



Established in terms of Act 58 of 1995

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 NSB 06, Manufacturing, Engineering and Technology, publishes the following unit standards for public comment.

This notice contains the titles, fields, subfields, NQF levels, credits, and purpose of the unit standards. The 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, Hatfield Forum West, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the unit standards should reach **SAQA** at the address *below and no later than 27 February 2005*. 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: Steel Tube and Pipe Manufacturing (Seamless Hot-Finished OR Welded OR Cold-Formed)

SAQA QUAL ID	QUALIFICATION TITLE	
49400	National Certificate: Steel Tube and Pipe Manufacturing (Seamless Hot-Finished OR Welded OR Cold-Formed)	
SGB NAME	SGB Manufacturing and Assembly Processes	
ABET BAND	PROVIDER NAME	
Undefined		
QUALIFICATION CODE	QUAL TYPE	SUBFIELD
MET-3-National Certificate	National Certificate	Manufacturing and Assembly
MINIMUM CREDITS	NQF LEVEL	QUALIFICATION CLASS
135	Level 3)Regular-Unit Stds Based
SAQA DECISION NUMBER	REGISTRATION START DAT	REGISTRATION END DATE

PURPOSE AND RATIONALE OF THE QUALIFICATION

It is intended that qualifying learners will be able to work in the steel tube and pipe manufacturing environment and be able to perform a range of activities in steel tube and pipe manufacturing processes. This qualification recognises the skills, knowledge and values acquired by learners involved in setting up the manufacturing process for the production of steel tube and pipe and conducting first line maintenance on steel tube and pipe manufacturing and related equipment.

The chief skills that are recognised in this qualification are the ability to install tooling, produce first-off steel product and oversee the activities of team members in the steel tube and pipe manufacturing process. This capability requires a more advanced understanding of quality requirements, the conversion process as well as an understanding of communication, people management and people development theory.

Qualified learners will also understand how they should operate within the legislative, safety, health, environmental, quality and risk management systems that govern their workplace and how to apply the various policies and procedures related to these systems.

Qualifying in the exit level outcomes will allow learners to participate effectively in workplace activities. Learners will also have foundational competence in mathematics, science, reading, writing and speaking relevant to the steel tube and pipe manufacturing industry.

Rationale for the qualification:

The steel tube and pipe manufacturing industry is characterised by sophisticated manufacturing processes operating in a competitive and challenging environment. The manufactured products have to respond to a wide variety of exacting customer requirements. In addition the industry has to respond to global competition and ongoing development of new products as a result of changing customer needs and safety, health, environmental, quality and risk management issues.

This is the second qualification in a series designed for learners who want to follow a career in steel tube and pipe manufacturing. The series outlines a learning progression from NQF level 2 to NQF level 4 for learners learning and working in the following steel tube and pipe manufacturing processes; seamless hot-finished, welded and cold-formed. It reflects the skills, knowledge and understanding required to participate effectively in these manufacturing processes within the industry, whether in small, medium or large operations. For those who have been in the workplace for a long time, this qualification represents part of the RPL process to acknowledge workplace skills acquired without the benefit of formal education or training. For the new entrant, this qualification recognises the applied competence needed by a productive person in a steel tube and pipe manufacturing workplace.

The qualification also forms the basis for further development in manufacturing and assembly processes, and the management thereof, in the further education and training band.

RECOGNIZE PREVIOUS LEARNING?

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LEARNING ASSUMED TO BE IN PLACE

This qualification assumes learners have a National Certificate in Steel Tube and Pipe Manufacturing: NQF Level 2 or equivalent. If the learner does not already have such a qualification, learning in preparation for this qualification would also have to include learning in:

- > Mathematical Literacy at NQF Level 2
- > Concepts of science and technology related to material, machinery and equipment in use in manufacturing processes at NQF Level 2
- > Communication at **NQF** Level 2

Recognition of prior learning:

This qualification may be obtained through a process of RPL. The learner should be thoroughly briefed prior to the assessment and support provided and guidance should be provided to assist in the process of developing a portfolio. While this is primarily a workplace-based qualification, evidence from other **areas of** endeavour may be introduced if pertinent to any of the exit-level outcomes.

Care should be taken that the process used provides the learner with an opportunity to demonstrate competence and is not too demanding as to prevent learners from taking up the RPL option towards gaining the qualification.

QUALIFICATION RULES

In order to be awarded this qualification, learners have to be declared competent in:

- > All listed unit standards in the Fundamental category of the qualification
- > All listed unit standards in the Core category of the qualification
- > A choice of unit standards from the Elective category of the qualification totalling a minimum of **12** credits

EXIT LEVEL OUTCOMES

1. Demonstrate an understanding of, and an ability to, prepare and set up process equipment for **steel tube** and pipe manufacturing processes, working safely and with due care for fellow workers and the environment.
2. Select appropriate procedures to solve familiar problems within steel tube and pipe manufacturing processes and operate within clearly defined contexts, with some scope for personal decision-making and responsibility.
3. Demonstrate a familiarity with first line maintenance procedures and operations for process equipment in area of responsibility.
4. Demonstrate an understanding of, and the ability to, plan, organise and control individuals and work teams in area of responsibility to meet operational requirements.
5. Communicate with team members, internal customers and members of **supervisory/management** levels by demonstrating the ability to gather and summarise information from a range of sources and report this information.

ASSOCIATED ASSESSMENT CRITERIA

1.
 - > Use appropriate instruments to make adjustments or changes to process equipment set up
 - > Meet equipment specifications and manufacturing requirements
 - > Maintain process equipment availability and readiness for manufacturing processes
 - > Maintain a clean and safe work area
 - > Apply and adhere to applicable policies and procedures
 - > Respond to questions and discuss issues related to process equipment set up activities relevant to the outcomes
2.
 - > Select appropriate procedures to solve problems in an efficient and effective manner
 - > Report unfamiliar problems accurately to appropriate personnel
 - > Respond to questions and discuss issues related to familiar problems in the setting up and monitoring of process equipment for **steel** tube and pipe manufacturing
- 3.

