**No. 1544** **24 October 2003**

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

**Plastics Manufacturing**

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

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the unit standard. The unit standard 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 16 November 2003.*** All correspondence should be marked **Standards Setting – SGB for Plastics manufacturing** and addressed to

The Director: Standards Setting and Development
SAQA
*Attention: Mr. D Mphuthing*
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144
e-mail: dmphuthing@saqa.co.za

**JOE SAMUELS**
**DIRECTOR: STANDARDS SETTING AND DEVELOPMENT**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

### *QUALIFICATION:*

### *National Certificate: Thermoplastic Fabrication*

| *SAQA QUAL ID* | *QUALIFICATION TITLE* | |
|---|---|---|
| 24215 | National Certificate: Thermoplastic Fabrication | |
| *SGB NAME* | SGB Plastics Manufacturing | |
| *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* |
| 121 | Level 2 | Regular-Unit Stds Based |
| *SAQA DECISION NUMBER* | *REGISTRATION START DATE* | *REGISTRATION END DATE* |
| | | |

***PURPOSE OF THE QUALIFICATION***

The purpose of this qualification is to provide learners, education and training providers and employers with the standards and the range of learning required to work effectively in the thermoplastic fabrication industry and to meet the challenges of such an environment.

This qualification recognises the skills, knowledge and values acquired by learners involved in thermoplastics fabrication. The chief skill that is recognised in this qualification is the ability to produce plastic assemblies using a variety of fabrication methods. This capability requires an understanding of basic fabrication theory; engineering tools; concepts of measurement; basic engineering drawing; properties of plastic materials and methods of joining plastic components. Hand skills play a role in this qualification.

This qualification requires that learners qualify in at least three of the five different welding processes. This requirement is a measure to allow for learners with work experience but limited access to training to achieve a qualification at this level. In the first revision of this qualification this requirement will change to include all five welding processes.

Qualified learners will also understand:
> The basics of how a business functions
> Their role in the business, i.e. in thermoplastic fabrication and related activities
> How they are affected by legislation, regulations, agreements and policies related to their particular work environment
With this understanding, learners will be able to participate in workplace activities.

What learners achieve in this qualification will also serve as a basis for further learning where they will further develop their skills and knowledge to include more complex welding, laying out and marking off of regular and irregular shapes and developing work instructions from drawings.

Rationale for the qualification:
This is the first qualification in a series for learners who want to follow a career in thermoplastic fabrication processes. This qualification focuses on developing skills and knowledge necessary to begin such a career.

The thermoplastic fabrication industry operates in a competitive and challenging environment. The finished fabrications have to respond to a wide variety of exacting customer and consumer requirements. In addition, the industry has to respond to international competition, on-going development of new products as the result of changing customer needs, and environmental issues.

The fabrication of plastics products generally requires the joining of plastics components into assemblies. The assemblies are often subjected to considerable stress when in operation and the manufacturing process needs to be consistent and accurate.

There were previously no qualifications for this branch of industry, which consists of many micro and small enterprises. Few employees have any sort of formal qualification. The industry has low barriers to entry and invests little in developing people's skills. This, together with the ignorance of clients, has led to widely differing standards. Many products and services are safety critical in nature and there is a need to create skills standards to alleviate these problems.

This qualification forms part of a series of qualifications at different levels to create opportunities for development, a career path and greater security of employment within the thermoplastics fabrication industry.

This qualification enables learners who have gained relevant experience in the workplace to obtain credits through the RPL process. This qualification also forms the basis for further development in thermoplastic fabrication in particular and the plastics manufacturing industry in general.

***RECOGNIZE PREVIOUS LEARNING?***

Y

***LEARNING ASSUMED TO BE IN PLACE***

This qualification assumes learners have a General Education and Training Certificate at NQF Level 1, or alternatively, ABET qualifications.
If the learner does not already have such a qualification, learning in preparation for this qualification would also have to include:
> Communication and numeracy
> Basic concepts of science and technology

Recognition of prior learning:
This qualification may be obtained through a process of RPL. The learner should be thoroughly briefed on the mechanism to be used and support and guidance should be provided. Care should be taken that the mechanism used provides the learner with an opportunity to demonstrate competence and is not so onerous as to prevent learners from taking up the RPL option towards gaining a qualification.

***QUALIFICATION RULES***

N/A

***EXIT LEVEL OUTCOMES***

1. Demonstrate an understanding of fabrication methods and an ability to produce simple assemblies / components that meet quality and output requirements, working safely and in an environmentally aware manner.
2. Identify plastics materials used in the fabrication process and describe their characteristics and applications.
3. Demonstrate an ability to read and interpret basic engineering drawings and sketches as used in thermoplastic fabrication.
4. Demonstrate an ability to select, use and care for fabrication equipment and consumables.
5. Work effectively with others, understand own role in the organisation and understand the purpose of the organisation in the economy of the country.
6. Demonstrate the ability to communicate with peers and members of supervisory / management levels by summarising information and expressing opinions on given information in spoken form.

***ASSOCIATED ASSESSMENT CRITERIA***

1.
>Output and quality requirements are met
> Safe working practices are adhered to
> Issues related to the theoretical principles of fabrication, the various fabrication methods and the functioning of equipment / machinery are discussed and an understanding is demonstrated by responding to questions
2.

