

## QUALIFICATION PACK - OCCUPATIONAL STANDARD FOR MINING INDUSTRY



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### What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standard that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

#### Contact Us:

FIMI House, B-311,  
Okhla Ind. Area Ph-I,  
New Delhi-110020  
011-26814596

E-mail: [scms@skillcms.in](mailto:scms@skillcms.in)

## Introduction

### Qualifications Pack- Sampler

**SECTOR:** MINING

**SUB-SECTOR:** Underground and Open Cast Mines

**OCCUPATION:** Ore Processing

**REFERENCE ID:** MIN/Q 0418

**ALIGNED TO:** NCO-2004/7111.68

A Sampler ensures obtaining the ore samples at mine and analysing the same

**Brief Job Description:** Sampler takes onsite samples, either in open-cast or underground workings of the mine. He visits the different sections of the mine on a daily basis to take ore samples. This is a specialized task, since the information obtained from the ore is vital for planning.

**Personal Attributes:** Ability to plan and prioritize, quality consciousness, safety orientation, Physique to sustain strenuous conditions, Dexterity, Ability to use fingers, hands and feet with ease to complete the assigned task (Dexterity), high precision and sensitivity to problem solving and sensitivity towards safety for self and equipment, Reading, writing and communication skills

Job Details	<b>Qualification Pack Code</b>	MIN/Q 0418		
	<b>Job Role</b>	Sampler		
	<b>Credits(NSQF)</b>	TBD	<b>Version number</b>	1.0
	<b>Industry</b>	Mining	<b>Drafted on</b>	15/12/2014
	<b>Sub-sector</b>	Underground and Open Cast Mines	<b>Last reviewed on</b>	24/03/2015
	<b>Occupation</b>	Ore Processing	<b>Next review date</b>	24/03/2017

<b>Job Role</b>	<b>Sampler</b>
<b>Role Description</b>	<p>Sampler takes onsite samples, either in open-cast or underground workings of the mine. He visits the different sections of the mine on a daily basis to take ore samples. This is a specialized task, since the information obtained from the ore is vital for planning</p>
<b>NSQF level</b>	3
<b>Minimum Educational Qualification</b>	Class X
<b>Maximum Educational Qualification</b>	NA
<b>Training</b> (Suggested but not mandatory)	<ol style="list-style-type: none"> <li>1. Sampling techniques and machinery</li> <li>2. Safety</li> <li>3. Quality Management</li> </ol>
<b>Experience</b>	2 to 3 years' experience
<b>Applicable National Occupational Standards</b>	<p><b>Compulsory:</b></p> <p>Click on the hyperlink to read/download the required NOS</p> <ol style="list-style-type: none"> <li>1. MIN/ N0451 (<a href="#">Prepare for &amp; obtain representative sample</a>)</li> <li>2. MIN/ N0452 (<a href="#">Testing of sample obtained from the mine and provide the results to the management</a>)</li> <li>3. MIN / N 0901 (<a href="#">Health and Safety</a>)</li> </ol> <p><b>Optional:</b></p> <p>Not Applicable</p>
<b>Performance Criteria</b>	As described in the relevant OS units