- > Perform first line maintenance regularly and consistently on process equipment
- > Maintain process equipment availability and readiness for manufacturing processes
- > Maintain a clean and safe work area
- > Apply and adhere to applicable policies and procedures
- > Respond to questions and discuss issues related to first line maintenance issues on process equipment

- 4.
- > Align workplace performance to meet organisational goals, objectives and targets
 - > Organise resources to effectively meet workplace objectives
 - > Respond to questions and discuss issues related to planning, organising and controlling individuals and work teams

- 5.
- > Gather information from a range of sources and accurately summarise and report on it in an appropriate and timely manner to relevant parties
 - > Discuss and resolve manufacturing issues in work area on a regular basis with other team members, internal customers and supervisors/management
 - > Establish and maintain relationships with peers and supervisory/management levels

Integrated Assessment:

> **Integrated** assessment at the level of the qualification provides an opportunity for learners to show they are able to integrate concepts, actions and ideas achieved across a range of unit standards and contexts.

Integrated assessment must evaluate the quality of observable performance as well as the thinking behind the performance, and must be based on a summative assessment guide. The guide will spell out how the assessor will assess different aspects of the performance and will include:

- > Observing the learner at work (both in the primary activity as well as other interactions)
- > Asking questions and initiating short discussions to test understanding
- > Looking at records and reports in the portfolio and reviewing previous assessments

In some cases inference will **be** necessary to determine competence depending on the nature and context within which performance takes place.

It is necessary to ensure that the fundamental part of the qualification **is** also targeted to ensure that while the competence may have been achieved in a particular context, learners are able to apply it in a range of other contexts and for further learning. The assessment should also ensure that all the CRITICAL CROSS-FIELD OUTCOMES have been achieved.

The learner may choose in which language s/he wants to be assessed. This should be established as part of a process of preparing the learner for assessment and familiarising the learner with the approach being taken.

While this is primarily a workplace-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes. The assessment process should cover both the explicit tasks required for the qualification as well as the understanding of the concepts and principles that underpin the activities associated with the tube and pipe manufacturing process.

INTERNATIONAL COMPARABILITY

No comparative sources of outcomes-based, standards-based and/or learning material could be found during Internet searches. Subject matter experts in this field could not provide any additional references to research for comparison with this qualification. A comparison between this qualification and other international models is therefore not possible.

This qualification **was** however compared with existing machine-based South African qualifications:

- > National Certificate in Iron and Steel manufacturing: NQF Level 3 (ID # 21009)
- > National Certificate in Industrial Rubber Manufacturing (Mixing OR Extruding OR Moulding OR Calendaring): NQF Level 3 (ID # 23258)

It was evident that the technical content of this qualification for Steel Tube and Pipe Manufacturing corresponds with the level and content of the qualifications highlighted above, and is of similar quality and value to learners and the provision of learning according to NQF principles.

ARTICULATION OPTIONS

The qualification has been designed and structured so that qualifying learners can move both horizontally from one area of specialisation to another, and vertically, further specialising in a particular skills area.

This qualification allows learners to enter into the FETC in Steel Tube and Pipe Manufacturing (Seamless Finished or Welded or Cold Formed). This qualification should also, in terms of the fundamental, non-manufacturing unit standards and other portable skills, articulate with any other qualification at level 3 in the fields of:

- > Engineering
- > Machine-based manufacturing processes such as Product Coating and Iron and Steel Manufacturing

Employers or institutions should be able to evaluate the outcomes of these qualifications against the needs of their context and structure top-up learning appropriately. Equally, holders of other qualifications may be evaluated against this qualification for the purpose of RPL.

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, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.
- > Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant Education, Training, Quality, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.
- > Assessment and moderation of assessment will be overseen by the relevant Education, Training, Quality, Assurance (ETQA) Body, or by an ETQA that has a Memorandum of Understanding with the relevant ETQA, according to the ETQA's policies and guidelines for assessment and moderation.
- > 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 as well as the integrated competence described in the Qualification.

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

The assessor should be in possession of:

- > At least the NQF Level 4 Steel Tube and Pipe Manufacturing (Seamless Hot-Finished OR Welded OR Cold-Formed) qualification with relevant workplace experience of at least 12 months in the field of steel tube and pipe manufacturing.
- > Registration as an assessor with the relevant ETQA.

NOTES

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UNIT STANDARDS

(Note: A blank space after this line means that the qualification is not based on Unit Standards.)

	UNIT STANDARD ID AND TITLE	LEVEL	CREDITS	STATUS
Core	12466 Explain the individual's role within business	Level 2	4	Registered
core	9913 Perform first line maintenance	Level 3	14	Registered
core	12456 Explain and use organisational procedures	Level 3	6	Registered
core	12457 Develop learning strategies and techniques	Level 3	3	Registered
Core	13223 Apply safely, health and environmental protection procedures	Level 3	6	Reregistered
core	13234 Apply quality procedures	Level 3	8	Registered
CORE	119053 Set up process for tube and pipe production	Level 3	30	Draft * Prep for P Comment
Core	10981 Supervise work unit to achieve work unit objectives (Individuals and team)	Level 4	12	Registered
Elective	8038 Operating lift trucks	level 3	6	Reregistered
Elective	8039 Operating cranes	Level 3	10	Registered

