

No. 1093

17 October 2008

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Manufacturing and Assembly Processes

registered by Organising Field 06 – Manufacturing, Engineering and Technology, publishes the following Qualification and Unit Standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit Standards can be accessed via the SAQA web-site at www.saqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standards should reach SAQA at the address below and **no later than 17 November 2008**. All correspondence should be marked **Standards Setting SGB for Manufacturing and Assembly Processes** and addressed to

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SOUTH AFRICAN QUALIFICATIONS AUTHORITY
**QUALIFICATION:
National Certificate: Metals Production**

SAQA QUAL ID	QUALIFICATION TITLE		
64189	National Certificate: Metals Production		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
QUALIFICATION TYPE	FIELD	SUBFIELD	
National Certificate	6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	120	Level 2	Regular-Unit Stds Based

This qualification replaces:

Qual ID	Qualification Title	NQF Level	Min Credits	Replacement Status
49018	National Certificate: Metals Production	Level 2	126	Will occur as soon as 64189 is registered

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose:

This Qualification is for any individual who is, or wishes to be, involved in a metals production environment. The Qualification contains all the skills, knowledge, values and attitudes required by a learner who needs mainly to be able to perform a range of activities within a specific metals production environment to support a particular process like extracting, melting, refining, casting, rolling, shearing, forging and other metallurgical processes. An individual acquiring this Qualification will be able to contribute towards the smooth and efficient operation of the production processes in the metals production sector.

The core component contains generic competencies covering, inter alia:

- > Health, safety and environment legislation and procedures.
- > Preparation and operation of support equipment.
- > Working in teams.
- > Role of the individual in a business or organisation.

These competencies will enable the learner to work in different industries within the diverse production sector.

The Qualification ensures progression of learning, enabling the learner to perform optimally within the metals production field of learning and provide access to a higher Qualification within the same or a related sector. The Qualification will facilitate access to, and mobility within, education and training for learners who:

- > Would like to achieve this Qualification through the process of Recognition of Prior Learning (RPL) and/or formal study.

> Wish to extend their range of skills and knowledge and hence their competencies in the metals production environment.

The Qualification also intends to:

> Release the potential of people.
> Provide opportunities for people to explore different but related activities within the metals production sector.

Rationale:

Metals production can be defined as the processing of raw materials into metal products, including value adding processes. The metals production sector constitutes the following industries - iron and steel, aluminium, platinum, chrome, zinc, manganese and copper and is characterised by sophisticated processes. Companies within this sector operate in a global competitive and challenging environment. The products produced have to respond to a wide variety of customer requirements and safety, health, environmental, quality and risk management issues.

This is an entry level Qualification - in a series of three qualifications. Typical learners will be persons who are currently working in a metals production environment who have not received any formal recognition for their skills and knowledge or for anyone wishing to follow a career in a ferrous or non-ferrous metals production working environment, in a variety of contexts.

In terms of the learning pathway, the Qualification will allow this learner to progress from providing support functions at this level to that of a process operator within a metals production environment by completing the National Certificate: Metals Production at NQF Level 3. At this point s/he would be able to operate a furnace, for example. Subsequently the learner could become a process controller in the same environment by completing the FETC: Metals Production at NQF Level 4.

South Africa has a very extensive and highly developed metals production sector. This sector employs a large number of people, is well-established and economically powerful. In terms of transformation in the country, learners will require skills and competencies to gain access to positions within management structures by completing other qualifications and training. It will be in the interest of the country and the sector to ensure that those who operate in the metals production environment are trained according to this Qualification to improve productivity and efficiency.

This national Qualification and its related unit standards were developed to standardise the accreditation of learning programmes, resulting in improved quality management in terms of programme delivery.

The National Certificate: Metal Production supports the objectives of the NQF in that it gives the learner access to a registered Qualification. It will ensure that the quality of education and training in the sub-field is enhanced and of a world-class standard. The Qualification will allow learners not only to develop their knowledge and skills in the metal production sector but will also enable them to benchmark their competencies against international standards.

RECOGNIZE PREVIOUS LEARNING?

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LEARNING ASSUMED IN PLACE

Learners wishing to study towards this Qualification are assumed to have:

> Mathematical literacy at NQF level 1.

- > Communication at NQF level 1.
- > Engineering Science at NQF level 1 or equivalent.

Recognition of Prior Learning:

This Qualification may be achieved in part (or whole) through the recognition of relevant prior knowledge and/or experience. The learner must be able to demonstrate competence in the knowledge, skills, values and attitudes implicit in this Qualification. As part of the provision of recognition of prior learning providers are required to develop a structured means for the assessment of individual learners against the Unit Standards of the Qualification on a case-by-case basis. A range of assessment tools and techniques during formative and summative assessment procedures should be used which have been jointly decided upon by the learner and the assessor. Such procedures, and the assessment of individual cases, are subject to moderation by independent assessors. The same principles that apply to assessment of this Qualification also apply to recognition of prior learning.

Learners may provide evidence of prior learning for which they may receive credit towards the Unit Standards and/or the Qualification by means of portfolios or other forms of appropriate evidence as agreed to between the relevant provider and relevant ETQA or ETQA that has a Memorandum of Understanding in place with the relevant ETQA.