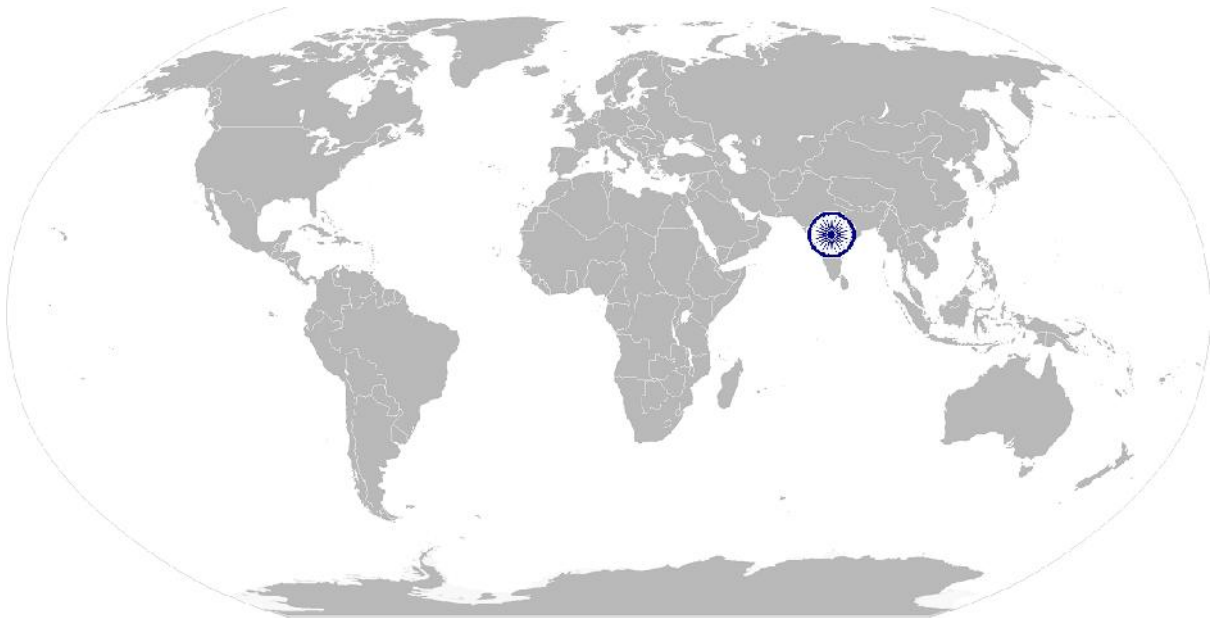
Definitions

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
OS	OS specify the standard of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standard are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
NOS	NOS are Occupational Standard which apply uniquely in the Indian context.
Qualification Pack Code	Qualification Pack Code is a unique reference code that identifies a qualification pack.
Qualification Pack	Qualification Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualification Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard , which is denoted by an 'N'
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills or Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.

Acronyms

Keywords /Terms	Description
SCMS	Skill council for Mining Sector
NOS	National Occupational Standard
NSQF	National Skill Qualification Framework
NVEQF	National Vocational Educational Qualification Framework
NVQF	National Vocational Qualification Framework
OS	Occupational Standard
PC	Performance Criteria
QP	Qualification Pack
SSC	Sector Skill Council

# National Occupational Standard



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## Overview

This OS unit is about preparing for routine sampling activities using prescribed standard operating procedures involving the taking of basic samples

**MIN/ N0451 Prepare for & obtain representative sample**

<b>Unit Code</b>	<b>MIN/ N0451</b>
<b>Unit Title (Task)</b>	<b>Prepare and obtain representative sample</b>
<b>Description</b>	This OS unit is about preparing for routine sampling activities using prescribed standard operating procedures involving the taking of basic samples. Such samples require limited judgment and involve following standard operating procedures
<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Prepare for simple sampling</li> <li>• Obtain representative sample</li> <li>• Maintain sample integrity</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Prepare for simple sampling</b>	<p>PC1. Ensure that the conditions for sampling are in accordance with laid down procedures</p> <p>PC2. Check that equipment and materials selected conform to instructions</p> <p>PC3. Check that the equipment is in calibration</p> <p>PC4. Ensure that the required resources are available and appropriate</p>
<b>Obtain representative sample</b>	<p>PC5. Take onsite samples, either in open-cast or underground workings of the mine. They visit different sections of the mine on a daily basis to take ore samples. This is a specialized task, since the information obtained from the ore is vital for planning.</p> <p>PC6. Record the conditions under which the sample is taken</p> <p>PC7. Identify and correctly label the sample</p> <p>PC8. Record any deviations from set procedure or anticipated results and take the appropriate action</p> <p>PC9. Clean the sampling equipment and materials to be re-used appropriately</p> <p>PC10. Dispose of other equipment and materials according to standard operating procedures and approved codes of practice</p> <p>PC11. Ensure that the sample taken meets sample plan procedure</p>
<b>Maintain sample integrity</b>	<p>PC12. Record all information about the sample accurately using appropriate documentation to permit traceability</p> <p>PC13. Maintain the condition of the sample according to instructions</p>