> Key fabrication materials are identified and their properties relevant to the fabrication process and end use are described
> Issues related to the common applications and methods of fabricating using plastic materials are discussed and an understanding is demonstrated by responding to questions.
3.
> Components / assemblies to be fabricated are identified and requirements interpreted from engineering drawing or sketch
> Engineering drawing or sketch is produced to meet job requirements
> Issues related to engineering drawing concepts and material lists for thermoplastic fabrication are discussed and an understanding is demonstrated by responding to questions .
4.
> Equipment is used in accordance with manufacturer's specifications
> Adjustments or responses are made according to an assessment of the specific requirements of the working environment
> Issues related to the use and maintenance of equipment are discussed and an understanding is demonstrated by responding to questions.
5.
> Information or decisions are received and acted on
> Relevant information is reported or passed on
> Issues at the level of the qualification related to own role and the purpose of the organisation are discussed and an understanding is demonstrated by responding to questions.
6.
> Communication is effective, regular and ongoing
> Information is clear and accurate and conveyed in a timely manner
> Relationships with peers and supervisory / management levels are established and functioning

Integrated Assessment:
The purpose of assessment for this qualification is not to re-assess the outcomes of unit standards but to assess the evidence in terms of exit level outcomes. The exit level outcomes represent an integration of the various unit standards.

Integrated assessment at the level of the qualification provides an opportunity for learners to show they are able to integrate concepts, actions and values 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.

Some assessment aspects will demand practical demonstration while others may not. In some cases inference will be necessary to determine competence, depending on the nature and context within which performance takes place.

Assessors will collect evidence of the learner's competence by:
> Observing the learner at work (in primary activities as well as in other work-related interactions) or by relevant simulations
> Asking questions and initiating short discussions to test understanding
> Looking at records, reports, the portfolio and assessment reports for individual unit standards

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.

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 the critical cross-field outcomes have been achieved.

***INTERNATIONAL COMPARABILITY***

An extensive search has not revealed any comparable qualifications. The contents of this qualification do, however, conform to the first phase of trade-level fabrication qualifications in Germany. It is likely that this qualification will become a benchmark for future qualifications of this kind for other countries.

***ARTICULATION OPTIONS***

The qualification has been designed and structured so that qualifying learners can move from one context to another. Employers or institutions should be able to evaluate the outcomes of this qualification 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 against this qualification must be registered as an assessor with the relevant ETQA
> Any institution or learning provider offering learning towards the achievement of this qualification should be accredited as a provider with the relevant ETQA
> Moderation of assessment should be overseen by the relevant ETQA according to the moderation guidelines provided for in this qualification as well as the agreed ETQA guidelines

***CRITERIA FOR THE REGISTRATION OF ASSESSORS***

The following criteria should be applied by the relevant ETQA:
1. Appropriate qualification in the field of plastics fabrication at NQF Level 3 and a minimum of 2 years' experience in a thermoplastic fabrication environment. The subject matter experience of the assessor can be established by recognition of prior learning
2. Appropriate experience and understanding of assessment theory, processes and practices
3. Good inter-personal skills and the ability to balance the conflicting requirements of:
> Maintaining national standards
> The interests of the learner
> The need for transformation and redressing the legacies of the past
> The cultural background and language of the learner
4. Registration as an assessor with the MERS ETQA or any other relevant ETQA

***NOTES***

Note on the design of the qualification:

Core
Three of the following Unit Standards must be selected:
-Weld thermoplastics with extrusion equipment;
-Weld thermoplastics with electrofusion equipment;
-Weld thermoplastics with solvent cement;
-Weld thermoplastics with heated-tool equipment;
-Weld thermoplastics with hot gas.

Elective
One or two of the following Unit Standards must be selected, if not selected under Core:
-Weld thermoplastics with extrusion equipment;
-Weld thermoplastics with electrofusion equipment;
-Weld thermoplastics with solvent cement;
-Weld thermoplastics with heated-tool equipment;
-Weld thermoplastics with hot gas.

***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 | 12216 Select, use and care for engineering hand tools | Level 2 | 8 | 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 | 13220 Keep the work area safe and productive | Level 2 | 8 | Registered |
| Core | 13258 Participate in work group activities | Level 2 | 4 | Registered |

