increase the purity and quality of the rock or minerals, or to separate different minerals utilising their differing physical properties (e.g. weight, density, shape, solubility), which may be a dry process or with the assistance of a fluid (e.g. air, water, other liquids).
- 6. Chemical Separation The separation of rocks or minerals utilising their different chemical properties, or differing reactivity, which may involve the introduction of another chemical substance or substances to select the desired product. Note; this may often be combined with Density/fluid separation. This will also include those operations used to release the separated mineral from the separating additive
- 7. Forming Moulding, casting, forming, compressing or similar operations to produce a solid product of a shape to meeting customer requirements or aid transportation
- 8. Heat Treatment The application of higher levels and duration of heat to change the physical or chemical properties of the rock or mineral, e.g.s. calcining, cement production.
- 9. Sawing/Splitting/Shaping The use of specific plant/machinery to change the physical size and/or shape of a piece of (usually) dimensional stone to meet customer requirements
- 10. Packaging The partial or total enclosure of the rock or mineral, which would normally be done to aid storage or transportation, or to meet customer requirements.
- 11. Water Monitoring The extraction of a mineral from a mineral body (solid or broken) or a tip/stockpile by the use of a high pressure water jet.



**MPQPO12**
**SOLVE PROCESSING PROBLEMS**
**Overview:**

This standard is designed to demonstrate your competence in solving problems associated with minerals processing operations. This unit covers recognising the existence of problems, diagnosing their underlying causes, selecting standard solutions and implementing approved solutions to routine problems. You will require a range of knowledge and understanding including: the normal operational parameters of any system you are operating, purpose of approved procedures; identifying the correct solutions to problems; health and safety regulations; effective communication; quality assurance; and operational efficiency. During this work the candidate must take account of the relevant operational requirements and safe working practices. This standard is applicable to operatives or supervisors of processing operations in the extractives industries who have responsibility for solving identified problems in the processing operation.

**Key words:**

processing; process; extractive; mineral; operations; plant; machinery; rock; minerals; safety; equipment; crushing; screening; washing; drying; asphalt; concrete; cement; lime; density; fluid; chemical; monitoring; saw; shape; shear; packing; forming; materials; maintenance.

**Performance criteria - you must be able to:**

- P1 identify that a problem has occurred with the plant, equipment or the processing operations in your area of responsibility
- P2 seek information, assistance or support to identify problems and causes
- P3 identify the problem and its cause
- P4 estimate the effects of the problem on the processing activity
- P5 estimate the implications of the problem on other activities and stakeholders
- P6 develop solutions to the problem
- P7 agree solutions with relevant persons
- P8 initiate operational contingency plans whilst the problem is addressed
- P9 implement action to resolve the problem
- P10 monitor processing operations to check the implemented solution has resolved the problem
- P11 report problems, solutions and changes to relevant persons
- P12 carry out work activities according to approved policies, procedures and practices.

**Knowledge and understanding - you need to know and understand:**

- K1 the operational characteristics of the processing operations in your area of responsibility
- K2 the normal operational parameters of the processing operations including the manner in which it affects other processes or activities
- K3 the purpose and methods of monitoring the processing operations
- K4 the benefits that effective monitoring can bring in particular to quality assurance and the continuous improvement of operational activities and their outcomes
- K5 when the processing operations are out of normal operating parameters
- K6 organisational reporting arrangements and relevant persons in relation to problems and solutions
- K7 the sources of information, assistance or support in relation to problems, the location and work activity
- K8 the potential consequences of abnormal or stopped operation on other operations and processes, and on health, safety and the environment
- K9 how to identify the correct solution to a range of problems within the processing operations
- K10 the purpose of approved policies, procedures and practices and why they need to be followed
- K11 the approved policies, procedures and practices in the context of your work activity and your workplace environment.

**Scope/range**

- 1 processing operations: must provide performance and knowledge evidence in relation to one or more of the following processing operations categories: Crushing/Screening/Washing; Drying; Concrete/Mortar Production; Asphalt/Coated Materials Production; Density/Fluid Separation; Chemical Separation; Forming; Heat Treatment; Sawing/Splitting/Shaping; Packaging; Water Monitoring
- 2 approved policies, procedures and practices: legislative, organisational, operational, emergency, health and safety, and environmental as appropriate to the plant or machinery and work activity
- 3 relevant persons: supervision; maintenance staff; other operational staff.