**MIN/ N0451 Prepare for & obtain representative sample**

	<p>PC14. Protect the sample from external sources of contamination</p> <p>PC15. Take the appropriate action in the event of abnormal occurrences affecting sample condition</p>
<b>Knowledge and Understanding (K)</b>	
<p><b>A. Regulatory context (knowledge of safety guidelines specified by Director General of Mine Safety (DGMS))</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Different types of mines and detail of the mine he is working in</p> <p>KA2. Mine Organisation, time keeping, need for discipline and punctuality</p> <p>KA3. Benching in quarries, Dressing of overhangs, Undercuts, Fencing, First aid and Hygiene</p> <p>KA4. Standing orders in force at the mine. Safety in the vicinity of machinery</p> <p>KA5. Shot-firing and Safety regulations. How and where to take shelter</p> <p>KA6. Duties of workmen</p> <p>KA7. Provision of wages, working hours and accident compensation as per Mines act</p> <p>KA8. Knowledge of mining safety procedures</p> <p>KA9. Impact of violation of safely procedures</p>
<p><b>B. Organizational Context (Knowledge of the company / organization and its processes)</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Relevant standard and procedures followed in the company</p> <p>KB2. Different types of sampling requirements</p> <p>KB3. Processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution</p>
<p><b>C. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KC1. Control conditions and why it is important to maintain conditions</p> <p>KC2. Basic understanding of sampling plan</p> <p>KC3. Interpreting and using a sampling plan</p> <p>KC4. Methods to use for labelling samples</p> <p>KC5. Methods to use for handling, storing and disposing of materials</p> <p>KC6. Ensuring traceability of samples, and why this is important</p> <p>KC7. Maintain the condition of samples in transit and in storage</p> <p>KC8. Methods of sampling (spot sampling or strip sampling)</p>

**MIN/ N0451 Prepare for & obtain representative sample**

Skills (S) [Optional]	
<b>A. Core Skills/ Generic Skills</b>	<b>Core Skills</b>
	SA1. Able to practical and manual activities - able to cope with the physical demands of the job - be physically and mentally fit
	SA2. Willing to adhere to safety requirements
	SA3. Able to pass a medical examination- have no medical impairment such as colour blindness, deafness or epilepsy
	SA4. Basic skills in mathematics and science
	SA5. Be at least 18 years of age
	<b>Writing Skills</b>
The user/ individual on the job needs to know and understand how to:	
SA6. Note down observations (if any) related to sampling and share the same with the supervisor	
SA7. Write drawings to internal customers on the requirement of apparatus, hand tools etc	
<b>Reading Skills</b>	
The user/individual on the job needs to know and understand how to:	
SA8. Read and interpret symbols and measurements instruments	
SA9. Read equipment manuals and process documents to understand the equipment and processes better	
SA10. Read internal information drawings send by internal customers ( other functions within the organization)	
<b>Oral Communication (Listening and Speaking skills)</b>	
The user/individual on the job needs to know and understand how to:	
SA11. Discuss task lists, schedules, and work-loads with co-workers	
SA12. Effectively communicate with the team members	
SA13. Question internal customers/ supervisor appropriately in order to understand the nature of the problem and make a diagnosis	
SA14. Attentively listen with full attention and comprehend the information given by the speaker	
<b>B. Professional Skills</b>	<b>Core Professional Skills</b>
	SB1. Concentration skills



**MIN/ N0451 Prepare for & obtain representative sample**

	<p>SB2. Critical thinking</p> <p>SB3. Ensuring that machines function properly by viewing various indicators</p> <p>SB4. Excellent attention to detail</p> <p>SB5. Properly handling machinery and systems</p>
	<p><b>Plan and Organize</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB6. Plan and organize the work order and jobs received from the internal customers</p> <p>SB7. Organize all process/ equipment manuals so that sorting out information is fast</p> <p>SB8. Support the supervisor in scheduling tasks for helper grade</p>
	<p><b>Judgment and Critical Thinking</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB9. Use common sense and make judgments during day to day basis</p> <p>SB10. Use reasoning skills to identify and resolve basic problems</p> <p>SB11. Use intuition to detect any potential problems which could arise during operations</p>
	<p><b>Desire to learn and take initiatives</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB12. Follow instructions and work on areas of improvement identified</p> <p>SB13. Complete the assigned tasks with minimum supervision</p> <p>SB14. Complete the job defined by the supervisor within the timelines and quality norms</p>
	<p><b>Problem Solving and Decision making</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB15. Detect problems in day to day tasks</p> <p>SB16. Support supervisor in using specific problem solving techniques and detailing out the problems</p> <p>SB17. Discuss possible solution with the supervisor for problem solving</p> <p>SB18. Make decisions in emergency conditions in case the supervisor is not available( as per the authority matrix defined by the organization)</p>