| | | | | |
|---|---|---|---|---|
| Core | 14681 Select, use and care for power tools used for thermoplastic fabrication | Level 2 | 6 | Public Comment |
| Core | 14684 Weld thermoplastics with electrofusion equipment | Level 2 | 5 | Public Comment |
| Core | 14686 Identify thermoplastics and related materials and relate their properties to their application | Level 2 | 8 | Public Comment |
| Core | 14690 Weld thermoplastics with solvent cement | Level 2 | 5 | Public Comment |
| Core | 14693 Read and interpret basic engineering drawings as required for thermoplastic fabrication | Level 2 | 5 | Public Comment |
| Core | 14694 Weld thermoplastics with heated-tool equipment | Level 2 | 5 | Public Comment |
| Core | 14696 Weld thermoplastics with hot gas | Level 2 | 5 | Public Comment |
| Core | 14697 Weld thermoplastics with extrusion equipment | Level 2 | 5 | Public Comment |
| Elective | 12481 Sling loads | Level 2 | 4 | Public Comment |
| Elective | 12484 Perform basic fire fighting | Level 2 | 4 | Public Comment |
| Elective | 13222 Deal with safety, health and environmental emergencies in the workplace | Level 2 | 4 | Registered |
| Fundamental | 7469 Use mathematics to investigate and monitor the financial aspects of personal and community life | Level 2 | 2 | Registered |
| Fundamental | 8962 Maintain and adapt oral communication | Level 2 | 5 | Registered |
| Fundamental | 8963 Access and use information from texts | Level 2 | 5 | Registered |
| Fundamental | 8964 Write for a defined context | Level 2 | 5 | Registered |
| Fundamental | 8982 Demonstrate understanding of rational and irrational numbers and number systems within the context of relevant calculations | Level 2 | 3 | Registered |
| Fundamental | 9007 Work with a range of patterns and functions and solve problems | Level 2 | 5 | Registered |
| 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 | Registered |
| Fundamental | 9268 Manage basic personal finance | Level 2 | 6 | Registered |
| Fundamental | 12444 Measure, estimate and calculate physical quantities and explore, describe and represent geometrical relationships in 2-dimensions in different life or workplace contexts | Level 2 | 3 | Registered |
| Fundamental | 12461 Communicate at work | Level 2 | 5 | Registered |
| Fundamental | 12463 Understand and deal with HIV/AIDS | Level 2 | 3 | Registered |
| Fundamental | 12465 Develop a learning plan and a portfolio for assessment | Level 2 | 6 | Registered |

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

### *QUALIFICATION:*

### *National Certificate: Thermoplastic Fabrication*

| *SAQA QUAL ID* | *QUALIFICATION TITLE* | |
|---|---|---|
| 24217 | National Certificate: Thermoplastic Fabrication | |
| *SGB NAME* | SGB Plastics Manufacturing | |
| *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* |
| 126 | Level 3 | Regular-Unit Stds Based |
| *SAQA DECISION NUMBER* | *REGISTRATION START DATE* | *REGISTRATION END DATE* |
| | | |

***PURPOSE OF THE QUALIFICATION***

The purpose of this qualification is to provide learners, education and training providers and employers with the standards and the range of learning required to work effectively in the thermoplastic fabrication industry and to meet the challenges of such an environment.

This qualification recognises the skills, knowledge and values acquired by learners involved in thermoplastics fabrication. The chief skill that is recognised in this qualification is the ability to produce plastic components and assemblies of some complexity using a variety of fabrication methods. This capability requires an understanding of the laying out and marking off of shapes; the setting up and use of powered machinery; development and fabrication from drawings and sketches; the cutting and joining of components; and complex welds. Hand skills play a role in this qualification. At this level, qualifying learners must be proficient in all five welding processes.

Qualifying learners will be able to relate what they are doing to scientific principles and concepts. They will also be able to maintain and support the various policies and procedures related to the safety, health, environment and quality systems that govern their workplace. Qualifying learners will also understand diversity and how to resolve conflict in the workplace, the basics of business finance and how to manage their own work time effectively.

What learners achieve in this qualification will also serve as a basis for further learning where they will further develop their skills and knowledge to include fabricating complex welded assemblies and shapes, maintaining product quality and commissioning and handing over fabrications.

Rationale for the qualification:
This is the second qualification in a series for learners who want to follow a career in thermoplastic fabrication processes. This qualification focuses on developing skills and knowledge necessary to progress in such a career.

The thermoplastic fabrication industry operates in a competitive and challenging environment. The finished fabrications have to respond to a wide variety of exacting customer and consumer requirements. In addition, the industry has to respond to international competition, on-going development of new products as the result of changing customer needs, and environmental issues.

The fabrication of plastics products generally requires the manufacture and joining of plastics components into assemblies. The assemblies are often subjected to considerable stress when in operation and the manufacturing process needs to be consistent and accurate.

There were previously no qualifications for this branch of industry, which consists of many micro and small enterprises. Few employees have any sort of formal qualification. The industry has low barriers to entry and invests little in developing people's skills. This, together with the ignorance of clients, has led to widely differing standards. Many products and services are safety critical in nature and there is a need to create skills standards to alleviate these problems.

This qualification forms part of a series of qualifications at different levels to create opportunities for development, a career path and greater security of employment within the thermoplastics fabrication industry.

This qualification enables learners who have gained relevant experience in the workplace to obtain credits through the RPL process. This qualification also forms the basis for further development in thermoplastic fabrication in particular and the plastics manufacturing industry in general.

***RECOGNIZE PREVIOUS LEARNING?***

Y

***LEARNING ASSUMED TO BE IN PLACE***

This qualification assumes learners have a National Certificate in Thermoplastic Fabrication (Level 2). If the learner does not already have such a qualification, learning in preparation for this qualification would also have to include:
> Language and maths beyond basic literacy and numeracy
> Basic concepts of science and technology related to fabrication methods, plastics materials, and tools and equipment used in the fabrication process
> An ability to produce simple components and assemblies using a variety of fabrication methods
> An ability to perform routine maintenance on machinery
> Concepts of organising factors in labour, business and the economy
> Role and purpose of procedures related to workplace relationships, roles and responsibilities

Recognition of prior learning:
This qualification may be obtained through a process of RPL. The learner should be thoroughly briefed on the mechanism to be used and support and guidance should be provided. Care should be taken that the mechanism used provides the learner with an opportunity to demonstrate competence and is not so onerous as to prevent learners from taking up the RPL option towards gaining a qualification.