Elective	12455	Perform the <i>role</i> of a safety, health and environmental protection representative	Level 3	4	Registered
Elective	13914	Conduct a formal meeting	Level 3	3	Registered
Elective	119048	Finish tube and pipe products	Level 3	20	Draft - Prep for P Comment
Fundamental	7456	Use mathematics to investigate and monitor the financial aspects of personal, business and national issues	Level 3	5	Reregistered
Fundamental	8968	Accommodate audience and context needs in oral communication	Level 3	5	Reregistered
Fundamental	8969	Interpret and use information from texts	Level 3	5	Reregistered
Fundamental	8970	Write texts for a range of communicative contexts	Level 3	5	Reregistered
Fundamental	8973	Use language and communication in occupational learning programmes	Level 3	5	Reregistered
Fundamental	9010	Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations	Level 3	2	Reregistered
Fundamental	9012	Investigate life and work related problems using data and probabilities	Level 3	5	Reregistered
Fundamental	9013	Describe, apply, analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts	Level 3	4	Reregistered
Fundamental	13915	Demonstrate knowledge and understanding of HIV/AIDS in a workplace, and its effects on a business sub-sector, own organisation and a specific workplace	Level 3	4	Registered



Established in terms of Act 58 of 1995

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

National Certificate in Steel Tube and Pipe Manufacturing (Seamless Hot-Finished OR Welded OR Cold-Formed)

SAQA QUAL ID	QUALIFICATION TITLE	
49402	National Certificate in Steel Tube and Pipe Manufacturing (Seamless Hot-Finished OR Welded OR Cold-Formed)	
SGB NAME	SGB Manufacturing and Assembly Processes	
ABET BAND	PROVIDER NAME	
Undefined		
QUALIFICATION CODE	QUAL TYPE	SUBFIELD
MET-2-National Certificate	National Certificate	Manufacturing and Assembly
MINIMUM CREDITS	NQF LEVEL	QUALIFICATION CLASS
120	Level 2	Regular-Unit Stds Based
SAQA DECISION NUMBER	REGISTRATION START DAT	REGISTRATION END DATE

PURPOSE AND RATIONALE OF THE QUALIFICATION

It is intended that qualifying learners will be able to work in the steel tube and pipe manufacturing environment and be able to perform a range of activities in steel tube and pipe manufacturing processes. This qualification is related to the inputs to and outputs from the conversion process, but not the conversion process itself. This qualification recognises the skills, knowledge and values acquired by learners involved in readying input material for steel tube and pipe manufacturing processes, checking the manufactured product against quality standards and working in enterprises that use such processes.

The chief skills that are recognised in this qualification are recognising and responding to observed changes that happen during the production process. This capability requires an understanding of quality requirements and of the conversion process. Hand skills play a large role in this qualification.

Qualified learners will also understand how they should operate within the legislative, safety, health, environmental, quality and risk management systems that govern their workplace and how to apply the various policies and procedures related to these systems.

Qualifying in the exit level outcomes will allow learners to participate effectively in workplace activities. What learners achieve in this qualification will also serve as a basis for further learning where they will engage more directly in steel tube and pipe manufacturing processes. Learners will also have foundational competence in mathematics, science, reading, writing and speaking relevant to the steel tube and pipe manufacturing industry.

Rationale for the qualification:

The steel tube and pipe manufacturing industry is characterised by sophisticated manufacturing processes operating in a competitive and challenging environment. The manufactured products have to respond to a wide variety of exacting customer requirements. In addition the industry has to respond to global competition and ongoing development of new products as a result of changing customer needs and safety, health, environmental, quality and risk management issues.

This is the first qualification in a series designed for learners who want to follow a career in steel tube and pipe manufacturing. The series outlines a learning progression from NQF level 2 to NQF level 4 for learners learning and working in the following steel tube and pipe manufacturing processes; seamless hot-finished, welded and cold-formed. It reflects the skills, knowledge and understanding required to participate effectively in these manufacturing processes within the industry, whether in small, medium or large operations.

For those who have been in the workplace for a long time, this qualification represents part of the RPL

process to acknowledge workplace skills acquired without the benefit of formal education or training. For the new entrant, this qualification recognises the applied competence needed by a productive person in a steel tube and pipe manufacturing workplace.

The qualification also forms the basis for further development in manufacturing and assembly processes, and the management thereof, in the further education and training band.

RECOGNIZE PREVIOUS LEARNING?

N

LEARNING ASSUMED TO BE IN PLACE

This qualification assumes learners have a National Certificate in Manufacturing, Engineering and Related Activities: NQF Level 1 or equivalent.

If the learner does not already have such a qualification, learning in preparation for this qualification would also have to include NQF Level 1 learning in:

- > Mathematical Literacy
- > Communication

Recognition of prior learning:

This qualification may be obtained through a process of RPL. The learner should be thoroughly briefed prior to the assessment and support provided and guidance should be provided to assist in the process of developing a portfolio. While this is primarily a workplace-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes.

Care should be taken that the process used provides the learner with an opportunity to demonstrate competence and is not too demanding as to prevent learners from taking up the RPL option towards gaining the qualification.

QUALIFICATION RULES

In order to be awarded this qualification, learners have to be declared competent in:

- > All listed unit standards in the Fundamental category of the qualification
- > All listed unit standards in the Core category of the qualification
- > A choice of unit standards from the Elective category of the qualification totalling a minimum of 19 credits

EXIT LEVEL OUTCOMES

1. Understand the manufacturing process and the quality requirements and recognise and respond to changes in the production process that will result in reduced levels of safety, health, quality or efficiency.
2. Demonstrate an ability to receive, store and ready input material for consumption in the manufacturing process
3. Apply appropriate procedures to solve familiar problems within steel tube and pipe manufacturing processes and operate within clearly defined contexts
4. Work effectively with others, understand own role in the organisation and understand the purpose of the organisation in the economy of the country
5. Communicate with peers and members of supervisory / management levels by demonstrating the ability to summarise information and express opinions on given information in spoken or written form
6. Demonstrate an understanding of options for further learning in this or a related field of learning and preparation requirements for such learning

ASSOCIATED ASSESSMENT CRITERIA

1.
 - > Minimise manufacturing of scrap or faulty product
 - > Report changes and responses accurately and clearly (orally or in writing)
 - > Maintain a clean and safe work area
 - > Respond to questions and discuss issues related to the manufacturing process relevant to the outcomes
 - > Apply and adhere to applicable policies and procedures

- > Make simple adjustments or changes to equipment and process
- > Receive, verify and store materials
- > Load and lay out material for input
- > Minimise material or product damage
- > Apply and adhere to applicable policies and procedures
- > Recognise and report problems, changes and/or malfunctions
- > Respond to questions and discuss issues related to readying materials

3.