MIN/ N0451 Prepare for & obtain representative sample

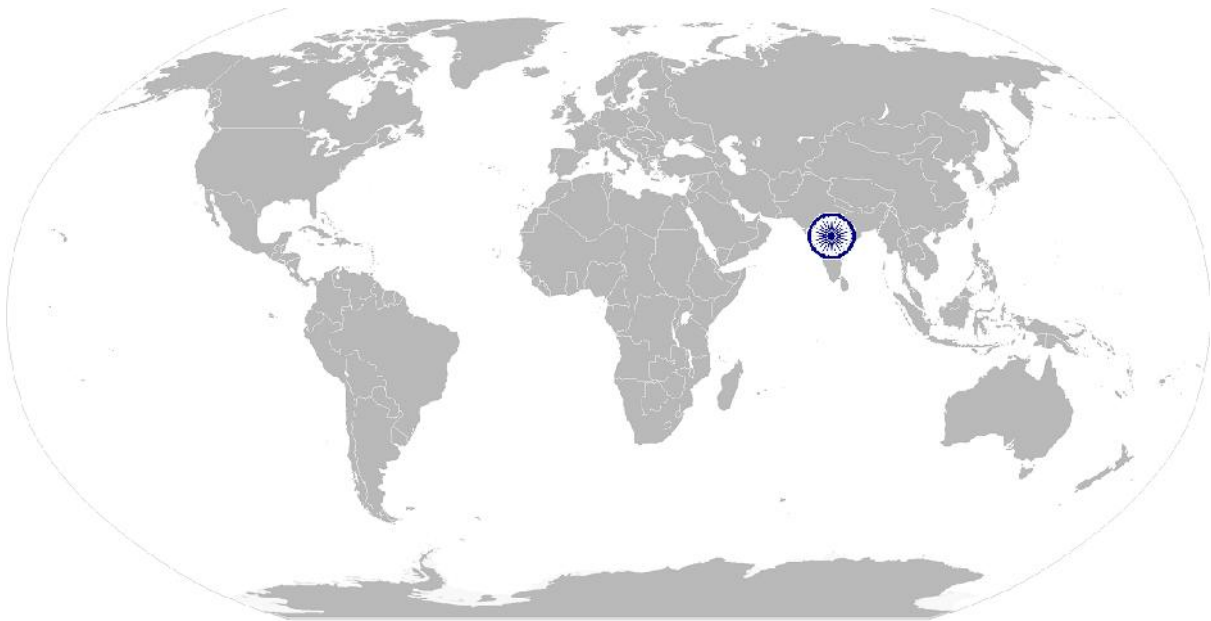
**NOS Version Control**

NOS Code	MIN/ N0451		
Credits(NSQF)	TBD	Version number	1.0
Industry	Mining	Drafted on	15/12/2014
Industry Sub-sector	Underground and Open Cast Mines	Last reviewed on	24/03/2015
Occupation	Ore Processing	Next review date	24/03/2017



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# National Occupational Standard



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## Overview

Testing of sample obtained from the mine and provide the results to the management.