***QUALIFICATION RULES***

N/A

***EXIT LEVEL OUTCOMES***

1. Demonstrate an ability to produce components and assemblies of some complexity using a variety of fabrication methods and operations, meeting output requirements and working safely with due care for fellow workers and the environment.
2. Demonstrate an ability to plan fabrication processes, develop work instructions, and lay out and mark off materials.
3. Demonstrate an ability to select and apply quality checks to determine whether components and assemblies comply with specifications.
4. Select procedures to solve familiar problems within a thermoplastic fabrication environment and operate within clearly defined contexts, with some scope for personal decision-making and responsibility.
5. Contribute to workgroup efforts and support the maintenance of a safe, effective and efficient workplace.
6. Demonstrate the ability to communicate with peers and members of supervisory / management levels and to use information which has been gathered and summarised from a range of sources to produce simple written reports

***ASSOCIATED ASSESSMENT CRITERIA***

1.
> Output and quality requirements are met
> Fabrication time limits are adhered to
> Safe working practices are adhered to
> Issues related to the theoretical principles of fabrication and the various fabrication methods and their

respective operations at this level are discussed and an understanding is demonstrated by responding to questions
2.
> Components and assemblies to be fabricated are identified and requirements are interpreted from drawing
> Material lists are compiled
> Work instructions are clear and logical and comprehensive
> The ability to plan fabrication processes for a variety of different situations and projects is demonstrated
3.
> Quality checks are appropriate for the specifications
> Issues related to various quality checks, methods and procedures and the principles underpinning such quality checks are discussed and an understanding is demonstrated by responding to questions.
4.
> Appropriate procedures are selected to solve problems in an efficient and effective manner
> Unfamiliar problems are accurately reported to appropriate personnel
> Issues related to familiar problems in the fabrication of components and assemblies are discussed and an understanding is demonstrated by responding to questions.
5.
> Production schedules and assignments are met
> Production workflow is managed efficiently
> Safe working practices are adhered to
> Workgroup goals are met
> Assistance and support are provided where required
> Active participation in workgroup discussions, in workgroup problem solving activities and in the implementation of solutions occurs
> Relevant information is received and passed on
6.
> Information is gathered from a range of sources and accurately summarised
> Information is presented clearly, in a timely manner and in the required format to appropriate parties
> Relationships with peers and supervisory / management levels are established and functioning.

Integrated Assessment:

The purpose of assessment for this qualification is not to re-assess the outcomes of unit standards but to assess the evidence in terms of exit level outcomes. The exit level outcomes represent an integration of the various unit standards.

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.

Some assessment aspects will demand practical demonstration while others may not. In some cases inference will be necessary to determine competence, depending on the nature and context within which performance takes place.

The assessor will collect evidence of the learner's competence by:
> Observing the learner at work (in primary activities as well as in other work-related interactions) or by relevant simulations
> Asking questions and initiating short discussions to test understanding
> Looking at records, reports, the portfolio and assessment reports for individual unit standards

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 on the approach being taken.

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 the critical cross-field outcomes have been achieved.

***INTERNATIONAL COMPARABILITY***

An extensive search has not revealed any comparable qualifications. The contents of this qualification do, however, conform to the second phase of trade-level fabrication qualifications in Germany. It is likely that this qualification will become a benchmark for future qualifications of this kind for other countries.

***ARTICULATION OPTIONS***

The qualification has been designed and structured so that qualifying learners can move from one context to another. Employers or institutions should be able to evaluate the outcomes of this qualification 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 against this qualification must be registered as an assessor with the relevant ETQA
> Any institution or learning provider offering learning towards the achievement of this qualification should be accredited as a provider with the relevant ETQA
> Moderation of assessment should be overseen by the relevant ETQA according to the moderation guidelines provided for in this qualification as well as the agreed ETQA guidelines.

***CRITERIA FOR THE REGISTRATION OF ASSESSORS***

The following criteria should be applied by the relevant ETQA:
1. Appropriate qualification in the field of plastics fabrication at NQF Level 4 and a minimum of 2 years' experience in a thermoplastic fabrication environment. The subject matter experience of the assessor can be established by recognition of prior learning
2. Appropriate experience and understanding of assessment theory, processes and practices
3. Good interpersonal skills and the ability to balance the conflicting requirements of:
> Maintaining national standards
> The interests of the learner
> The need for transformation and redressing the legacies of the past
> The cultural background and language of the learner
4. Registration as an assessor with the MERS ETQA or any other 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 | 9526 Manage basic business finance | Level 3 | 6 | Registered |
| Core | 9530 Manage work time effectively | Level 3 | 3 | Registered |
| Core | 9531 Show understanding of diversity in the workplace | Level 3 | 3 | Registered |
| Core | 9533 Use communication skills to handle and resolve conflict in the workplace | Level 3 | 3 | Registered |
| Core | 12457 Develop learning strategies and techniques | Level 3 | 3 | Registered |
| Core | 14688 Develop work instructions for thermoplastic fabrication using drawings | Level 3 | 10 | Public Comment |
| Core | 14699 Fabricate thermoplastic assemblies requiring complex welds | Level 3 | 15 | Public Comment |
| Core | 14700 Lay out and mark off regular and irregular shapes for thermoplastic fabrication | Level 3 | 25 | Public Comment |
| Core | 14720 Adapt to working in a client's work environment | Level 3 | 3 | Public Comment |
| Elective | 10567 Transport personnel, material and equipment using Light Delivery Vehicle | Level 1 | 4 | Registered |
| Elective | 9880 Perform basic welding/joining of metals | Level 2 | 8 | Registered |
| Elective | 12483 Perform basic first aid | Level 2 | 4 | Registered |
| Elective | 12484 Perform basic fire fighting | Level 2 | 4 | Public Comment |
| Elective | 13204 Operate and monitor a milling machine to produce simple components | Level 2 | 12 | Public Comment |