RPL is particularly important, as there are people in the metal production sector with a variety of skills and competencies of differing quality and scope. It is important that an RPL process be available to assist in making sense of existing competencies and skills, and helping to standardise these competencies and skills towards a common standard.

Access to the Qualification:

There is an open access to this Qualification, keeping in mind the "Learning Assumed to be in Place".

QUALIFICATION RULES

The Qualification consists of a Fundamental, a Core and an Elective Component.

To be awarded the Qualification learners are required to obtain a minimum of 120 credits as detailed below.

Fundamental Component:

The Fundamental Component consists of Unit Standards in:

- > Mathematical Literacy at NQF Level 2 to the value of 16 credits.
- > Communication at NQF Level 2 to the value of 20 credits.

All Unit Standards in the Fundamental Component are compulsory.

Core Component:

The Core Component consists of Unit Standards to the value of 47 credits, all of which are compulsory.

Elective Component:

The Elective Component consists of two specialisation areas, each with its own set of Unit Standards. Learners are to choose one specialisation and choose Elective Unit Standards

totalling a minimum of 37 credits from the Unit standards listed under that specialisation area so as to attain a minimum of 120 credits for this Qualification.

Specialisation Area 1: Metal Production: (Manufacturing, Engineering and Related Industries):

Learners must choose Elective Unit Standards from the list below to give a minimum of 37 credits for the Elective Component:

- > ID 259722: Handle and care for prepared materials, Level 2, 4 Credits.
- > ID 110075: Apply basic fire-fighting techniques; Level 1, 3 Credits.
- > ID 119567: Perform basic life support and first aid procedures, Level 1, 5 Credits.
- > ID 259737: Complete finishing operations, Level 2, 12 Credits.
- > ID 116256: Sling and communicate during crane operations, Level 2, 4 Credits.
- > ID 242976: Operate overhead/gantry cranes, Level 2, 5 Credits.
- > ID 244365: Lift and move material and equipment by means of a forklift, Level 2, 3 Credits.
- > ID 115101: Address workplace hazards and risks, Level 2, 4 Credits.
- > ID 13217: Collect and use information, Level 2, 5 Credits.
- > ID 116932: Operate a personal computer system, Level 1, 3 Credits.
- > ID Demonstrate an understanding of HIV/Aids and its impact on the workplace, Level 2, 5 Credits (Reviewed)
- > ID 13221: Perform routine maintenance, Level 2, 8 Credits.
- > ID 12461: Communicate at work, Level 2, 5 Credits.
- > ID 12465: Develop a learning plan and a portfolio for assessment, Level 2, 6 Credits.
- > ID 9268: Manage basic personal finance, Level 2, 6 Credits.

Total Number of Credits for Metal Production Electives: 78 Credits.

Specialisation Area 2: Mining and Minerals:

Learners must choose Elective Unit Standards from the list below to give a minimum of 37 credits for the Elective Component:

- > ID 259722: Handle and care for prepared materials, Level 2, 4 Credits (Reviewed)
- > ID 110075: Apply basic fire-fighting techniques, Level 1, 3 Credits.
- > ID 119567: Perform basic life support and first aid procedures, Level 1, 5 Credits.
- > ID Complete finishing operations, Level 2, 12 Credits (Reviewed)
- > ID 116256: Sling and communicate during crane operations, Level 2, 4 Credits.
- > ID 242976: Operate overhead/gantry cranes, Level 2, 5 Credits
- > ID 244365: Lift and move material and equipment by means of a forklift, Level 2, 3 Credits.
- > ID 115101: Address workplace hazards and risks, Level 2, 4 Credits.
- > ID 13217: Collect and use information, Level 2, 5 Credits.
- > ID 116932: Operate a personal computer system, Level 1, 3 Credits.
- > ID Demonstrate an understanding of HIV/Aids and its impact on the workplace, Level 2, 5 Credits (Reviewed)
- > ID 259690: Maintain the hearth and sidewall of a converter, Level 2, 4 Credits.
- > ID Maintain the paste level in an electrode casing, Level 2, 2 Credits.
- > ID 259717: Dry sulphur dioxide gas by means of absorption, Level 2, 4 Credits.
- > ID Generate hot gas, Level 2, 4 Credits.
- > ID 259719: Refine molten copper by means of oxygen and propanol blowing, Level 2, 10 Credits.
- > ID 259739: Hand sort material, Level 1, 2 Credits.
- > ID 252331: Remove airborne dust by means of a bag filter, Level 2, 3 Credits.
- > ID 259686: Produce anodes by means of a casting process, Level 2, 5 Credits.
- > ID 259682: Transfer an overhead crane by means of a transfer car, Level 2, 4 Credits.
- > ID 259693: Transfer material by means of pneumatic conveying system, Level 2, 4 Credits.