**Glossary**

Categories of Processing Operations for the E&MPI

- 1. Crushing/Screening/Washing The reduction in size of as extracted material by mechanical crushing equipment (fixed or mobile), grading by size and water washing of that material. This would also include blending or adding water to meet customer specification.
- 2. Drying The application of heat in any type of oven to remove excess water from the as extracted or processed material
- 3. Concrete/Mortar Production The production of concrete, mortar and similar materials, by batch (wet batch or dry batch) or continuous production. It is limited to the production of the material, and does not include the subsequent use of the material to make a product, for example a concrete block by casting/forming.
- 4. Asphalt/Coated Materials Production The production of asphalt and other similar coated materials by any type of batch or continuous production
- 5. Density/Fluid Separation Includes all processes to increase the purity and quality of the rock or minerals, or to separate different minerals utilising their differing physical properties (e.g. weight, density, shape, solubility), which may be a dry process or with the assistance of a fluid (e.g. air, water, other liquids).
- 6. Chemical Separation The separation of rocks or minerals utilising their different chemical properties, or differing reactivity, which may involve the introduction of another chemical substance or substances to select the desired product. Note; this may often be combined with Density/fluid separation. This will also include those operations used to release the separated mineral from the separating additive
- 7. Forming Moulding, casting, forming, compressing or similar operations to produce a solid product of a shape to meeting customer requirements or aid transportation
- 8. Heat Treatment The application of higher levels and duration of heat to change the physical or chemical properties of the rock or mineral, e.g.s. calcining, cement production.
- 9. Sawing/Splitting/Shaping The use of specific plant/machinery to change the physical size and/or shape of a piece of (usually) dimensional stone to meet customer requirements
- 10. Packaging The partial or total enclosure of the rock or mineral, which would normally be done to aid storage or transportation, or to meet customer requirements.
- 11. Water Monitoring The extraction of a mineral from a mineral body (solid or broken) or a tip/stockpile by the use of a high pressure water jet.

**MPQPO0814**

**CARRY OUT SAMPLING OPERATIONS FOR SCIENTIFIC OR TECHNICAL TESTS**

**Overview:**

This unit covers the competences you need to carry out sampling operations for scientific or technical tests, in accordance with approved procedures and practices. You will be expected to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. You will be expected to complete tasks and procedures and exercise autonomy and judgement subject to overall direction or guidance. You will be required to work to the relevant workplace procedures, legislation and organisational policy, and to use good scientific or technical techniques and practices. On completion of workplace activities, you will be required to show you have completed well-defined, generally routine tasks and can address straightforward problems, selecting and using the relevant scientific or technical skills and procedures. You will be expected to show you have identified, gathered and used relevant information to inform your actions and identify how effective these have been. Your responsibilities will require you to comply with organisational policy and procedures for the scientific or technical activities undertaken, and to report any problems with the activities, materials or equipment that you cannot personally resolve, or that are outside your permitted authority, to the relevant people.

You will work under a team leader, whilst taking responsibility for your own actions in the completion of tasks and procedures, whilst exercising a degree of autonomy and judgement. You will also be responsible for the quality and accuracy of the work that you carry out. Your underpinning knowledge will provide a good understanding of scientific or technical facts, procedures and ideas to complete well-defined tasks and address straightforward problems in the workplace. You will have an understanding of the workplace process used, and its application, and will know about the scientific or technical equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification. You will know how to interpret workplace information and ideas and be aware of the types of resources that are relevant to these scientific or technical activities. You will understand the safety precautions required when carrying out the scientific or technical activities. You will be required to demonstrate safe working practices throughout, and will understand the responsibility you owe to yourself and others in the workplace.

**Key words:**

Laboratory; technical; LATA; sampling; operations; scientific; tests; preservation; transportation; aseptic container.

**Performance criteria - you must be able to:**

- P1 ensure that your work is carried out in accordance with workplace procedures
- P2 use safe practices and the appropriate personal protection equipment (PPE) when doing scientific or technical activities
- P3 ensure that the correct equipment and materials for the sampling process are available for use
- P4 collect samples in the parameters specified in the standard operating procedure
- P5 label and identify collected samples correctly
- P6 maintain the condition of the samples and store in the correct location
- P7 communicate the required information laboratory activities to authorised people in accordance with departmental and organisational procedures.

**Knowledge and understanding - you need to know and understand:**

Sector specific

- K1 the health and safety requirements of the area in which you are carrying out the scientific or technical activities
- K2 the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities
- K3 the scientific or technical techniques and processes you must use correctly in the workplace.

**Organisation specific**

- K4 the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities
- K5 the importance of correct identification, and any unique workplace coding system
- K6 the lines of communication and responsibilities in your department, and their links with the rest of the organisation
- K7 the limits of your own authority and to whom you should report if you have problems that you cannot resolve

**Equipment/Process specific**

- K8 the sampling methods and procedures used in the environment where they are taken
- K9 the range of equipment and materials used for sampling in the environment where they are taken
- K10 the documentation and labelling systems that should be used to ensure sample traceability after sampling
- K11 the methods used for keeping records of sampling operations, and why this is important
- K12 the principles and techniques of maintaining the sample integrity following collection
- K13 how to identify defective sampling equipment, and the actions to be taken
- K14 the methods used for the handling, storage and disposal of materials
- K15 the materials and methods used in the sampling process.