| | | | | |
|---|---|---|---|---|
| Elective | 13205 Operate and monitor a lathe to produce simple components | Level 2 | 12 | Public Comment |
| Elective | 13214 Operate and monitor a drilling machine to produce simple components | Level 2 | 6 | Public Comment |
| Elective | 14684 Weld thermoplastics with electrofusion equipment | Level 2 | 5 | Public Comment |
| Elective | 14690 Weld thermoplastics with solvent cement | Level 2 | 5 | Public Comment |
| Elective | 14694 Weld thermoplastics with heated-tool equipment | Level 2 | 5 | Public Comment |
| Elective | 14696 Weld thermoplastics with hot gas | Level 2 | 5 | Public Comment |
| Elective | 14697 Weld thermoplastics with extrusion equipment | Level 2 | 5 | Public Comment |
| Elective | 8038 Operating lift trucks | Level 3 | 6 | Registered |
| Elective | 8039 Operating cranes | Level 3 | 10 | Registered |
| Fundamental | 8968 Accommodate audience and context needs in oral communication | Level 3 | 5 | Registered |
| Fundamental | 8969 Interpret and use information from texts | Level 3 | 5 | Registered |
| Fundamental | 8970 Write texts for a range of communicative contexts | Level 3 | 5 | Registered |
| 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 | Registered |
| Fundamental | 9011 Use mathematics to investigate and monitor the financial aspects of personal and business issues | Level 3 | 5 | Registered |
| Fundamental | 9012 Investigate life and work related problems using data and probabilities | Level 3 | 5 | Registered |
| Fundamental | 9528 Communicate with clients | Level 3 | 3 | Registered |
| Fundamental | 9529 Compile feasibility and commissioning reports | Level 3 | 3 | Registered |
| Fundamental | 14108 Measure, estimate, calculate physical quantities, explore, describe and represent, interpret, justify geometrical relationships in 2 & 3-dimensional space relevant to the life or workplace of the comm | Level 3 | 4 | Registered |

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

### *QUALIFICATION:*

### *National Certificate: Thermoplastic Fabrication*

| *SAQA QUAL ID* | *QUALIFICATION TITLE* | |
|---|---|---|
| 24218 | National Certificate: Thermoplastic Fabrication | |
| *SGB NAME* | SGB Plastics Manufacturing | |
| *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* |
| 137 | Level 4 | Regular-Unit Stds Based |
| *SAQA DECISION NUMBER* | *REGISTRATION START DATE* | *REGISTRATION END DATE* |
| | | |

***PURPOSE OF THE QUALIFICATION***

The purpose of this qualification is to provide learners, education and training providers and employers with the standards and the range of learning required to work effectively in the thermoplastic fabrication industry and to meet the challenges of such an environment.

This qualification recognises the skills, knowledge and values acquired by learners involved in thermoplastics fabrication. The chief skill that is recognised in this qualification is the ability to manage a workshop producing fabricated thermoplastic components and assemblies. This capability requires an understanding of the co-ordination of activities, the maintenance of quality and the commissioning of completed components and assemblies. Interpersonal skills play a role in this qualification.

Qualifying learners will be able to relate what they are doing to scientific principles and concepts. They will also be able to contribute to the implementation and maintenance of the various policies and procedures related to the safety, health, environment and quality systems that govern their workplace. Qualifying learners will also be able to contribute to the implementation and maintenance of business processes.

What learners achieve in this qualification will also serve as a basis for further learning where they will further develop their skills and knowledge to include optimising fabrication processes, maintaining fabrication efficiencies, scheduling and arranging maintenance and managing inventory to meet production requirements.

Rationale for the qualification:
This is the third qualification in a series for learners who want to follow a career in thermoplastic fabrication processes. This qualification focuses on developing skills and knowledge necessary to progress in such a career.

The thermoplastic fabrication industry operates in a competitive and challenging environment. The finished fabrications have to respond to a wide variety of exacting customer and consumer requirements. In addition, the industry has to respond to international competition, on-going development of new products as the result of changing customer needs, and environmental issues.

The fabrication of plastics products generally requires the joining of plastics components into assemblies. The assemblies are often subjected to considerable stress when in operation and the manufacturing process needs to be consistent and accurate.

There were previously no qualifications for this branch of industry, which consists of many micro and small

enterprises. Few employees have any sort of formal qualification. The industry has low barriers to entry and invests little in developing people's skills. This, together with the ignorance of clients, has led to widely differing standards. Many products and services are safety critical in nature and there is a need to create skills standards to alleviate this problem.