- > Apply appropriate procedures to solve problems in an efficient and effective manner
- > Report problems accurately to appropriate personnel
- > Respond to questions and discuss issues related to familiar problems in the readying of input material for steel tube and pipe manufacturing

4.

- > Receive and act on information or decisions
- > Report or pass on relevant information
- > Respond to questions and discuss issues related to own role and purpose of the organisation

5.

- > Conduct regular and on-going communication
- > Discuss daily work schedules and manufacturing issues on a regular basis with other team members
- > Gather, record and report information relevant to own work context and manufacturing process when required and in an appropriate manner
- > Establish functioning relationships with team members and supervisory/ management levels

6.

- > Explain options
- > Explain preparation requirements
- > Develop a learning plan

Integrated Assessment:

Integrated assessment at the level of the qualification provides an opportunity for learners to show they are able to integrate concepts, actions and ideas achieved across a range of unit standards and contexts.

Integrated assessment must evaluate the quality of observable performance as well as the thinking behind the performance, and must be based on a summative assessment guide. The guide will spell out how the assessor will assess different aspects of the performance and will include:

- > Observing the learner at work (both in the primary activity as well as other interactions)
- > Asking questions and initiating short discussions to test understanding
- > Looking at records and reports in the portfolio and reviewing previous assessments

In some cases inference will be necessary to determine competence depending on the nature and context within which performance takes place.

Since this is a foundational qualification, it is necessary to ensure that the fundamental part of the qualification is also targeted to ensure that while the competence may have been achieved in a particular context, learners are able to apply it in a range of other contexts and for further learning. The assessment should also ensure that all the critical cross-field outcomes have been achieved.

The learner may choose in which language s/he wants to be assessed. This should be established as part of a process of preparing the learner for assessment and familiarising the learner with the approach being taken.

While this is primarily a workplace-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes. The assessment process should cover both the explicit tasks required for the qualification as well as the understanding of the concepts and principles that underpin the activities associated with the tube and pipe manufacturing process.

INTERNATIONAL COMPARABILITY

No comparative sources of outcomes-based, standards-based and/or learning material could be found during Internet searches. Subject matter experts in this field could not provide any additional references to research for comparison with this qualification. A comparison between this qualification and other

international models is therefore not possible.

This qualification was however compared with existing machine-based South African qualifications:

- > National Certificate in Iron and Steel manufacturing: NQF Level 2 (ID # 21008)
- > National Certificate in Industrial Rubber Manufacturing (Mixing OR Extruding OR Moulding OR Calendaring): NQF Level 2 (ID # 23257)

It was evident that the technical content of this qualification for Steel Tube and Pipe Manufacturing corresponds with the level and content of these qualifications highlighted above, and is of similar quality and value to learners and the provision of learning according to NQF principles.

ARTICULATION OPTIONS

The qualification has been designed and structured so that qualifying learners can move both horizontally from one area of specialisation to another, and vertically, further specialising in a particular skills area.

This qualification allows learners to progress to the National Certificate in Steel Tube and Pipe Manufacturing (Seamless Hot-Finished or Welded or Cold-Formed): NQF Level 3.

This qualification should also, in terms of the fundamental, non-manufacturing unit standards and other portable skills, articulate with any other qualification at level 2 in the fields of:

- > Engineering
- > Machine-based manufacturing processes such as Product Coating and Iron and Steel Manufacturing

Employers or institutions should be able to evaluate the outcomes of these qualifications against the needs of their context and structure top-up learning appropriately. Equally, holders of other qualifications may be evaluated against this qualification for the purpose of RPL.

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, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.

> Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant Education, Training, Quality, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.

> Assessment and moderation of assessment will be overseen by the relevant Education, Training, Quality, Assurance (ETQA) Body, or by an ETQA that has a Memorandum of Understanding with the relevant ETQA, according to the ETQAs policies and guidelines for assessment and moderation.

> 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 as well as the integrated competence described in the Qualification.

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

The assessor be in possession of:

1. At least the NQF Level 3 Steel Tube and Pipe Manufacturing (Seamless Hot-Finished OR Welded OR Cold-Formed) qualification with relevant workplace experience of at least 12 months in the field of steel tube and pipe manufacturing.

2. Registered as an assessor with the relevant ETQA

NOTES

N/A

UNIT STANDARDS**(Note: A blank space after this line means that the qualification is not based on Unit Standards.)**