**Scope/range related to performance criteria**

1. collect samples following all of the following operations: 1.1 adhering to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations 1.2 checking that all the equipment is in a safe and usable working condition (such as undamaged, safety devices in place and operational) 1.3 ensuring that sufficient quantities of all required materials are obtained 1.4 obtaining all the necessary data, documentation and specifications for the sampling process 1.5 collecting and labelling samples in the required quantities 1.6 cleaning/disposing of sampling equipment and materials appropriately 1.7 ensuring that the work area is clear and tidy, and that waste is disposed of in the correct manner 1.8 ensuring that safe working practices and procedures are applied at all times
2. collect samples using five of the following parameters: 2.1 location for sampling 2.2 sampling access points 2.3 sampling duration 2.4 sample cycle time 2.5 sampling frequency 2.6 other (please specify)
3. maintain the condition of samples by two of the following methods: 3.1 preservation 3.2 aseptic container 3.3 transportation 3.4 other (please specify)
4. record and communicate details of the work done, to the appropriate people, using: 4.1 verbal report plus one method from the following: 4.2 written or typed report 4.3 computer-based record 4.4 specific workplace documentation 4.5 electronic mail.

**MPQPO18**

**POSITION MOBILE PROCESSING PLANT FOR OPERATIONAL PERFORMANCE**

**Overview:**

Increasingly the Extractive, Mineral Processing and related Manufacturing Industries are using processing plant that, on completion of a processing operating cycle, can be moved, usually under its own power, to a new position for the next operating cycle. The particular types of plant can also move to and from parking areas, workshops for maintenance or to and from transportation (rail or low-loaders). This standard is about the safe movement of the processing plant to its required position. It covers preparation for movement, driving to the required position, and securing after movement. This standard would apply to anyone carrying out this function: the processing plant operator (employee or contractor), a maintenance person, haulage driver, or any other authorised person.

**Key words:**

crushing; screening; washing; drying; concrete; mortar; asphalt; coated materials; density; fluid separation; chemical separation; forming; heat treatment; sawing; splitting; shaping; packaging; water monitoring; processing; mineral; rock; extraction; quarrying; mining; dredging; mobile; mobile plant.

**Performance criteria - you must be able to:**

- P1 confirm the movement required
- P2 set up the plant for safe movement
- P3 carry out pre-start and pre-movement checks
- P4 check the route and intended new operating position are suitable
- P5 drive the plant to the new position according to organisational procedures
- P6 set up the plant for processing operations
- P7 carry out all work activities in accordance with approved policies, procedures and practices.

**Knowledge and understanding - you need to know and understand:**

- K1 manufacturer's recommendations for moving the plant
- K2 how and why to prepare the plant for movement
- K3 how and why to carry out pre-start and pre-movement checks
- K4 how and why to check the condition and suitability of routes and working areas
- K5 how and why to check the plant after movement and set it up for processing operations
- K6 organisational communications procedures relating to plant movement
- K7 organisational procedures in the event of a problem occurring
- K8 emergency shutdown procedures
- K9 the approved policies, procedures and practices for the work activity and location.

**Scope/range**

- 1 processing operations: must provide performance and knowledge evidence in relation to one or more of the following processing operations categories: Crushing/Screening/Washing; Drying; Concrete/Mortar Production; Asphalt/Coated Materials Production; Density/Fluid Separation; Chemical Separation; Forming; Heat Treatment; Sawing/Splitting/Shaping; Packaging; Water Monitoring
- 2 approved policies, procedures and practices: legislative, organisational, operational, emergency, waste disposal, health and safety, and environmental as appropriate to the process, materials, plant or machinery and work activity.

**Glossary**

Categories of Processing Operations for the E&MPI

- 1. Crushing/Screening/Washing The reduction in size of as extracted material by mechanical crushing equipment (fixed or mobile), grading by size and water washing of that material. This would also include blending or adding water to meet customer specification.