**MIN/ N0452 Testing of sample obtained from the mine and provide the results to the management**

National Occupational Standard

<b>Unit Code</b>	<b>MIN/ N0452</b>
<b>Unit Title (Task)</b>	<b>Testing of sample obtained from the mine and provide the results to the management</b>
<b>Description</b>	This OS unit is about Testing of sample obtained from the mine and provide the results to the management as per the required specifications and industry standard
<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>Testing of sample obtained from the mine and provide the results to the management.</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Testing of sample obtained from the mine and provide the results to the management</b>	<p>PC1. Follow proper methods of spot sampling to identify the ore concentration at a particular point or strip sampling at regular interval as per the requirement or as directed by sampling in charge</p> <p>PC2. Prepare the representative sample by coning and quartering process, or through core cutting in metaliferrous mines by working with exploration driller under the guidance of sampling in-charge (supervisor level person)</p> <p>PC3. Pack the representative sample packets in sample bags, and tagging to facilitate analysis at laboratories</p> <p>PC4. Work in laboratories and determine, by means of chemical processes or other analytical methods, the quantity and quality of elements, both organic and inorganic compounds, and intermediate products in ores. They also process materials and analyze base metals, non-metallic materials, concentrates, effluents and air samples.</p> <p>PC5. Use chemical processes such as fire or dry assay procedures and wet chemical methods.</p> <p>PC6. Collect and prepare the representative samples using appropriate methods.</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Regulatory context (knowledge of safety guidelines specified by</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Different types of mines and detail of the mine he is working in</p> <p>KA2. Mine Organisation, time keeping, need for discipline and punctuality</p> <p>KA3. Benching in quarries, Dressing of overhangs, Undercuts, Fencing, First aid and Hygiene</p> <p>KA4. Standing orders in force at the mine. Safety in the vicinity of machinery</p>

**MIN/ N0452 Testing of sample obtained from the mine and provide the results to the management**

<b>Director General of Mine Safety (DGMS))</b>	<p>KA5. Shot-firing and Safety regulations. How and where to take shelter</p> <p>KA6. Duties of workmen</p> <p>KA7. Provision of wages, working hours and accident compensation as per Mines act</p> <p>KA8. Knowledge of mining safety procedures</p> <p>KA9. Impact of violation of safely procedures</p>
<b>B. Organizational Context (Knowledge of the company / organization and its processes)</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Relevant standard and procedures followed in the company</p> <p>KB2. Different types of sampling requirements at the mine</p> <p>KB3. Processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution</p>
<b>C. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KC1. Methods of sampling (spot sampling or strip sampling)</p> <p>KC2. Technique coning and quartering process or through core cutting</p> <p>KC3. In-depth understanding of physical and chemical analysis, and relevant properties of the ore/mineral</p> <p>KC4. Recent development in analytical procedures in laboratory analysis and sampling</p> <p>KC5. Principles and procedures of scientific processes in lab management</p> <p>KC6. Knowledge and understanding of instruments used in laboratory</p> <p>KC7. Depth and type of cuts used for sampling</p> <p>KC8. Use of tools and process used in sampling (Base plate, spatula, brush, sample bags etc.)</p>
<b>Skills (S) [Optional]</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Note down observations (if any) related to sampling and share the same with the supervisor</p> <p>SA2. Write drawings to internal customers on the requirement of apparatus, hand tools etc</p>

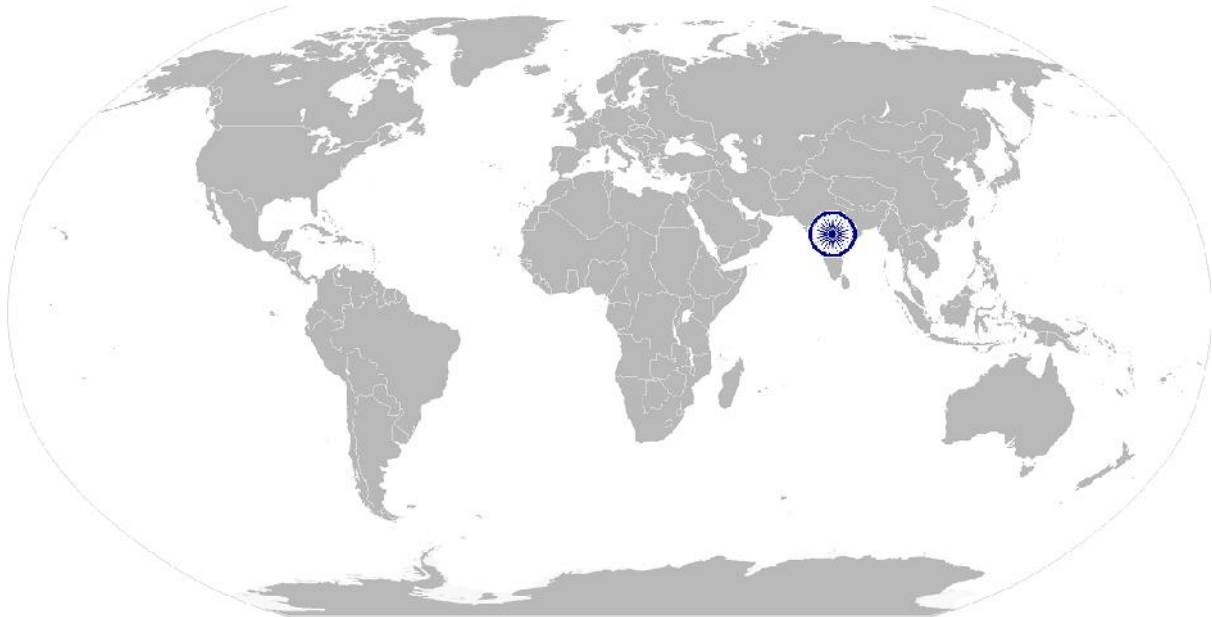
**MIN/ N0452 Testing of sample obtained from the mine and provide the results to the management**