	UNIT STANDARD ID AND TITLE	LEVEL	CREDITS	STATUS
CORE	9322 Work in a team	Level 2	3	Registered
CORE	12216 Select, use and care for engineering hand tools	Level 2	8	Registered
Core	12219 Select, use and care for engineering power tools	Level 2	6	Registered
Core	12466 Explain the individual's role within business	Level 2	4	Registered
CORE	12476 Select, use and care for engineering measuring equipment	Level 2	4	Registered
CORE	12481 Sling loads	Level 2	4	Registered
CORE	12654 Monitor the quality of the output	Level 2	12	Registered
CORE	13220 Keep the work area safe and productive	Level 2	8	Registered
CORE	13222 Deal with safety, health and environmental emergencies in the workplace	Level 2	4	Reregistered
Elective	14445 Frame and implement an individual action plan to improve productivity within an organisational unit	Level 1	3	Registered
Elective	9324 Communicate with fellow workers and supervisors	Level 2	4	Reregistered
Elective	12215 Read, interpret and produce basic engineering drawings	Level 2	6	Registered
Elective	12465 Develop a learning plan and a portfolio for assessment	Level 2	6	Registered
Elective	12483 Perform basic first aid	Level 2	4	Reregistered
Elective	12484 Perform basic fire fighting	Level 2	4	Reregistered
Elective	13202 Apply study and learning techniques	Level 2	3	Registered
Elective	119044 Receive and store raw materials	Level 2	12	Draft - Prep for P Comment
Elective	119047 Select and load material for input	Level 2	12	Draft - Prep for P Comment
Fundamental	7469 Use mathematics to investigate and monitor the financial aspects of personal and community life	Level 2	2	Reregistered
Fundamental	7480 Demonstrate understanding of rational and irrational numbers and number systems	Level 2	3	Reregistered
Fundamental	7547 Operate a personal computer system	Level 2	6	Reregistered
Fundamental	8962 Maintain and adapt oral communication	Level 2	5	Reregistered
Fundamental	8963 Access and use information from texts	Level 2	5	Reregistered
Fundamental	8964 Write for a defined context	Level 2	5	Reregistered
Fundamental	8967 Use language and communication in occupational learning programmes	Level 2	5	Reregistered
Fundamental	9007 Work with a range of patterns and functions and solve problems	Level 2	5	Reregistered
Fundamental	9008 Identify, describe, compare, classify, explore shape and motion in 2- and 3-dimensional shapes in different contexts	Level 2	3	Reregistered
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	Reregistered
Fundamental	10718 Use a personal budget to manage own money	Level 2	3	Registered
Fundamental	12463 Understand and deal with HIV/AIDS	Level 2	3	Registered



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

Further Education and Training Certificate: Steel Tube and Pipe Manufacturing (Seamless Hot-Finished OR Welded OR Cold-Formed)

SAQA QUAL ID	QUALIFICATION TITLE	
49403	Further Education and Training Certificate: Steel Tube and Pipe Manufacturing (Seamless Hot-Finished OR Welded OR Cold-Formed)	
SGB NAME	SGB Manufacturing and Assembly Processes	
ABET BAND	PROVIDER NAME	
Undefined		
QUALIFICATION CODE	QUAL TYPE	SUBFIELD
MET-4-National Certificate	National Certificate	Manufacturing and Assembly
MINIMUM CREDITS	NQF LEVEL	QUALIFICATION CLASS
159	Level 4	Regular-Unit Stds Based
SAQA DECISION NUMBER	REGISTRATION START DAT	REGISTRATION END DATE

PURPOSE AND RATIONALE OF THE QUALIFICATION

It is intended that qualifying learners will be able to work in the steel tube and pipe manufacturing environment and be able to perform a range of activities in steel tube and pipe manufacturing processes. This qualification recognises the skills, knowledge and values acquired by learners involved in the actual forming/ manufacturing of seamless or welded or cold-formed steel tube and pipe products.

The chief skills that are recognised in this qualification are the ability to control the production of a range of steel tube and pipe products and enhance the performance of team members. This capability requires an in-depth understanding of the conversion process, product quality requirements, as well as an understanding of communication, people management and people development theory.

Qualified learners will also understand how they should operate within the legislative, safety, health, environmental, quality and risk management systems that govern their workplace and how to apply the various policies and procedures related to these systems.

Qualifying in the exit level outcomes will allow learners to participate effectively in workplace activities. Learners will also have foundational competence in mathematics, science, reading, writing and speaking relevant to the steel tube and pipe manufacturing industry.

Rationale for the qualification:

The steel tube and pipe manufacturing industry is characterised by sophisticated manufacturing processes operating in a competitive and challenging environment. The manufactured products have to respond to a wide variety of exacting customer requirements. In addition the industry has to respond to global competition and ongoing development of new products as a result of changing customer needs and safety, health, environmental, quality and risk management issues.

This is the third qualification in a series designed for learners who want to follow a career in steel tube and pipe manufacturing. The series outlines a learning progression from NQF level 2 to NQF level 4 for learners learning and working in the following steel tube and pipe manufacturing processes; seamless hot-finished, welded and cold-formed. It reflects the skills, knowledge and understanding required to participate effectively in these manufacturing processes within the industry, whether in small, medium or large operations.

For those who have been in the workplace for a long time, this qualification represents part of the RPL process to acknowledge workplace skills acquired without the benefit of formal education or training. For the new entrant, this qualification recognises the applied competence needed by a productive person in a steel tube and pipe manufacturing workplace.

The qualification also forms the basis for further development in manufacturing and assembly processes, and the management thereof, in the higher education and training band.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED TO BE IN PLACE

This qualification assumes learners have a National Certificate in **Steel** Tube and Pipe Manufacturing: NQF Level 3 or equivalent. If the learner does not already have such a qualification, it is assumed that learners are competent in:

- > Communication and Mathematical Literacy at NQF Level 3
- > Concepts of science and technology related to material, machinery and equipment in use in manufacturing processes at NQF Level 3

Recognition of prior learning:

This qualification may be obtained through a process of RPL. The learner should be thoroughly briefed prior to the assessment and support provided and guidance should be provided to assist in the process of developing a portfolio. While this is primarily a workplace-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes.

Care should be taken that the process used provides the learner with an opportunity to demonstrate competence and is not too demanding as to prevent learners from taking up the RPL option towards gaining the qualification.

QUALIFICATION RULES

In order to be awarded this qualification, learners have to be declared competent in:

- > All listed unit standards in the Fundamental and Core category of the qualification
- > All the unit standard(s) in one of the three specialisations:
 - Cold-Formed Tube and Pipe Manufacturing OR
 - Welded Tube and Pipe Manufacturing OR
- > Seamless Tube and Pipe Manufacturing

The learner may also choose additional elective unit standards in excess of the minimum required.