- > ID Straighten cathodes by means of a hydraulic press, Level 2, 4 Credits.
- > ID 259684: Maintain converter air flow by means of a tuyere punching process, Level 2, 3 Credits.
- > ID 259688: Pre-heat a refractory-lined vessel, Level 2, 6 Credits.
- > ID 259683: Heat up a ladle, Level 2, 7 Credits.
- > ID 259696: Produce copper rod by means of a roller mill process, Level 2, 4 Credits.
- > ID 259692: Sample a vertical converter unit by means of a dip bar, Level 2, 3 Credits.
- > ID 259687: Remove anodes from a casting wheel by means of an anode take-off machine, Level 2, 3 Credits.
- > ID 259691: Clean gas by means of a dry electrostatic precipitator, Level 2, 4 Credits.

Total Number of Credits for Mining and Minerals Electives: 129 Credits.

EXIT LEVEL OUTCOMES

Qualifying learners will be able to:

1. Perform support functions and activities in the metal production process.
2. Identify and respond to minor maintenance and operational problems related to the performance of support functions and activities.
 - > Outcome Note: Maintenance refers to minor maintenance performed by operations personnel not qualified as artisans.
3. Demonstrate an understanding of Occupational Health, Safety and Environmental standards in the workplace.
4. Explain the individual's role in business and teamwork development.

Critical Cross-Field Outcomes:

Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made when:

- > Engaging in post-production processes and finishing operations.
- > Maintaining stock levels.
- > Maintaining the production process.
- > Interpret and act in emergency situations.
- > Applying safety, health and environmental principles and procedures.
- > Monitoring material flow and consumption of consumables and making adjustments.

Work effectively with others as a member of a team, group, organisation, community to:

- > Ensure that the post-production processes and operations runs smoothly and efficiently and problems are dealt with appropriately.
- > Ensure that the production process continues uninterrupted.
- > Accept, interpret and delegate work instructions correctly, when and if required, in an appropriate manner during an emergency.
- > Respond to SHE requirements.

Organise and manage oneself and one's activities responsively and effectively when:

- > Engaging in post-production processes and operations.
- > Dispatching products/components to customer or downline processes.
- > Maintaining stock levels.
- > Maintaining the production process.

- > Laying out materials.
- > Conforming to SHE requirements, according to specified requirements.
- > Interpreting production schedules.
- > Checking consumables, equipment and tools.
- > Operating equipment.
- > Monitoring material flow and consumption of consumables and making adjustments.

Collect, analyse, organise and critically evaluate information to:

- > Solve problems during the post production process operations.
- > Identify hazardous material.
- > Apply safety, health and environmental principles and procedures.
- > Use personal protective equipment.
- > Interface with organisational structures and understand organisational procedures and concepts.
- > Solve problems by making adjustments.
- > Deal with changes and deviations.

Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation to:

- > Report problems and incidents/occurrences.
- > Record outputs and measurements.
- > Prepare and maintain records.
- > Ensure the continuity of the production process.
- > Describe situations, conditions and incidents related to the use and processing of materials.

Use science and technology effectively and critically, showing responsibility towards the environment and the health of others by:

- > Using the equipment according to manufacturer's instructions.
- > Adjust processes and procedures to suit different materials.

Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation to:

- > Understand the impact of their or others' actions on health, safety, environment and productivity.
- > Explain the relationship and interfaces between the individual and the organisation.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit level outcome 1:

- > Equipment is prepared and operated according to standard operating procedures.
- > Equipment is used in a manner that ensures the safety of all in the metal production environment.
- > Consumables required are checked according to quality assurance requirements.
- > Activities relevant to the production process are performed according to standard operating procedures.
- > Quality requirements are complied with according to standard operating procedures.
- > Basic mathematical principles and techniques are applied while performing the tasks related to metals production activities.
- > Oral and written communication is maintained and adapted as required to promote effective interaction in a metals production context.

Associated Assessment Criteria for Exit level outcome 2:

- > The problem is identified, rectified and/or reported according to standard operating procedures.
- > Minor maintenance is performed and reported according to standard operating procedures.
- > Tools, auxiliary services and equipment are identified and used in resolving problems and performing maintenance.
- > Quality, safety and environmental procedures are applied to the maintenance procedure.
- > Mathematical calculations are utilised for the solution of common operational problems.

Associated Assessment Criteria for Exit level outcome 3:

- > Occupational Health, Safety and Environmental principles are explained in accordance with workplace requirements.
- > The impact of risks and hazards are explained and preventative measures are applied in order to minimise/eliminate risks/hazards in metal production activities.
- > Policies and procedures relevant to quality and risk management in the metal production environment are applied to eliminate or reduce danger and risk.
- > Emergencies arising from production operation are managed according to standard operating procedure.

Associated Assessment Criteria for Exit level outcome 4:

- > The rights of an employee within the workplace are explained in terms of responsibilities and obligations.
- > Organisational structures, values, procedures and concepts are explained so that the differences between these aspects are clarified.
- > The functions of the business are described in terms of the metal production environment.
- > Conditions of employment, disciplinary and grievance procedures are described to ensure that the legislation governing these aspects is understood.
- > Individual and team performance standards are maintained through working together.