This qualification forms part of a series of qualifications at different levels to create opportunities for development, a career path and greater security of employment within the thermoplastics fabrication industry.

This qualification enables learners who have gained relevant experience in the workplace to obtain credits through the RPL process. This qualification also forms the basis for further development in thermoplastic fabrication in particular and the plastics manufacturing industry in general.

***RECOGNIZE PREVIOUS LEARNING?***

Y

***LEARNING ASSUMED TO BE IN PLACE***

This qualification assumes learners have a National Certificate in Thermoplastic Fabrication (NQF Level 3). If the learner does not already have such a qualification, learning in preparation for this qualification would also have to include:
> Language and maths related to organising and controlling their environment
> An ability to fabricate plastic components and assemblies of some complexity using a variety of welding methods
> An ability to set up and assemble equipment and perform routine maintenance on equipment and tools
> Concepts of organising factors in labour, business and the economy
> Role and purpose of procedures related to workplace relationships, roles and responsibilities.

Recognition of prior learning:
This qualification may be obtained through RPL. The learner should be thoroughly briefed on the mechanism to be used and support and guidance should be provided. Care should be taken that the mechanism used provides the learner with an opportunity to demonstrate competence and is not so onerous as to prevent learners from taking up the RPL option towards gaining a qualification.

***QUALIFICATION RULES***

N/A

***EXIT LEVEL OUTCOMES***

1. Demonstrate an ability to produce complex components and assemblies using a variety of fabrication methods and operations, meeting output requirements and working safely with due care for fellow workers and the environment.
2. Demonstrate an ability to read, interpret and produce complex engineering drawings.
3. Demonstrate an understanding of quality specifications and an ability to interpret these and evaluate fabricated components to determine compliance with specifications.
4. Maintain and support procedures to solve a variety of problems, both familiar and unfamiliar, within a thermoplastic welding context and operate within both familiar and new situations, taking responsibility and making decisions.
5. Co-ordinate work team activities, ensure a safe and efficient workplace, and develop the skills and performance of workgroup members.
6. Communicate with peers, the work group, members of supervisory / management levels and end-users and produce documentation using information gathered and summarised from a range of sources.
7. Demonstrate the ability to communicate and present information clearly and reliably, and to analyse information in order to identify problems and determine trends.

***ASSOCIATED ASSESSMENT CRITERIA***

1.
> Output and quality requirements are met
> Fabrication time limits are adhered to
> Safe working practices are adhered to
> Issues related to the theoretical principles of fabrication and the various fabrication methods and their respective operations at this level are discussed and an understanding is demonstrated by

responding to questions.
2.
> Components and assemblies to be fabricated are identified and requirements are interpreted from drawing
> Drawing is produced to meet project requirements and appropriate drawing standards
> Material list is compiled
3.
> Quality specifications are interpreted and applied to fabricated components and compliance is determined and reported
> Issues related to quality specifications and the principles underpinning such methods are discussed and an understanding is demonstrated by responding to questions.
4.
> Solutions to thermoplastic welding-related problems are based on a clear analysis of information gathered through diagnostic procedures
> Procedures are modified to respond to unfamiliar problems where appropriate
> All actions related to problem solving are accurately recorded for future reference
> Issues related to familiar problems in the fabrication of components and assemblies are discussed and an understanding is demonstrated by responding to questions
5.
> Production schedules and assignments are met
> Production workflow is managed efficiently
> Workgroup goals are met
> Provide leadership in workgroup discussions, in workgroup problem solving activities and in the implementation of solutions
> Relevant information is received, processed and passed on
> Workgroup members are supported, coached and influenced to work effectively, efficiently and safely
6.
> Information is gathered from a range of sources and accurately summarised
> Information is clearly presented in a timely manner in the required format to appropriate parties
> Relationships with peers and supervisory / management levels are established and functioning
7.
> Conditions, evidence and incidences are reported accurately in a timely manner and discussed with peers and management
> Data gathered through diagnostic procedures is examined systematically and analysis is repeated until problem is solved (see Exit Level Outcome 4)
> Records are available for scrutiny and future reference

Integrated Assessment:
The purpose of assessment for this qualification is not to re-assess the outcomes of unit standards but to assess the evidence in terms of exit level outcomes. The exit level outcomes represent an integration of the various unit standards.

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.

Some assessment aspects will demand practical demonstration while others may not. In some cases inference will be necessary to determine competence, depending on the nature and context within which performance takes place.

The assessor will collect evidence of the learner's competence by:
> Observing the learner at work (in primary activities as well as in other work-related interactions) or by relevant simulations
> Asking questions and initiating short discussions to test understanding
> Looking at records, reports, the portfolio and assessment reports for individual unit standards

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 on the approach being taken.

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 the critical cross-field outcomes have been achieved.

***INTERNATIONAL COMPARABILITY***

An extensive search has not revealed any comparable outcomes-based qualifications. The contents of this qualification do, however, conform to the trade-level fabrication qualifications in Germany. It is likely that this qualification will become a benchmark for future qualifications of this kind for other countries.

***ARTICULATION OPTIONS***

The qualification has been designed and structured so that qualifying learners can move from one context to another. Employers or institutions should be able to evaluate the outcomes of this qualification 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 against this qualification must be registered as an assessor with the relevant ETQA
> Any institution or learning provider offering learning towards the achievement of this qualification should be accredited as a provider with the relevant ETQA
> Moderation of assessment should be overseen by the relevant ETQA according to the moderation guidelines provided for in this qualification as well as the agreed ETQA guidelines.