EXIT LEVEL OUTCOMES

1. Demonstrate the ability to produce steel tube and pipe products, and an ability to meet quality, safety, health, environmental and risk management specifications.
2. Demonstrate an understanding of, and ability to perform on-plant product tests, analyse and interpret test results gathered to identify problems and determine trends
Range: Understanding of quality specifications and an ability to interpret these and evaluate fabricated components to determine compliance with specifications.
3. Demonstrate a familiarity with process machinery operations and procedures in order to diagnose and troubleshoot machinery functioning.
4. Maintain and support procedures to solve a variety of manufacturing process problems, both familiar and unfamiliar, and operate within familiar and new situations, taking responsibility and making decisions.
5. Demonstrate the ability to enhance manufacturing team performance.
6. Communicate and present information clearly and reliably.

ASSOCIATED ASSESSMENT CRITERIA

1.
 - > Monitor and control manufacturing processes according to manufacturing and customer requirements
 - > Maintain a clean and safe work area
 - > Monitor and control actual manufacturing cost against budget
 - > Apply and adhere to applicable policies and procedures
 - > Respond to questions and discuss issues related to steel tube and pipe manufacturing processes relevant to the outcomes
2.
 - > Perform product tests and interpret test results
 - > Record actions related to product tests for future reference
 - > Respond to questions and discuss issues related to product tests

- > Explain relevance of quality specifications and importance of adherence to these
3.
 - > Establish root cause of problems and categorise defect types
 - > Communicate equipment repair and preventive maintenance need to maintenance specialists
 - > Respond to questions and discuss issues related to maintenance issues on machinery
 4.
 - > Base solutions to production problems on a clear analysis of information gathered through diagnostic procedures
 - > Modify procedures to respond to unfamiliar problems where appropriate
 - > Record actions related to problem solving for future reference
 - > Respond to questions and discuss issues related to familiar and unfamiliar problems arising in the manufacturing process
 5.
 - > Select employees to fill defined positions
 - > Understand the dynamics within a specific group
 - > Implement procedures related to legislation
 - > Assess learning outcomes
 - > Develop a plan of action and enhance team performance
 6.
 - > Conduct meetings with team members, peers, management and maintenance specialists
 - > Report and discuss conditions, evidence and incidences accurately and in a timely manner
 - > Make records available for scrutiny and future reference

Integrated Assessment:

Integrated assessment at the level of the qualification provides an opportunity for learners to show they are able to integrate concepts, actions and ideas achieved across a range of unit standards and contexts.

Integrated assessment must evaluate the quality of observable performance as well as the thinking behind the performance, and must be based on a summative assessment guide. The guide will spell out how the assessor will assess different aspects of the performance and will include:

- > Observing the learner at work (both in the primary activity as well as other interactions)
- > Asking questions and initiating short discussions to test understanding
- > Looking at records and reports in the portfolio and reviewing previous assessments

In some cases inference will be necessary to determine competence depending on the nature and context within which performance takes place.

It is necessary to ensure that the fundamental part of the qualification is also targeted to ensure that while the competence may have been achieved in a particular context, learners are able to apply it in a range of other contexts and for further learning. The assessment should also ensure that all the critical cross-field outcomes have been achieved.

The learner may choose in which language s/he wants to be assessed. This should be established as part of a process of preparing the learner for assessment and familiarising the learner with the approach being taken.

While this is primarily a workplace-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes. The assessment process should cover both the explicit tasks required for the qualification as well as the understanding of the concepts and principles that underpin the activities associated with the tube and pipe manufacturing process.

INTERNATIONAL COMPARABILITY

No comparative sources of outcomes-based, standards-based and/or learning material could be found during Internet searches. Subject matter experts in this field could not provide any additional references to research for comparison with this qualification. A comparison between this qualification and other international models is therefore not possible.

This qualification was however compared with existing South African unit standards-based qualifications:

- > National Certificate in Iron and Steel manufacturing: NQF Level 4 (ID # 21010)

> National Certificate in Industrial Rubber Manufacturing (Mixing OR Extruding OR Moulding OR Calendaring): NQF Level 4 (ID # 23259)

It was evident that the technical content of this qualification for Steel Tube and Pipe Manufacturing corresponds with the level and content of the qualifications highlighted above, and is of similar quality and value to learners and the provision of learning according to NQF principles.

ARTICULATION OPTIONS

The qualification has been designed and structured so that qualifying learners can move both horizontally from one area of specialisation to another, and vertically, further specialising in a particular skills area.

This qualification has been designed so that the learner can meaningfully articulate into the higher education and training band at NQF Level 5 in steel tube and pipe manufacturing. This qualification should also, in terms of the fundamental, non-manufacturing unit standards and other portable skills, articulate with any other qualification at level 4 in the fields of:

- > Engineering
- > Machine-based manufacturing processes such as Product Coating and Iron and Steel Manufacturing

Employers or institutions should be able to evaluate the outcomes of these qualifications against the needs of their context and structure top-up learning appropriately. Equally, holders of other qualifications may be evaluated against this qualification for the purpose of RPL.

MODERATION OPTIONS

> Anyone assessing a learner or moderating the assessment of a learner against this unit standard must be registered as an assessor with the relevant Education, Training, Quality, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.

> Any institution offering learning that will enable the achievement of this unit standard must be accredited as a provider with the relevant Education, Training, Quality, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.

> Assessment and moderation of assessment will be overseen by the relevant Education, Training, Quality, Assurance (ETQA) Body, or by an ETQA that has a Memorandum of Understanding with the relevant ETQA, according to the ETQA's policies and guidelines for assessment and moderation.

> Moderation must include both internal and external moderation of assessments, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described in the Unit Standard.

Anyone wishing to be assessed against this unit standard 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

Assessors should be in possession of:

- > Appropriate qualification and preferably relevant workplace practical experience of at least 12 months in the field of Manufacturing and/or Operational Management at or above NQF level 5. The subject matter experience of the assessor can be established by recognition of prior learning.
- > Registered as an assessor with the relevant ETQA.