Integrated assessment:

The importance of integrated assessment is to confirm that the learner is able to demonstrate applied competence (practical, foundational and reflexive) and ensure that the purpose of this Qualification is achieved. Both formative and summative assessment methods and strategies are used to ensure that the Exit Level Outcomes and the purpose of the Qualification are achieved through achieving the Unit Standards. Learning, teaching and assessment are inextricably linked.

Learning and assessment should be integrated and assessment practices must be fair, transparent, valid and reliable. A variety of assessment strategies and approaches must be used. This could include tests, assignments, projects, demonstrations and/or any applicable method. Evidence of the acquisition of competencies must be demonstrated through the Unit Standards, which enhance the integration of theory and practice as deemed appropriate at this level.

Formative assessment is an on-going process which is used to assess the efficacy of the teaching and learning process. It is used to plan appropriate learning experiences to meet the learner's needs. Formative assessments can include a mix of simulated and actual (real) practice or authentic settings. Feedback from assessment informs both teaching and learning. If the learner has met the assessment criteria of all the Unit Standards then s/he has achieved the Exit Level Outcomes of the Qualification.

Summative assessment is concerned with the judgement of the learning in relation to the Exit Level Outcomes of the Qualification. Such judgement must include integrated assessment(s) which test the learners' ability to integrate the larger body of knowledge, skills and attitudes, which are represented by the Exit Level Outcomes. Summative assessment can take the form of oral, written and practical examinations as agreed to by the relevant ETQA.

Integrated assessment must be designed to achieve the following:

- > An integration of the achievement of the Exit Level Outcomes in a way that reflects a comprehensive approach to learning and shows that the purpose of the Qualification has been achieved.
- > Judgement of learner performance to provide evidence of applied competence or capability.

Assessors and moderators should make use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.

Assessment should ensure that all specific outcomes, embedded knowledge and critical cross-field outcomes are assessed. The assessment of the critical cross-field outcomes should be integrated with the assessment of specific outcomes and embedded knowledge.

INTERNATIONAL COMPARABILITY

This is the first in a series of three qualifications. In terms of the learning pathway, a learner has the opportunity to start at Level 2 and progress to Level 4 in the Metal Production environment. Hence, there is a duplication of competencies between the three qualifications; competencies acquired at Level 2 are used as a foundation to acquire other competencies at Level 3 and competencies acquired at Level 3 form the foundation for competencies at Level 4. It follows that the international comparability also reflects the overlap of the competencies.

The following competencies are addressed by this qualification:

- > Prepare and operate equipment to support a production process.
- > Work in a team.
- > Apply safety, health and environmental principles and procedures in a workplace.
- > Demonstrate basic knowledge and understanding of emergency preparedness and response.
- > Identify, inspect, use, maintain and care for engineering hand tools.

The following countries were chosen primarily for two reasons:

- > They are significant metal producing countries.
- > They have a substantial number of providers for this type of training.

These are:

- > The United Kingdom.
- > India.
- > The United States.
- > Canada.
- > China and Japan.
- > New Zealand.
- > Australia.

It must be noted that although India, for instance, is a significant metal producer, information on the training is severely limited. The websites of Nigeria, Ghana, Angola, Botswana, Zambia and Tunisia were checked, to no avail in terms of comparability purposes.

United Kingdom:

The UK metals sector (comprising those companies which make, process, distribute and recycle metals, or fabricate metals for construction or other products) supplies vital raw materials, precision products and complete building structures to the manufacturing, public and service sectors. Every year, the metals sector produces 14 million tonnes of steel, 1.2 million tonnes of castings and 500,000 tonnes of aluminium reclaims and processes 10 million tonnes of used or end-of-life metals a year. The metals market covers a diverse range of industries, including aerospace, automotive, engineering, retail, leisure and public buildings and bridges, oil and gas extraction, power generation, telecommunications, defence, orthopaedic medicine, rail, domestic appliances, furniture and packaging.

Oxford Cambridge RSA Qualification Examination:

The Oxford Cambridge RSA Qualification Examination in the United Kingdom provides a variety of vocational qualifications in many areas. They have designed a series of manufacturing qualifications (Diplomas) at Levels 1, 2 and 3 in Manufacturing and Product Design, for implementation in 2009. The draft unit titles of the UK Level 1 Diploma - which constitute the principal learning - have resonance with the competencies of the South African Level 2 qualification in Metal Production. Although the UK qualification is focussed on product design and is located primarily in the manufacturing environment, there are generic competencies that can be drawn upon for comparison purposes. Manufacturing and production are closely related but not identical.

The draft unit titles are:

- > Introduction to manufacturing.
- > Dealing with customers and suppliers within a manufacturing business.
- > Introduction to working practices in manufacturing.
- > Manufacturing: Introduction to product design and development.
- > Manufacturing: Introduction to materials science.
- > Manufacturing a product.

Assessment and Qualification Alliance (AQA) and City & Guilds:

Assessment and Qualification Alliance (AQA) is the UK's main provider of GCSEs and A levels. City & Guilds is well-known for vocational qualifications. It works closely with employers and industry bodies to ensure that its qualifications provide the benchmark standard for workplace skills and knowledge.

The collaboration between AQA and C&G brings together the providers of qualifications in both fields to provide all the support needed to deliver them at one point of contact.