2. **Drying** The application of heat in any type of oven to remove excess water from the as extracted or processed material
3. **Concrete/Mortar Production** The production of concrete, mortar and similar materials, by batch (wet batch or dry batch) or continuous production. It is limited to the production of the material, and does not include the subsequent use of the material to make a product, for example a concrete block by casting/forming.
4. **Asphalt/Coated Materials Production** The production of asphalt and other similar coated materials by any type of batch or continuous production
5. **Density/Fluid Separation** Includes all processes to increase the purity and quality of the rock or minerals, or to separate different minerals utilising their differing physical properties (e.g. weight, density, shape, solubility), which may be a dry process or with the assistance of a fluid (e.g. air, water, other liquids).
6. **Chemical Separation** The separation of rocks or minerals utilising their different chemical properties, or differing reactivity, which may involve the introduction of another chemical substance or substances to select the desired product. Note; this may often be combined with Density/fluid separation. This will also include those operations used to release the separated mineral from the separating additive
7. **Forming Moulding, casting, forming, compressing or similar operations** to produce a solid product of a shape to meeting customer requirements or aid transportation
8. **Heat Treatment** The application of higher levels and duration of heat to change the physical or chemical properties of the rock or mineral, e.gs. calcining, cement production.
9. **Sawing/Splitting/Shaping** The use of specific plant/machinery to change the physical size and/or shape of a piece of (usually) dimensional stone to meet customer requirements
10. **Packaging** The partial or total enclosure of the rock or mineral, which would normally be done to aid storage or transportation, or to meet customer requirements.
11. **Water Monitoring** The extraction of a mineral from a mineral body (solid or broken) or a tip/stockpile by the use of a high pressure water jet.

**MPQPO15**

**LEAD THE WORK OF TEAMS AND INDIVIDUALS TO ACHIEVE THEIR OBJECTIVES IN THE EXTRACTIVE AND MINERAL PROCESSING INDUSTRY**

**Overview:**

This standard states the skills, knowledge and understanding required to demonstrate your competence in leading your team and its members, making best use of them to achieve their objectives. It includes planning and assessing work, and giving feedback. This standard is for you if you are a manager or supervisor with a tightly defined area of responsibility, some limited opportunity for taking decisions and managing budgets, with responsibility for achieving specific results by using resources effectively, and responsibility for allocating work to team members, colleagues or contractors.

**Key words:**

processing; process; extractive; mineral; operations; plant; machinery; rock; minerals; safety; equipment; crushing; screening; washing; drying; asphalt; concrete; cement; lime; density; fluid; chemical; monitoring; saw; shape; shear; packing; forming; materials; maintenance; leadership; plan; assess; feedback; lead; team.

**Performance criteria - you must be able to:**

- P1 give opportunities to your team members to contribute to the planning and organisation of their work
- P2 make plans that are consistent with your team's objectives, realistic and achievable within organisational constraints
- P3 explain to your team members your plans and their work activities in sufficient detail and at a level and pace appropriate to them
- P4 confirm your team members' understanding of your plans and their work activities
- P5 update your plans at regular intervals to take account of individual, team and organisational changes
- P6 assess the work of teams or individuals, based on sufficient and valid information and against clear agreed criteria
- P7 provide feedback to your team members in a situation and in a form and manner most likely to maintain and improve performance
- P8 give feedback that is clear and is based on an objective assessment of your team members' work
- P9 recognise team members' achievements and provides constructive suggestions and encouragement for improving their work
- P10 give opportunities to team members to respond to feedback and suggestions.

**Knowledge and understanding - you need to know and understand:**

- K1 the importance of effective communication when explaining work plans and activities
- K2 the importance of providing your team members with the opportunity to contribute to the planning and organisation of their work
- K3 the types of organisational constraints which influence your planning
- K4 the importance of planning work activities to organisational effectiveness and your role and responsibilities in relation to this
- K5 how to develop realistic and achievable work plans for teams and individuals both in the short and medium term
- K6 the team's objectives and how your plans succeed in meeting these
- K7 the difference between someone who is within your line management control and someone for whom you have functional responsibility, and the implications this difference may have for planning work
- K8 how to present work plans in a way that gains the support and commitment of those involved
- K9 the importance of regularly reviewing work
- K10 the principles of fair and objective assessment of work and how to ensure this is achieved
- K11 the importance of assessing the ongoing work of teams and individuals and your role and responsibilities in relation to this
- K12 the importance of providing opportunities to your team members to assess their own work and how you can enable and encourage this involvement

- K13 the importance of being clear yourself about the purpose of assessment and of communicating this effectively to those involved
- K14 how to gather and evaluate the information you need to assess the work of teams and individuals
- K15 the purposes of work assessment, why work assessment plays a role in an organisation and how they apply to your own situation
- K16 how to assess the work of teams and individuals, and processes in the workplace which can support such assessments
- K17 the importance of good communication skills when providing feedback
- K18 the principles of confidentiality when providing feedback, and who should receive which pieces of information
- K19 how to give both positive and negative feedback to team members on their performance
- K20 how to choose an appropriate time and a place to give feedback to teams and individuals
- K21 how to give feedback in a way which encourages your team members to feel that you respect them
- K22 the importance of providing clear and accurate feedback to your team members on their performance and your role and responsibilities in relation to this
- K23 how to motivate team members and gain their commitment by providing feedback
- K24 the importance of being encouraging when providing feedback to team members and showing respect for those involved
- K25 why it is important to provide constructive suggestions on how performance can be improved
- K26 the importance of giving those involved the opportunity to provide suggestions on how to improve their work.