NOTES

N/A

UNIT STANDARDS

(Note: A blank space after this line means that the qualification is not based on Unit Standards.)

	UNIT STANDARD ID AND TITLE	LEVEL	CREDITS	STATUS
Core	13912 Apply knowledge of self and team in order to develop a plan to enhance team performance	Level 3	5	Registered
Core	13914 Conduct a formal meeting	Level 3	3	Registered
Core	13194 Perform statistical process control	Level 4	12	Registered
Core	13224 Monitor the application of safety, health and environmental protection procedures	Level 4	4	Registered

core	13235	Maintain the quality assurance system	Level 4	5	Registered
core	13254	Contribute to the implementation and maintenance of business processes	Level 4	10	Registered
core	119054	Perform tube and pipe product tests and interpret results	Level 4	4	Draft - Prep for P Comment
Elective	12135	Represent stakeholders in consultations and discussions on matters that arise at shop floor level	Level 3	3	Registered
Elective	12429	Develop a personal financial plan	Level 3	2	Registered
Elective	12455	Perform the role of a safety, health and environmental protection representative	Level 3	4	Registered
Elective	12457	Develop learning strategies and techniques	Level 3	3	Registered
Elective	10978	Recruit and select candidates to fill defined positions	Level 4	10	Registered
Elective	119051	Prepare material chemically for input	Level 4	10	Draft - Prep for P Comment
Elective	119052	Produce cold-formed tube and pipe	Level 4	50	Draft - Prep for P Comment
Elective	119055	Produce seamless hot-finished tube and pipe	Level 4	60	Draft - Prep for P Comment
Elective	119058	Produce welded tube and pipe	Level 4	60	Draft - Prep for P Comment
Fundamental	8968	Accommodate audience and context needs in oral communication	Level 3	5	Reregistered
Fundamental	8969	Interpret and use information from texts	Level 3	5	Reregistered
Fundamental	8970	Write texts for a range of communicative contexts	Level 3	5	Reregistered
Fundamental	8973	Use language and communication in occupational learning programmes	Level 3	5	Reregistered
Fundamental	7468	Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues	Level 4	6	Reregistered
Fundamental	8974	Engage in sustained oral communication and evaluate spoken texts	Level 4	5	Reregistered
Fundamental	8975	Read, analyse and respond to a variety of texts	Level 4	5	Reregistered
Fundamental	8976	Write for a wide range of contexts	Level 4	5	Reregistered
Fundamental	8979	Use language and communication in occupational learning programmes	Level 4	5	Reregistered
Fundamental	9015	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Level 4	6	Reregistered
Fundamental	9016	Represent, analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts	Level 4	4	Reregistered



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

1

Receive and store raw materials

SAQA US ID	UNIT STANDARD TITLE		
119044	Receive and store raw materials		
SGB NAME	(ABETBAND	(PROVIDERNAME	
SGB Manufacturing and Assembly Processes	Undefined		
FIELD DESCRIPTION	SUBFIELD DESCRIPTION		
Manufacturing, Engineering and Technology	Fabrication and Extraction		
UNIT STANDARD CODE	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
MET-FBE-O-SGB MAP	Regular	Level 2	12

SPECIFIC OUTCOME 1

Plan and prepare for activity.

SPECIFIC OUTCOME 2

Receive, **verify** and store raw materials.

SPECIFIC OUTCOME 3

Recognise and report problems, changes and/or malfunctions.

SPECIFIC OUTCOME 4

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



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

2

Select and load material for input

SAQA US ID	UNIT STANDARD TITLE		
119047	Select and load material for input		
SGB NAME	ABET BAND	PROVIDER NAME	
SGB Manufacturing and Assembly Processes	Undefined		
FIELD DESCRIPTION	SUBFIELD DESCRIPTION		
Manufacturing, Engineering and Technology	Fabrication and Extraction		
UNIT STANDARD CODE	UNIT STANDARD TYPE	NQF LEVEL	(CREDITS)
MET-FBE-O-SGB MAP	Regular	Level 2	12

SPECIFIC OUTCOME 1

Plan and prepare for activity.

SPECIFIC OUTCOME 2

Organise, inspect and prepare mechanical aids, handling equipment, *tools*, consumables and the work area.

SPECIFIC OUTCOME 3

Identify and report defects and hazardous conditions.

SPECIFIC OUTCOME 4

Check, transfer, load and lay out material for input.

SPECIFIC OUTCOME 5

Dispose of scrap material and segregate recyclable material.

SPECIFIC OUTCOME 6

Identify defects, nonconformances and hazardous conditions and take corrective action.

SPECIFIC OUTCOME 7

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



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

3

Finish tube and pipe products

SAQA US ID	UNIT STANDARD TITLE		
119048	Finish tube and pipe products		
SGB NAME	ABET BAND	PROVIDER NAME	
SGB Manufacturing and Assembly Processes	Undefined		
FIELD DESCRIPTION	SUBFIELD DESCRIPTION		
Manufacturing, Engineering and Technology	Manufacturing and Assembly		
UNIT STANDARD CODE	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
MET-MNA-0-SGB MAP	Regular	Level 3	20

SPECIFIC OUTCOME 1

Plan and prepare for process.

SPECIFIC OUTCOME 2

Inspect and prepare tools, equipment, consumables and the work area.

SPECIFIC OUTCOME 3

Identify, inspect for wear and damage, install and set up tooling.

SPECIFIC OUTCOME 4

Finish tube and pipe product.

SPECIFIC OUTCOME 5

Identify non-conformances and take corrective action.

SPECIFIC OUTCOME 6

Execute changeover process.