AQA and C&G offer the Foundation Diploma in Engineering at Level 1 in the UK. As part of this course they offer a unit on 'Practical engineering and communication skills' which is offered in this qualification at NQF Level 2. Some of the competencies in this unit are similar to those in this qualification.

The purpose of this unit is to introduce learners to the work of the Engineering sector. This unit will provide learners with the opportunity to develop Health and Safety awareness and will emphasise the importance of using safe working practices. This is a practically focused unit where learners will work with common materials and relevant tools and equipment to gain an understanding of how they can be used to make engineered products.

One of the assessment criteria is that on Health and Safety standards.

The learner can:

- > Consider the importance of Health and Safety requirements when working in an engineering environment by following:
 - > Health and Safety at Work guidelines.
 - > Control of Substances Hazardous to Health (COSHH) guidelines.
 - > The correct procedure when preparing for an engineering activity.
 - > Safe working procedures in the workshop.
 - > Written safety instructions and displayed notices.
- > Apply the appropriate Health and Safety requirements for workshop activities:
 - > Identifying and eliminating hazards.
 - > Checking all safety equipment.
 - > Sourcing and confirming suitability of personal protective equipment (PPE).
 - > Confirming process operating safety measures.

National Standards Developed by Specialist Bodies:

A variety of national standards developed by sector skills authorities in the United Kingdom has relevance for aspects of this qualification. Some of these bodies are Metal Processing and Allied operations (Metals Industry Skills & Performance Ltd), Chemical, Pharmaceutical and Petro-Chemicals Operations (Cogent) and others.

Unit Title: Prepare for heating:

This unit is about Preparing for heating to ensure the heating plant and equipment are ready to perform in an optimum manner. This involves ensuring:

- > That you receive and check incoming stock.
- > Convey and store stock safely in the designated area.
- > Select the appropriate stock according to the production schedule.
- > That discrepancies and defects are correctly dealt with.
- > You set up plant and equipment correctly.
- > Ensure stock is fed to the process at the appropriate rate.
- > Damaged and malfunctioning plant and equipment are dealt with.

This unit is a suitable choice if one is working with reheating furnaces, soaking pits and batch and continuous annealing processes.

This unit contains two elements:

- > Select and transfer stock for heating.
- > Prepare plant and equipment for heating.

Unit Title: Carrying out finishing operations:

This unit covers the skills and knowledge you will need to carry out finishing operations on materials or products which is used to either enhance its appearance, increase its protection or improve its safety properties.

This unit on material finishing involves:

- > Using the correct equipment for the finishing operation.
- > Carrying out the finishing operation.

- > Monitoring the finishing operation.
- > Reporting problems to the appropriate person.
- > Completing any necessary documentation.
- > Working in ways which maintain the safety of yourself and others.

India:

India is a substantial producer of metals mainly steel. While websites for the many Indian steel companies provide much information, unlike in the UK they contain very little information on the kind of training and the respective levels at which the training that takes.

The following information - pertinent to this qualification was obtained from the website of the National Institute of Secondary Steel Technology in India. Seminars/Workshops/Training/In-house Programmes are held on the following aspects:

- > Importance of Safety Training & Inspection in Induction Furnace units.
- > Heat Treatment.
- > Basic Metallurgy for Mill owners.
- > Safety for Industrial Handling.

The United States:

According to the websites of the American Iron and Steel Institute the education and training you need to work in the steel industry depends on the kind of job you want. Some companies prefer to hire high school or vocational school graduates for processing jobs. Most training is done on the job, however. Usually, workers start in unskilled jobs and learn by helping experienced workers. It takes up to four years to learn some of the most highly skilled jobs, such as those of blowers or rollers, but you may have to wait much longer for an opening in one of these positions. Steel companies often encourage their employees to take courses in subjects such as chemistry, physics, or metallurgy to upgrade their skills.

To qualify for one of the maintenance trades such as those of machinists, millwrights, or pipe fitters, you usually have to serve a three- to four-year apprenticeship. Generally, apprentices are chosen from among high school or vocational school graduates already employed in the plant. To qualify for a job as an administrator or engineer, you usually need a bachelor's degree in the appropriate field. New professional employees often go through a formal training period in the plant before they are fully qualified.

Advancement in plant jobs in the steel industry usually follows a set pattern. For example, a worker may start as a laborer and become a second helper, a first helper, and then a keeper before advancing to a job as a blast furnace blower. Companies usually consider such factors as experience and leadership ability when promoting workers into positions that require the supervision of other workers.

The website of the United Steelworkers of America does not have any information regarding training in metals production at these levels.

Canada:

According to the Human Resources and Social Development Canada, in the primary metal industry most training is done on the job and does not involve the acquisition of formal certifiable skills. In recent years the steel division has made a major effort to increase levels of literacy and numeracy among its personnel. Much of this has been done through the Canadian Steel Trade and Employment Congress (CSTEC) which has developed a wide range of programs offered through secondary schools, community colleges, CEGEP's and, in some cases, through

universities. CSTECH has also developed a distance learning initiative to teach basic skills. The levels at which training is done remains unspecified.