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**MPQPO17**

**MANAGE PHYSICAL RESOURCES FOR PROCESSING ACTIVITIES**



<p><b>Overview:</b></p> <p>This standard states the skills, knowledge and understanding required to demonstrate your competence in about ensuring the availability of the physical resources (equipment, materials, premises, services and energy supplies) required to carry out planned activities in your area of responsibility. It involves identifying the resources required, taking action to obtain these resources, planning how they will be used effectively, efficiently, sustainably, safely and securely, monitoring resource use and taking corrective action, if required. This standard is appropriate for managers, supervisors, or senior operatives additional supervisory or control who are involved in the managing physical resources, for any type of processing operation within the extractive, mineral processing or related manufacturing industries.</p> <p><b>Key words:</b></p> <p>processing; process; extractive; mineral; operations; plant; machinery; rock; minerals; safety; equipment; crushing; screening; washing; drying; asphalt; concrete; cement; lime; density; fluid; chemical; monitoring; saw; shape; shear; packing; forming; materials; maintenance; resources; tools; equipment; consumables</p>
<p><b>Performance criteria - you must be able to:</b></p> <p>P1 evaluate past patterns of resource use, trends and developments likely to affect future demand for physical resources required for the processing operations in your area of responsibility</p> <p>P2 identify the range and quantity of physical resources required for the planned processing operations in your area of responsibility, including likely contingencies</p> <p>P3 make arrangements with suppliers for physical resources to be supplied</p> <p>P4 agree amendments to your planned activities when physical resources are not available</p> <p>P5 take action to ensure the security and safe use of physical resources</p> <p>P6 continuously monitor the quality and patterns of use of physical resources</p> <p>P7 take timely corrective action to deal with any significant discrepancies between actual and planned use of physical resources</p> <p>P8 maintain records according to organisational requirements P9 carry out work activities according to approved policies, procedures and practices.</p>
<p><b>Knowledge and understanding - you need to know and understand:</b></p> <p>K1 how to identify the range and calculate the quantity of physical resources required to carry out planned processing operations</p> <p>K2 why it is important to involve those who use physical resources in identifying, planning and monitoring resources, and how to do so</p> <p>K3 who can assist in the identification of the physical resources required, planning and monitoring their use</p> <p>K4 how to develop an operational plan and make adjustments to the plan</p> <p>K5 how to make arrangements with suppliers to ensure physical resources are available when required</p> <p>K6 the hazards, risks and environmental aspects associated with the types of physical resources used for the work activity</p> <p>K7 the actions you can take to ensure the security and safe use of physical resources</p> <p>K8 the importance of continuously monitoring the quality and use of physical resources, and how to do this</p> <p>K9 the sources of information on past patterns of physical resources use in your area of responsibility and how to access this information</p> <p>K10 trends and developments that could affect future demand for physical resources in your area of responsibility and how to evaluate the likely impact of these</p> <p>K11 the planned activities in your area of activity and possible contingencies</p> <p>K12 how to identify the suppliers of the physical resources you need K13 the limits of your personal authority to obtain and use physical resources</p> <p>K14 the possible consequences of failure to manage physical resources in your area of responsibility</p> <p>K15 the approved policies, procedures and practices in the context of your work activity and your workplace environment.</p>
<p><b>Scope/range</b></p>

- 1 processing operations: must provide performance and knowledge evidence in relation to one or more of the following processing operations categories: Crushing/Screening/Washing; Drying; Concrete/Mortar Production; Asphalt/Coated Materials Production; Density/Fluid Separation; Chemical Separation; Forming; Heat Treatment; Sawing/Splitting/Shaping; Packaging; Water Monitoring
- 2 approved policies, procedures and practices: legislative, organisational, operational, emergency, health and safety, and environmental as appropriate to the plant or machinery and work activity
- 3 physical resources: tools and equipment, materials, consumables, premises, services, energy supplies and other physical resources as applicable to the processing activity and your area of personal responsibility.