***CRITERIA FOR THE REGISTRATION OF ASSESSORS***

The following criteria should be applied by the relevant ETQA:
1. Appropriate qualification in the field of plastics fabrication at NQF Level 5 and a minimum of 2 years' experience in a thermoplastic fabrication environment. The subject matter experience of the assessor can be established by recognition of prior learning
2. Appropriate experience and understanding of assessment theory, processes and practices
3. Good inter-personal skills and the ability to balance the conflicting requirements of:
> Maintaining national standards
> The interests of the learner
> The need for transformation and redressing the legacies of the past
> The cultural background and language of the learner
4. Registration as an assessor with the MERS ETQA or any other relevant ETQA

***NOTES***

The following Core Unit Standard has not been developed yet:
- Manage and develop the performance and work group members in fabrication activities - Level 4

The following Elective Unit Standard has not been developed yet:
- Use computer technology - Level 4

***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 | 13254 Contribute to the implementation and maintenance of business processes | Level 4 | 10 | Public Comment |
| Core | 14702 Fabricate complex welded thermoplastic assemblies and shapes | Level 4 | 28 | Public Comment |
| Core | 14704 Maintain the quality of welded thermoplastic products | Level 4 | 24 | Public Comment |
| Core | 14708 Commission and hand over thermoplastic fabrications | Level 4 | 10 | Public Comment |
| Core | 14710 Manage and develop the performance of work group members in fabrication activities | Level 4 | 6 | Public Comment |
| Elective | 10953 Operate a rigid vehicle | Level 4 | 32 | Registered |

| | | | | |
|---|---|---|---|---|
| Fundamental | 8970 Write texts for a range of communicative contexts | Level 3 | 5 | Registered |
| Fundamental | 8971 Analyse and respond to a variety of literary texts | Level 3 | 5 | Registered |
| Fundamental | 8972 Interpret a variety of literary texts | Level 3 | 5 | Registered |
| Fundamental | 8973 Use language and communication in occupational learning programmes | Level 3 | 5 | Registered |
| Fundamental | 12429 Develop a personal financial plan | Level 3 | 2 | Public Comment |
| Fundamental | 8974 Engage in sustained oral communication and evaluate spoken texts | Level 4 | 5 | Registered |
| Fundamental | 8975 Read, analyse and respond to a variety of texts | Level 4 | 5 | Registered |
| Fundamental | 8976 Write for a wide range of contexts | Level 4 | 5 | Registered |
| Fundamental | 9014 Use mathematics to investigate and monitor the financial aspects of personal, business and national issues | Level 4 | 6 | Registered |
| Fundamental | 9015 Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems | Level 4 | 6 | Registered |
| Fundamental | 9016 Represent, analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts | Level 4 | 4 | Registered |
| Fundamental | 9502 Write a technical report | Level 4 | 4 | Registered |
| Fundamental | 9505 Manage basic business and personal finance | Level 4 | 6 | Registered |
| Fundamental | 9506 Communicate in an assertive manner with clients and fellow workers | Level 4 | 4 | Registered |

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 1

**Select, use and care for power tools used for thermoplastic fabrication**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14681 | Select, use and care for power tools used for thermoplastic fabrication |

| *SGB NAME* | *ABET BAND* | *PROVIDER NAME* |
|---|---|---|
| SGB Plastics Manufacturing | 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 2 | 6 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Select and use engineering power tools.

***SPECIFIC OUTCOME*** 2

Care for and maintain power tools.

***SPECIFIC OUTCOME*** 3

Monitor the safety and condition of power supply sources to equipment.

***SPECIFIC OUTCOME*** 4

Recognise and report problems, changes and/or malfunctions while working.

***SPECIFIC OUTCOME*** 5

Work safely.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 2

**Weld thermoplastics with electrofusion equipment**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14684 | Weld thermoplastics with electrofusion equipment |

| *SGB NAME* | *ABET BAND* | *PROVIDER NAME* |
|---|---|---|
| SGB Plastics Manufacturing | Undefined | |

| *FIELD DESCRIPTION* | *SUBFIELD DESCRIPTION* |
|---|---|
| Manufacturing, Engineering and Technology | Manufacturing and Assembly |

| *UNIT STANDARD CODE* | *UNIT STANDARD TYPE* | *NQF LEVEL* | *CREDITS* |
|---|---|---|---|
| MET-FBE-0-SGB MAP | Regular | Level 2 | 5 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Understand instructions and select tools and equipment.

***SPECIFIC OUTCOME*** 2

Measure, cut and prepare materials.

***SPECIFIC OUTCOME*** 3

Check weld conditions and set up equipment.

***SPECIFIC OUTCOME*** 4

Make weld according to instructions.

***SPECIFIC OUTCOME*** 5

Visually inspect weld, clean up and report.

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

### *UNIT STANDARD:* 3

**Identify thermoplastics and related materials and relate their properties to their application**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14686 | Identify thermoplastics and related materials and relate their properties to their application |

| *SGB NAME* | *ABET BAND* | *PROVIDER NAME* |
|---|---|---|
| SGB Plastics Manufacturing | 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 PLAS | Regular | Level 2 | 8 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Identify materials used in common fabrication applications.