While on-the-job training is the most common form of training in the primary metal industry, training is becoming increasingly formalised through the work of CSTECH. CSTECH has begun to develop standardised job descriptions for basic occupations in the industry and to design training packages in basic steel making practice.

China and Japan:

China is one of the world's biggest metals producers. Japan is a producer of steel. However, an intense internet search proved futile in terms of locating and obtaining information about training within the metal production at this level. In Japan, a search of the following steel producing companies yielded no results: Itoshu Corporation and Nippon Steel Corporation, the second largest steel producer in the world.

New Zealand:

The following Unit Standards are relevant to the competencies that will be acquired through this Qualification:

- > Standard Title: Sort and pack non-ferrous materials.
 - > People credited with this unit standard are able to: separate non-ferrous from ferrous metals; maintain continuity of separator operations; and pack non-ferrous metals.
- > Standard Title: Demonstrate knowledge of the steel industry and its products.
 - > People credited with this unit standard are able to describe New Zealand's steel industry, and New Zealand manufactured steel products.

Australia:

The following information has been taken from the National Training Information Service (NTIS) of Australia.

The Certificate II in Engineering: Production Technology has some resemblance to this Qualification.

The following standards are relevant to this Qualification:

- > MEM13014A: Apply principles of occupational health and safety in the work environment.
- > MEM16007A: Work with others in a manufacturing, engineering or related environment.
- > MEM13001B: Perform emergency first aid.
- > MEM16006A: Organise and communicate information.
- > MEM15004B: Perform inspection.
- > MEM18001C: Use hand tools.

In conclusion, a Qualification very similar to this one could not be found. At this level most countries seem to offer skills programmes. This Qualification is far more comprehensive in terms of the competencies it offers.

ARTICULATION OPTIONS

This Qualification lends itself to both vertical and horizontal articulation possibilities.

Horizontal articulation is possible with the following Qualifications:

- > ID 49402: National Certificate: Steel Tube and Pipe Manufacturing (Seamless Hot-Finished OR Welded OR Cold-Formed) at NQF Level 2.
- > ID 58781: National Certificate: Production Technology at NQF Level 2.
- > ID 58718: National Certificate: Metals Processing at NQF Level 2.
- > ID 59305: National Certificate: Mineral Processing at NQF Level 2.
- > Continuous Processes: Chemical Operations at NQF Level 2.

Vertical articulation is possible with the following Qualifications:

- > ID 64190: National Certificate: Metals Production at NQF Level 3.
- > ID 58785: National Certificate: Production Technology at NQF Level 3.
- > ID 58719: National Certificate: Metals Processing at NQF Level 3.
- > ID 62769: National Certificate: Mineral Processing at NQF Level 3.

MODERATION OPTIONS

> Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with the relevant Education, Training, Quality, and Assurance (ETQA) Body.

> Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.

> Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQA's policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQA's (including professional bodies); and in terms of the moderation guideline detailed immediately below.

> Moderation must include both internal and external moderation of assessments at exit points of the Qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual unit standards, the integrated competence described in the Qualification and will include competence within core sales and the elective standards relevant to the economic sector.

> Anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

For an applicant to register as an assessor, the applicant needs:

- > A minimum of 2 (two) years' practical, relevant occupational experience.
- > A relevant Qualification at NQF Level 3 or higher.
- > To be registered as an assessor with the relevant ETQA.

NOTES

This qualification replaces qualification 49018, "National Certificate: Metals Production", Level 2, 126 credits.

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	119463	Access and use information from texts	Level 2	5
Fundamental	9009	Apply basic knowledge of statistics and probability to influence the use of data and procedures in order to investigate life related problems	Level 2	3
Fundamental	7480	Demonstrate understanding of rational and irrational numbers and number systems	Level 2	3