**Glossary**

Categories of Processing Operations for the E&MPI

- 1. Crushing/Screening/Washing The reduction in size of as extracted material by mechanical crushing equipment (fixed or mobile), grading by size and water washing of that material. This would also include blending or adding water to meet customer specification.
- 2. Drying The application of heat in any type of oven to remove excess water from the as extracted or processed material
- 3. Concrete/Mortar Production The production of concrete, mortar and similar materials, by batch (wet batch or dry batch) or continuous production. It is limited to the production of the material, and does not include the subsequent use of the material to make a product, for example a concrete block by casting/forming.
- 4. Asphalt/Coated Materials Production The production of asphalt and other similar coated materials by any type of batch or continuous production
- 5. Density/Fluid Separation Includes all processes to increase the purity and quality of the rock or minerals, or to separate different minerals utilising their differing physical properties (e.g. weight, density, shape, solubility), which may be a dry process or with the assistance of a fluid (e.g. air, water, other liquids).
- 6. Chemical Separation The separation of rocks or minerals utilising their different chemical properties, or differing reactivity, which may involve the introduction of another chemical substance or substances to select the desired product. Note; this may often be combined with Density/fluid separation. This will also include those operations used to release the separated mineral from the separating additive
- 7. Forming Moulding, casting, forming, compressing or similar operations to produce a solid product of a shape to meeting customer requirements or aid transportation
- 8. Heat Treatment The application of higher levels and duration of heat to change the physical or chemical properties of the rock or mineral, e.g.s. calcining, cement production.
- 9. Sawing/Splitting/Shaping The use of specific plant/machinery to change the physical size and/or shape of a piece of (usually) dimensional stone to meet customer requirements
- 10. Packaging The partial or total enclosure of the rock or mineral, which would normally be done to aid storage or transportation, or to meet customer requirements.
- 11. Water Monitoring The extraction of a mineral from a mineral body (solid or broken) or a tip/stockpile by the use of a high pressure water jet.

**Version 1 January 2014 – MPQC**

**MPQPO03**

**SUPERVISE HEALTH, SAFETY AND ENVIRONMENTAL PRACTICE IN EXTRACTIVES INDUSTRIES SITES**

**Overview:**

This standard is about maintaining and improving performance within the extractive industries site/s in relation to health, safety and the environment. It is also concerned with promoting the achievements of the site and organisation to all people who are under the control of the supervisor, encouraging them to understand their role and responsibilities and how they can bring about improvements to health, safety and environmental performance. To assist in achieving these ends appropriate training must be identified, recommended, implemented and then evaluated. This standard is for you if you are a supervisor with responsibility for a section or sections of an extractives industry operational site working under the direction of a manager.

**Key words:**

processing; manufacturing; quarry; crushing; screening; asphalt; concrete; cement; drying; heat treatment; forming; separation; sawing; mineral; extractive.

**Performance criteria - you must be able to:**

- P1 present the benefits of continuous improvements to health, safety and environmental performance in line with the organisation's policies
- P2 promote awareness and achievement in health, safety and environmental matters
- P3 provide accurate, up to date information on health, safety and environmental matters
- P4 encourage individuals in the workplace to improve health, safety and environmental performance
- P5 encourage individuals in the workplace to offer suggestions for improving health, safety and environmental performance
- P6 assist individuals in the workplace to understand their health, safety and environmental responsibilities
- P7 provide opportunities for individuals to discuss areas of concern
- P8 encourage individuals to identify their training needs
- P9 identify training needs that meet the occupational needs of the workplace and individuals
- P10 implement and monitor training in accordance with agreed training plans
- P11 encourage individuals to provide feedback on training activities
- P12 ensure individual training records are kept conforming to organisational requirements
- P13 keep up to date with health, safety and environmental regulations and practice that affect the workplace under your supervision.

**Knowledge and understanding - you need to know and understand:**

- K1 the benefits to individuals and the organisation from improved health, safety and environmental performance
- K2 the consequences of failing to improve health, safety and environmental performance
- K3 the benefits of participation of persons at work
- K4 how to communicate to individuals and groups in the workplace
- K5 how to identify and use effective opportunities to promote awareness and understanding of health, safety and environmental issues
- K6 sources of supporting information, resources and materials
- K7 how to publicise achievements
- K8 the range of available presentational techniques and how to use them
- K9 the organisation's procedures for publicising health, safety and environmental matters
- K10 the organisation's achievements in health, safety and environmental management
- K11 the organisational record keeping requirements in relation to health, safety and the environment
- K12 how to identify training needs
- K13 how to organise and monitor training
- K14 how to encourage feedback and assess the effectiveness of training
- K15 key aspects of current health, safety and environmental legislation, regulation or operating conditions applicable to the workplace under your supervision
- K16 the workplace health, safety and environmental performance and identified improvements
- K17 health and safety hazards and risks associated with the work activity
- K18 environmental aspects and impacts associated with the work activity
- K19 organisational and workplace training requirements.

**Scope/range related to performance criteria**



1 training requirements: health and safety induction; environmental induction; refresher training; use of fire extinguishers; manual handling; incident and emergency procedures; use of personal protective equipment; mobile plant; fixed plant; waste disposal and recycling; reporting of problems in connection with emissions to air, releases to water and contamination of ground; material and product handling; control and reporting of spills; key aspects of legislation, regulations or conditions applicable to the workplace; use of explosives (where applicable); safe working at height; safe working in confined spaces; hazardous materials; geotechnical awareness (as applicable to the site); site security.