	SA3. Write log book in terms of output quantity, set up parameters, machine setting parameters and loss details etc
	SA4. Note measurements, equipment panel readings for various process parameters in the required reporting formats
	<b>Reading Skills</b>
	The user/individual on the job needs to know and understand how to: SA5. Read equipment manuals and process documents to understand the equipment and processes better SA6. Read instructions especially safety instructions especially symbols while using the equipment SA7. Read internal drawings send by internal customers ( other functions within the organization)
	<b>Oral Communication (Listening and Speaking skills)</b>
	The user/individual on the job needs to know and understand how to: SA8. Discuss task lists, schedules, and work loads with co-workers SA9. Question internal customers/ supervisor appropriately in order to understand the nature of the problem and make a diagnosis
<b>B. Professional Skills</b>	<b>Plan and Organize</b>
	The user/individual on the job needs to know and understand how to: SB1. Plan and organize the work order and jobs received from the internal customers SB2. Plan and organize the design documents received from internal customers SB3. Organize all process/ equipment manuals so that sorting out information is fast SB4. Organize apparatus etc in an orderly manner at proper designated areas
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB5. Finalize the optimum levels of physical parameters so that the output meets the prescribed standard
	<b>Problem solving</b>
	The user/individual on the job needs to know and understand how to: SB6. Think through the problem, evaluate the possible solution and suggest the



**MIN/ N0452 Testing of sample obtained from the mine and provide the results to the management**

	<p>best possible solution to the problem</p> <p>SB7. Identify immediate or temporary solutions to resolve delays</p>
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MIN/ N0452 Testing of sample obtained from the mine and provide the results to the management

## NOS Version Control



<b>NOS Code</b>	MIN/ N0452		
<b>Credits(NSQF)</b>	TBD	<b>Version number</b>	1.0
<b>Industry</b>	Mining	<b>Drafted on</b>	15/12/2014
<b>Industry Sub-sector</b>	Underground and Open Cast Mines	<b>Last reviewed on</b>	24/03/2015
<b>Occupation</b>	Ore Processing	<b>Next review date</b>	24/03/2017

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MIN/ N 0901 Health and Safety