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	9008	Identify, describe, compare, classify, explore shape and motion in 2-and 3-dimensional shapes in different contexts	Level 2	3
Fundamental	119454	Maintain and adapt oral/signed communication	Level 2	5
Fundamental	119460	Use language and communication in occupational learning programmes	Level 2	5
Fundamental	7469	Use mathematics to investigate and monitor the financial aspects of personal and community life	Level 2	2
Fundamental	9007	Work with a range of patterns and functions and solve problems	Level 2	5
Fundamental	119456	Write/present for a defined context	Level 2	5
Core	116520	Apply safety, health and environmental principles and procedures in a workplace	Level 2	2
Core	116533	Demonstrate basic knowledge and understanding of emergency preparedness and response	Level 2	2
Core	12466	Explain the individual's role within business	Level 2	4
Core	10252	Identify, inspect, use, maintain and care for engineering hand tools	Level 2	6
Core	259721	Perform activities to support a metal production process	Level 2	20
Core	259720	Plan support activities in a metal production process	Level 2	10
Core	9322	Work in a team	Level 2	3
Elective	252250	Apply fire fighting techniques	Level 1	3
Elective	259739	Hand sort material	Level 1	2
Elective	116932	Operate a personal computer system	Level 1	3
Elective	119567	Perform basic life support and first aid procedures	Level 1	5
Elective	115101	Address workplace hazards and risks	Level 2	4
Elective	259691	Clean gas by means of a dry electrostatic precipitator	Level 2	4
Elective	13217	Collect and use information	Level 2	5
Elective	12461	Communicate at work	Level 2	5
Elective	259737	Complete finishing operations and dispatch product	Level 2	12
Elective	259762	Demonstrate an understanding of HIV/AIDS and its impact on the workplace	Level 2	12
Elective	12465	Develop a learning plan and a portfolio for assessment	Level 2	6
Elective	259717	Dry sulphur dioxide gas by means of absorption	Level 2	4
Elective	256660	Generate hot gas	Level 2	4
Elective	259722	Handle and care for materials	Level 2	4
Elective	259683	Heat up a ladle	Level 2	7
Elective	244365	Lift and move material and equipment by means of a forklift	Level 2	3
Elective	259684	Maintain converter air flow by means of a tuyere punching process	Level 2	3
Elective	259690	Maintain the hearth and sidewall of a converter	Level 2	4
Elective	259740	Maintain the paste level in an electrode casing	Level 2	1
Elective	9268	Manage basic personal finance	Level 2	6
Elective	242976	Operate overhead/gantry cranes	Level 2	5
Elective	13221	Perform routine maintenance	Level 2	8
Elective	259688	Pre-heat a refractory-lined vessel	Level 2	6
Elective	259686	Produce anodes by means of a casting process	Level 2	5
Elective	259696	Produce copper bar by means of a roller process	Level 2	4
Elective	259719	Refine molten copper by means of oxygen and propanol blowing	Level 2	10
Elective	252331	Remove airborne dust by means of a bag filter	Level 2	3
Elective	259687	Remove anodes from a casting wheel by means of an anode take-off machine	Level 2	3
Elective	259692	Sample a vertical converter unit by means of a dip bar	Level 2	3
Elective	253638	Sling and communicate during crane operations	Level 2	4
Elective	256658	Straighten cathodes by means of a hydraulic press	Level 2	4
Elective	259682	Transfer an overhead crane by means of a transfer car	Level 2	4
Elective	256667	Transfer material by means of pneumatic conveying system	Level 2	4

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION

None



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Transfer an overhead crane by means of a transfer car***

SAQA US ID	UNIT STANDARD TITLE		
259682	Transfer an overhead crane by means of a transfer car		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	4

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to the transferring of an overhead crane.

SPECIFIC OUTCOME 2

Prepare to transfer an overhead crane.

SPECIFIC OUTCOME 3

Transfer an overhead crane.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the transferring of an overhead crane.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Heat up a ladle**

SAQA US ID	UNIT STANDARD TITLE		
259683	Heat up a ladle		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	7

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to the heating up of a ladle.

SPECIFIC OUTCOME 2

Prepare to heat up a ladle.

SPECIFIC OUTCOME 3

Heat up a ladle.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the heating up process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Maintain converter air flow by means of a tuyere punching process**

SAQA US ID	UNIT STANDARD TITLE		
259684	Maintain converter air flow by means of a tuyere punching process		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	3

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
11660	Maintain converter airflow by means of a tuyere punching process	Level 2	3	Will occur as soon as 259684 is registered

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to punching process.

SPECIFIC OUTCOME 2

Prepare to punch tuyeres.

SPECIFIC OUTCOME 3

Punch tuyeres.

SPECIFIC OUTCOME 4

Complete duties pertaining to the punching process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Produce anodes by means of a casting process***

SAQA US ID	UNIT STANDARD TITLE		
259686	Produce anodes by means of a casting process		
ORIGINATOR			PROVIDER
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	5

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to anodes production.

SPECIFIC OUTCOME 2

Prepare to produce anodes.

SPECIFIC OUTCOME 3

Produce anodes.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the anode production process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Remove anodes from a casting wheel by means of an anode take-off machine***

SAQA US ID	UNIT STANDARD TITLE		
259687	Remove anodes from a casting wheel by means of an anode take-off machine		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	3

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to the removal of anodes by means of a take-off machine.

SPECIFIC OUTCOME 2

Prepare to remove anodes.

SPECIFIC OUTCOME 3

Remove anodes.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the take-off process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Pre-heat a refractory-lined vessel***

SAQA US ID	UNIT STANDARD TITLE		
259688	Pre-heat a refractory-lined vessel		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	6

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to the pre-pre-heating of a refractory lined vessel.

SPECIFIC OUTCOME 2

Prepare to pre-heat a refractory lined vessel.

SPECIFIC OUTCOME 3

Pre-heat a refractory lined vessel.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the pre-heating process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain the hearth and sidewall of a converter

SAQA US ID	UNIT STANDARD TITLE		
259690	Maintain the hearth and sidewall of a converter		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	4

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to maintaining the hearth and sidewall of a converter.

SPECIFIC OUTCOME 2

Prepare to maintain the hearth and sidewall.