**Version 1 January 2014 – MPQC**

## **APPENDIX 3 - ASSESSMENT TEMPLATE DOCUMENTS**

**3A: Sample Form  
Assessment plan and review**

Candidate name:	
Employer/location:	Date:
*	
Assessor:	
Period of Review: <small>(should not normally exceed 12 weeks)</small>	Proposed Date for next review:

**Part 1 – Activities / Tasks / Learning / Training** undertaken since last review:

**Part 2a – ‘Progress to date’** specifying units/elements/modules achieved to date (the progress recorded **must** tie in with the associated ‘**Summary of Achievement Record**’):

**Part 2b – Identified **barriers**** to progress (please detail here any issues relating to the programme delivery, which have impacted negatively on progress e.g. attendance times, learning difficulties, suitability of training/learning materials, physical barriers to participation, health issues, attitude etc):

\*

**Part 2c – Solutions** proposed to address the above barriers:

<p><b>Part 3 – Agreed ‘assessment planning’ &amp; action required for the next review</b> (<u>proposed methods of evidence collection must be recorded &amp; proposed assessment methods must be selected</u>):</p> <p><i><b>N.B.</b> Methods of evidence collection may include: either hard copy records or electronic records such as audio recordings, scanned documents, photographs etc.</i></p>	<p>Element:</p> <p>Proposed Assessment Methods/Sources of Evidence:</p>							
	CrossRef	RPL	OBS	Questioning	PS	WR	D	WT
<p><b>Key: Assessment Methods/Sources of Evidence</b></p> <p><b>CrossRef</b> = Cross Referencing    <b>RPL</b>= Recognition of Prior Learning  <b>OBS</b> = Observation                    <b>PS</b> = Personal Statement  <b>WR</b> = Work Record                    <b>D</b> = Discussion  <b>WT</b>= Witness Testimony</p>								



**Part 4** – Additional comments / issues (e.g. health & safety issues):

**Part 5** – Candidate comments/feedback/evaluation:

**Part 6** – Employer comments on progression and achievement noted in **Part 2a**:

**Part 7** – Assessor Feedback/Assessment Judgements/Decisions/Outcome

Candidate Signature: ..... Date: .....

Assessor Signature: ..... Date: .....

Employer Signature (where present): ..... Date: .....

Employer Name and position: .....

### **3B: Sample Form**

#### **Assessor report**

**Qualification:**



<b>Candidate:</b>	
<b>Assessor:</b>	
<b>Date:</b>	
<b>Unit/ element:</b>	
<b>Location/ circumstance:</b>	
<b>Details of observation/ question/ answers/ discussion</b>	<b>Ref</b>
<b>Details of observation/ question/ answers/ discussion</b>	<b>Ref</b>
<b>Details of observation/ question/ answers/ discussion</b>	<b>Ref</b>
<b>Assessors comments</b> (state whether candidate is competent)	
<b>Assessor signature</b>	
<b>Candidate signature</b>	

**3C: Sample Form  
Witness testimony**





Qualification: .....

Unit: .....

Element(s): .....

Candidate Name: .....

Witness Name: .....

Witness Contact Details: .....

.....

Describe your construction and any assessment qualifications/ experience:

.....

.....

.....

Describe your relationship with the candidate:

.....

.....

Date of evidence: .....

**Testimony and comment on candidate's performance**

.....

.....

.....

.....

.....

.....

.....

Witness Signature & Date: .....

Candidate Signature & Date: .....

Assessor Signature & Date: .....

**3D: Sample Form  
Candidate personal statement**

**Qualification:**

**Candidate name:**



Element(s)	Date	Statement / evidence
Candidate's signature:		
Assessor's signature: Date:		

**APPENDIX 4 - ASSESSOR TEMPLATE DOCUMENTS**



Unit progress record		
Qualification:		
Unit title:		
I confirm that the candidate has been assessed as competent for this unit		
Assessor name	Assessor signature	Date
I confirm that I have been assessed as competent and that the evidence produced is from work that is all mine		
Candidate name	Candidate signature	Date
I confirm that I have internally verified this unit and confirm that the candidate is competent (this section must be completed where the assessor is unqualified)		
IV name	IV signature	Date

## APPENDIX 5 - INTERNAL VERIFIER TEMPLATE DOCUMENTS

### 5A: Sample Internal verification Strategy



This document indicates what may be covered as part of an internal verifier's strategy. An effective internal verification strategy ensures:

- A forum for discussion of borderline cases
- Assessor networking and sharing of good practice
- Valid, reliable and consistent training and/or assessment
- Recorded assessment decisions which are appropriate, consistent, fair, transparent and equitable
- Clarity for candidates about assessment requirements
- Effective preparation and presentation for external verification
- Reduction in level of direct external verification scrutiny

To underpin the IV/ verification process a plan of internal activity should be developed indicating

- what will happen
- when it will happen
- who will be involved

New instructors/assessors must:

- a) be supplied with assessment and materials
- b) clearly understand assessment requirements and procedures

All assessors must:

- a) know the name of the person who will manage the IV process and the name of the IV
- b) know how IV/ verification will happen, when it will happen and who will be involved
- c) be informed about issues raised through previous internal and external quality assurance

### **On Course Monitoring**

The IV should:

- a) Sample assessments to ensure that:
  - feedback to candidates is clear and constructive
  - teaching and assessment activities are standard and appropriate
  - assessment decisions are fair and consistent
  - teaching and assessment records are clear
- b) Undertake standardisation activities
- c) Ensure candidates understand assessment requirements
- d) Provide advice and support for Assessors and share good practice
- e) Identify good assessment practice
- f) Record internal verification activities and findings, list action points and report to instructors/assessors and the EV

g) Liaise with the EV as necessary

### **End of Course Checking**

The IV should:

- a) monitor progress against previous action points
- b) ensure assessment records are complete and accurate
- c) ensure evidence of achievement is appropriate and standardised
- d) record internal verification activities and findings, list action points, and report these to assessors and the EV

### **Guidance on Sampling and Record Keeping**

#### **What do IVs/IVs sample and why?**

IVs are responsible for monitoring the quality of assessment, hence the need for them to sample assessment practices and decisions. It is not usually possible or necessary to verify every aspect of assessment at each internal verification. A properly selected representative sample should identify any issues with assessment practices and decisions.

#### **Selecting a sample**

To select a representative sample, IVs must take account of factors which may impact on the quality of assessment. These factors are used to define a sampling strategy that determines the size of the sample and enables judgements to be made.

Key factors to consider are:

- Sites of delivery
- Number and experience of Assessors
- Number of courses/assessments
- Previous IV actions/recommendations
- Assessment methods
- Special arrangements
- EV recommendations
- Borderline cases
- Anything else that you think might impact on assessment decisions

The sample should include an element of random selection by the IV. It is not necessary to sample across every aspect of the programme at each event but the plan should seek to cover everything over a period of time, e.g. 3 years.

#### **Which records should be kept?**

Records of internal quality assurance/ verification must be kept and made available to the EV during monitoring visits. These should demonstrate that the



internal verification procedures have been carried out. IVs should record two sets of information:

1. The sample taken by the IV
2. The comments and feedback to the Assessor following the sampling exercise, showing any recommendations or action required and how this was resolved.

There is a sample form shown below that you may use or adapt to suit your own requirement.

**5B: Sample Form**  
**Internal verification - sampling assessment decisions**

**Unit/qualification:**

**Location:**

**Assessor name:**

Candidate Name	Sampling element <sup>1</sup>	Was the assessment method appropriate?	Is there sufficient evidence that outcomes have been met?	Is the evidence appropriate for the level?	Comments
<b>Comments</b>					

**Signed:** (IV) **Date:**

**Signed:** (Assessor) **Date:**

## 5C: Sample Form

### Internal verification – observation of assessors

<sup>1</sup> Was this a learning outcome across candidates, or a whole unit or one method of assessment?



Internal Verifier's Name: .....

Assessor's Name: .....

Candidate's Name: .....

Qualification Title: .....

Unit Assessed: .....

Element Assessed: .....

Date of Observation: .....

Location of Assessment: .....

<b>Prior to the assessment had the Assessor:</b>	<b>Yes</b>	<b>No</b>	<b>Comments:</b>
Developed a written Assessment Plan for the candidate			
Checked that the facilities, resources and information required for the assessment were available and ready for use			
Briefed the candidate on how the assessment would take place and what would be assessed			
<b>During the assessment did the Assessor:</b>	<b>Yes</b>	<b>No</b>	<b>Comments:</b>

Conduct the assessment unobtrusively without interfering with the candidate's performance			
Encourage the candidate to satisfy the specified Assessment Criteria			
Ask questions clearly in an encouraging tone and manner without leading the candidate			
Ensure that sufficient questions were asked and that they were justifiable and relevant to the Unit assessed			

<b>During the assessment did the Assessor (continued):</b>	<b>Yes</b>	<b>No</b>	<b>Comments:</b>
Ensure that the atmosphere created during the assessment was pleasant and conducive			
Clarify and resolve any concerns that the candidate had during the assessment			
Clearly inform the candidate of the assessment decision i.e. 'achieved' or 'requires further practice'			
<b>After the assessment did the Assessor:</b>	<b>Yes</b>	<b>No</b>	<b>Comments:</b>
Provide feedback that was clear, constructive, met the candidate's needs and was			

appropriate to his/her level of confidence			
Encourage the candidate to comment on the assessment decision and how he/she was assessed			
Complete the Unit assessment documentation and ensure it was fully signed and dated			

**Overall feedback to Assessor:**

**Assessor's comments on the IV's feedback:**

Assessor's Signature: .....

Date:.....

Internal Verifier's Signature: .....

Date:.....