# National Occupational Standard



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## Overview

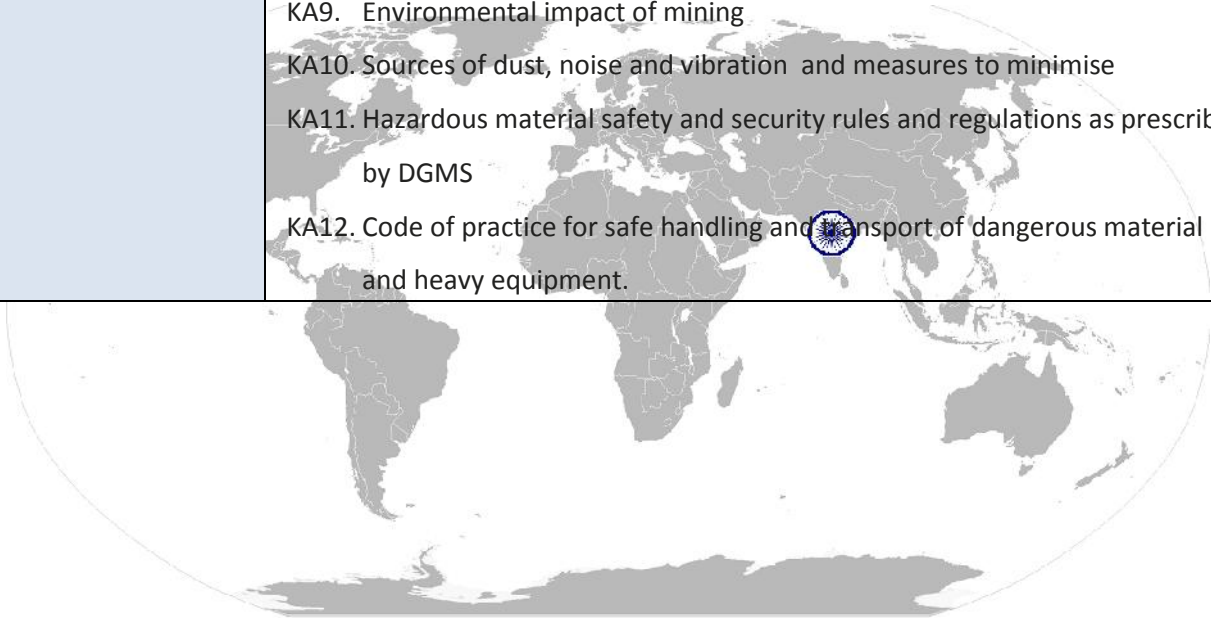
This unit is about health and safety measures critical in mines

MIN/ N 0901 Health and Safety

National Occupational Standard	<b>Unit Code</b>	MIN/N 0901
	<b>Unit Title (Task)</b>	Health and Safety
	<b>Description</b>	This unit is about health and safety measures critical in mines
	<b>Scope</b>	This OS unit/task covers the following: <ul style="list-style-type: none"> <li>Health and safety measures critical in mines</li> </ul>
	<b>Performance Criteria (PC) w.r.t. the Scope</b>	
	<b>Element</b>	<b>Performance Criteria</b>
	<b>Safety, Security and Administrative</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Comply with occupational health and safety regulations adopted by the employer.</p> <p>PC2. Follow mining operations procedures with respect to materials handling and accidents</p> <p>PC3. Follow the correct safety steps in case of accident or major failure</p> <p>PC4. Comply with safety regulations and procedures in case of fire hazard.</p> <p>PC5. Operate various grades of fire extinguishers.</p> <p>PC6. Work responsibly and as safe and careful as possible so as not to put the health and safety of self or others at risk, including members of the public</p> <p>PC7. Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS.</p> <p>PC8. Deal with misfires as per statutory requirement</p> <p>PC9. Identify characteristics of post-blast fumes and take necessary precautions.</p> <p>PC10. Wears safety gear such as hard hat, respiratory protection, eye protection, ear protection</p> <p>PC11. Follow the manufacturer’s instructions for care and safe operation of the equipment.</p>

MIN/ N 0901 Health and Safety

Knowledge and Understanding (K)	
<b>A. Regulatory context (knowledge of safety guidelines specified by Director General of Mine Safety (DGMS))</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Benching in quarries, Dressing of overhangs, undercuts, Fencing</p> <p>KA2. First aid and Hygiene</p> <p>KA3. Code of traffic in specific areas of mine. Significance of fences</p> <p>KA4. Standing orders in force at the mine. Safety in the vicinity of machinery</p> <p>KA5. Shot-firing and Safety regulations. How and where to take shelter</p> <p>KA6. Knowledge of mining safety procedures</p> <p>KA7. Impact of violation of safety procedures</p> <p>KA8. Locally prepared Emergency Preparedness / Disaster Management Plan.</p> <p>KA9. Environmental impact of mining</p> <p>KA10. Sources of dust, noise and vibration and measures to minimise</p> <p>KA11. Hazardous material safety and security rules and regulations as prescribed by DGMS</p> <p>KA12. Code of practice for safe handling and transport of dangerous material and heavy equipment.</p>



MIN/ N 0901 Health and Safety

## NOS Version Control

NOS Code	MIN/N 0901		
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Sector	Mining	Drafted on	15/12/2014
Sub-sector	Underground and Open Cast Mines	Last reviewed on	24/03/2015
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