SPECIFIC OUTCOME 3

Maintain the hearth and sidewall.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the maintenance of the hearth and sidewall of a converter.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Clean gas by means of a dry electrostatic precipitator**

SAQA US ID	UNIT STANDARD TITLE		
259691	Clean gas by means of a dry electrostatic precipitator		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
11083	Clean gas by means of a dry electrostatic precipitator	Level 2	4	Will occur as soon as 259691 is registered

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to the cleaning process.

SPECIFIC OUTCOME 2

Prepare to clean gas.

SPECIFIC OUTCOME 3

Clean gas.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the cleaning process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Sample a vertical converter unit by means of a dip bar

SAQA US ID	UNIT STANDARD TITLE		
259692	Sample a vertical converter unit by means of a dip bar		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	3

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
110137	Sample a vertical converter unit by means of a dip bar	Level 2	3	Will occur as soon as 259692 is registered

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to the sampling of a molten liquid bath.

SPECIFIC OUTCOME 2

Prepare to sample a molten liquid bath.

SPECIFIC OUTCOME 3

Sample a molten liquid bath.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the process of sampling a molten liquid bath.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Produce copper bar by means of a roller process***

SAQA US ID	UNIT STANDARD TITLE		
259696	Produce copper bar by means of a roller process		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	4

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to the production of copper rod.

SPECIFIC OUTCOME 2

Prepare to produce copper rod.

SPECIFIC OUTCOME 3

Produce copper rod.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the copper rod production process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Dry sulphur dioxide gas by means of absorption***

SAQA US ID	UNIT STANDARD TITLE		
259717	Dry sulphur dioxide gas by means of absorption		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
11085	Dry sulphur dioxide gas by means of absorption	Level 2	4	Will occur as soon as 259717 is registered

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to the drying process.

SPECIFIC OUTCOME 2

Prepare to dry sulphur dioxide gas.

SPECIFIC OUTCOME 3

Dry sulphur dioxide gas.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the drying process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Refine molten copper by means of oxygen and propanol blowing***

SAQA US ID	UNIT STANDARD TITLE		
259719	Refine molten copper by means of oxygen and propanol blowing		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	10

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to the refining of molten copper.

SPECIFIC OUTCOME 2

Prepare to refine copper.

SPECIFIC OUTCOME 3

Refine copper.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the refining process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Plan support activities in a metal production process***

SAQA US ID	UNIT STANDARD TITLE		
259720	Plan support activities in a metal production process		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	10

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to planning and preparing for supporting activities in a metal production environment.

SPECIFIC OUTCOME 2

Plan to perform support activities and functions.

SPECIFIC OUTCOME 3

Prepare consumables and equipment for use.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Perform activities to support a metal production process*

SAQA US ID	UNIT STANDARD TITLE		
259721	Perform activities to support a metal production process		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	20

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Operate production equipment that supports the production process.

SPECIFIC OUTCOME 2

Communicate with process control personnel and maintenance specialists.

SPECIFIC OUTCOME 3

Work safely with due care for self, fellow workers, equipment, materials and the environment.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Handle and care for materials***

SAQA US ID	UNIT STANDARD TITLE		
259722	Handle and care for materials		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
116604	Handle and care for prepared materials	Level 2	4	Will occur as soon as 259722 is registered

SPECIFIC OUTCOME 1

Check material stock levels for metals production.

SPECIFIC OUTCOME 2

Layout materials for use in the production process.

SPECIFIC OUTCOME 3

Work safely with due care for self, fellow workers, equipment, materials and environment.

SPECIFIC OUTCOME 4

Demonstrate knowledge of materials in the metal production process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Complete finishing operations and dispatch product**

SAQA US ID	UNIT STANDARD TITLE		
259737	Complete finishing operations and dispatch product		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	12

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Prepare for work activity.

SPECIFIC OUTCOME 2

Conduct finishing operations.

SPECIFIC OUTCOME 3

Dispatch product.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Hand sort material**

SAQA US ID	UNIT STANDARD TITLE		
259739	Hand sort material		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 1	2

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to the hand sorting of material.

SPECIFIC OUTCOME 2

Hand sort material.

SPECIFIC OUTCOME 3

Complete the duties pertaining to the hand sorting of material.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Maintain the paste level in an electrode casing***

SAQA US ID	UNIT STANDARD TITLE		
259740	Maintain the paste level in an electrode casing		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	1

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
9580	Maintain the paste level in an electrode casing	Level 2	1	Will occur as soon as 259740 is registered

SPECIFIC OUTCOME 1

Demonstrate knowledge relating to maintaining the paste level.

SPECIFIC OUTCOME 2

Prepare to maintain paste level.

SPECIFIC OUTCOME 3

Maintain paste level.

SPECIFIC OUTCOME 4

Complete the duties pertaining to the maintenance process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Demonstrate an understanding of HIV/AIDS and its impact on the workplace***

SAQA US ID	UNIT STANDARD TITLE		
259762	Demonstrate an understanding of HIV/AIDS and its impact on the workplace		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	12

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the main concepts and aspects of HIV/AIDS.

SPECIFIC OUTCOME 2

Describe the regulatory framework for HIV/AIDS with regard to the workplace.

SPECIFIC OUTCOME 3

Explain the impact of HIV/AIDS in the workplace.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	64189	National Certificate: Metals Production	Level 2