SPECIFIC OUTCOME 7

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



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

4

Set up process for tube and pipe production

SAQA US ID	UNIT STANDARD TITLE		
119053	Set up process for tube and pipe production		
SGB NAME	ABET BAND	PROVIDER NAME	
SGB Manufacturing and Assembly Processes	Undefined		
FIELD DESCRIPTION	SUBFIELD DESCRIPTION		
Manufacturing, Engineering and Technology	Manufacturing and Assembly		
UNIT STANDARD CODE	UNIT STANDARD TYPE	NQF LEVEL	(CREDITS)
MET-MNA-0-SGB MAP	Regular	Level 3	30

SPECIFIC OUTCOME 1

Plan and prepare for activity.

SPECIFIC OUTCOME 2

Organise, inspect and prepare handling and measuring equipment, tools, consumables and the work area.

SPECIFIC OUTCOME 3

Set up, inspect and install tooling.

SPECIFIC OUTCOME 4

Start and test operational functioning of auxiliary systems and equipment.

SPECIFIC OUTCOME 5

Set equipment operational parameters, produce first off product and inspect against specification.

SPECIFIC OUTCOME 6

Identify defects, non-conformances and hazardous conditions and take corrective action.

SPECIFIC OUTCOME 7

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



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

5

Perform tube and pipe product tests and interpret results

SAQA US ID	UNIT STANDARD TITLE		
119054	Perform tube and pipe product tests and interpret results		
SGB NAME	ABET BAND	PROVIDER NAME	
SGB Manufacturing and Assembly Processes	Undefined		
FIELD DESCRIPTION	SUBFIELD DESCRIPTION		
Manufacturing, Engineering and Technology	Fabrication and Extraction		
UNIT STANDARD CODE	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
MET-FBE-O-SGB MAP	Regular	Level 4	4

SPECIFIC OUTCOME 1

Plan and prepare for activity.

SPECIFIC OUTCOME 2

Identify, select, mark and process product samples.

SPECIFIC OUTCOME 3

Perform on-plant product tests and interpret test results.

SPECIFIC OUTCOME 4

Demonstrate understanding of laboratory product tests/testing processes.

SPECIFIC OUTCOME 5

Identify defects, non-conformances and hazardous conditions and take corrective action.

SPECIFIC OUTCOME 6

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



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

6

Prepare material chemically for input

SAQA US ID	UNIT STANDARD TITLE		
119051	Prepare material chemically for input		
SGB NAME	ABET BAND	PROVIDER NAME	
SGB Manufacturing and Assembly Processes	Undefined		
FIELD DESCRIPTION	SUBFIELD DESCRIPTION		
Manufacturing, Engineering and Technology	Manufacturing and Assembly		
UNIT STANDARD CODE	UNIT STANDARD TYPE	NQF LEVEL	(CREDITS)
MET-MNA-0-SGB MAP	Regular	Level 4	10

SPECIFIC OUTCOME 1

Plan the process.

SPECIFIC OUTCOME 2

Select and check availability of consumables, materials, tools and equipment necessary for process.

SPECIFIC OUTCOME 3

Prepare and chemically treat input material.

SPECIFIC OUTCOME 4

Analyse process chemicals, determine and affect required adjustments.

SPECIFIC OUTCOME 5

Identify defects, non-conformances and hazardous conditions and take corrective action.

SPECIFIC OUTCOME 6

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



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

7

Produce cold-formed tube and pipe

SAQA US ID	UNIT STANDARD TITLE		
119052.	Produce cold-formed tube and pipe		
SGB NAME	ABET BAND	PROVIDER NAME	
SGB Manufacturing and Assembly Processes	Undefined		
FIELD DESCRIPTION	SUBFIELD DESCRIPTION		
Manufacturing, Engineering and Technology	Manufacturing and Assembly		
UNIT STANDARD CODE	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
MET-MNA-0-SGB MAP	Regular	Level 4	50

SPECIFIC OUTCOME 1

Plan the manufacturing process.

SPECIFIC OUTCOME 2

Draw cold-formed product.

SPECIFIC OUTCOME 3

Identify defects, non-conformances and hazardous conditions and take corrective action.

SPECIFIC OUTCOME 4

Execute changeover process.

SPECIFIC OUTCOME 5

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



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

8

Produce seamless hot-finished tube and pipe

SAQA US ID	UNIT STANDARD TITLE		
119055	Produce seamless hot-finished tube and pipe		
SGB NAME	(ABET BAND	PROVIDER NAME	
SGB Manufacturing and Assembly Processes	(Undefined		
FIELD DESCRIPTION	SUBFIELD DESCRIPTION		
Manufacturing, Engineering and Technology	Manufacturing and Assembly		
UNIT STANDARD CODE	UNIT STANDARD TYPE	NQF LEVEL	(CREDITS
MET-MNA-0-SGB MAP	Regular	Level 4	160

SPECIFIC OUTCOME 1

Plan the manufacturing process.

SPECIFIC OUTCOME 2

Roll hot-finished product.

SPECIFIC OUTCOME 3

Identify defects, non-conformances and hazardous conditions and take corrective action.

SPECIFIC OUTCOME 4

Execute changeover process.

SPECIFIC OUTCOME 5

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



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

9

Produce welded tube and pipe

SAQA US ID	UNIT STANDARD TITLE		
11905%	Produce welded tube and pipe		
SGB NAME	ABET BAND	PROVIDER NAME	
SGB Manufacturing and Assembly Processes	Undefined		
FIELD DESCRIPTION	SUBFIELD DESCRIPTION		
Manufacturing, Engineering and Technology	Manufacturing and Assembly		
UNIT STANDARD CODE	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
MET-MNA-0-SGB MAP	Regular	(Level 4)	60

SPECIFIC OUTCOME 1

Plan the manufacturing process.

SPECIFIC OUTCOME 2

Form product.

SPECIFIC OUTCOME 3

Weld product.

SPECIFIC OUTCOME 4

Identify defects, non-conformances and hazardous conditions and take corrective action.

SPECIFIC OUTCOME 5

Execute changeover process.

SPECIFIC OUTCOME 6

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