***SPECIFIC OUTCOME*** 2

Discuss the physical properties of thermoplastic materials used in common fabrication application.

***SPECIFIC OUTCOME*** 3

Explain common applications and methods of joining and fabrication using thermoplastic materials.

***SPECIFIC OUTCOME*** 4

Demonstrate an understanding of the common tests used in fabrication.

***SPECIFIC OUTCOME*** 5

Explain the effects external factors have on thermoplastic materials.

Established in terms of Act 58 of 1995

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

### *UNIT STANDARD:* 4

**Weld thermoplastics with solvent cement**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14690 | Weld thermoplastics with solvent cement |

| *SGB NAME* | *ABET BAND* | *PROVIDER NAME* |
|---|---|---|
| SGB Plastics Manufacturing | 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 PLAS | Regular | Level 2 | 5 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Understand instructions and select tools and equipment.

***SPECIFIC OUTCOME*** 2

Measure, cut and prepare work pieces.

***SPECIFIC OUTCOME*** 3

Prepare and set up materials and equipment for the welding operation.

***SPECIFIC OUTCOME*** 4

Make weld according to instructions.

***SPECIFIC OUTCOME*** 5

Visually inspect weld, clean up and report.

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 5

**Read and interpret basic engineering drawings as required for thermoplastic fabrication**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14693 | Read and interpret basic engineering drawings as required for thermoplastic fabrication |

| *SGB NAME* | *ABET BAND* | *PROVIDER NAME* |
|---|---|---|
| SGB Plastics Manufacturing | 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 2 | 5 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Discuss and explain basic engineering drawing concepts and material lists.

***SPECIFIC OUTCOME*** 2

Interpret basic engineering drawings.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 6

**Weld thermoplastics with heated-tool equipment**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14694 | Weld thermoplastics with heated-tool equipment |

| *SGB NAME* | *ABET BAND* | *PROVIDER NAME* |
|---|---|---|
| SGB Plastics Manufacturing | 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 PLAS | Regular | Level 2 | 5 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Understand instructions and select tools and equipment.

***SPECIFIC OUTCOME*** 2

Measure, cut and prepare materials.

***SPECIFIC OUTCOME*** 3

Check weld conditions and set up equipment.

***SPECIFIC OUTCOME*** 4

Make weld according to instructions.

***SPECIFIC OUTCOME*** 5

Visually inspect weld, clean-up and report.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

### *UNIT STANDARD:* 7

**Weld thermoplastics with hot gas**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14696 | Weld thermoplastics with hot gas |

| *SGB NAME* | *ABET BAND* | *PROVIDER NAME* |
|---|---|---|
| SGB Plastics Manufacturing | 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 PLAS | Regular | Level 2 | 5 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Understand instructions and select tools and equipment.

***SPECIFIC OUTCOME*** 2

Measure, cut and prepare materials.

***SPECIFIC OUTCOME*** 3

Check weld conditions and set up equipment.

***SPECIFIC OUTCOME*** 4

Make weld according to instructions.

***SPECIFIC OUTCOME*** 5

Visually inspect weld, clean up and report.

Established in terms of Act 58 of 1995

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 8

**Weld thermoplastics with extrusion equipment**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14697 | Weld thermoplastics with extrusion equipment |

| *SGB NAME* | *ABET BAND* | *PROVIDER NAME* |
|---|---|---|
| SGB Plastics Manufacturing | 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 PLAS | Regular | Level 2 | 5 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Understand instructions and select tools and equipment.

***SPECIFIC OUTCOME*** 2

Measure, cut and prepare materials.

***SPECIFIC OUTCOME*** 3

Check weld conditions and set up equipment.

***SPECIFIC OUTCOME*** 4

Make weld according to instructions.

***SPECIFIC OUTCOME*** 5

Visually inspect weld, clean up and report.

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 9

**Develop work instructions for thermoplastic fabrication using drawings**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14688 | Develop work instructions for thermoplastic fabrication using drawings |

| *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 | 10 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Derive components and produce basic drawings of the components.

***SPECIFIC OUTCOME*** 2

Plan work and develop work instructions.

***SPECIFIC OUTCOME*** 3

Interpret engineering drawings.

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 10

**Fabricate thermoplastic assemblies requiring complex welds**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14699 | Fabricate thermoplastic assemblies requiring complex welds |

| *SGB NAME* | *ABET BAND* | *PROVIDER NAME* |
|---|---|---|
| SGB Plastics Manufacturing | 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 PLAS | Regular | Level 3 | 15 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Determine from the drawing the project requirements, select materials and plan a sequence.

***SPECIFIC OUTCOME*** 2

Prepare materials for the fabrication process.

***SPECIFIC OUTCOME*** 3

Determine setting from welding tables, prepare machinery and control sheets.

***SPECIFIC OUTCOME*** 4

Co-ordinate my efforts with those of other work group members.

***SPECIFIC OUTCOME*** 5

Fabricate assemblies requiring complex welds.

***SPECIFIC OUTCOME*** 6

Check dimensions, evaluate the integrity of component or assembly, assess welds and correct faults.

***SPECIFIC OUTCOME*** 7

Recognise and report fabrication problems.

***SPECIFIC OUTCOME*** 8

Record welding data.

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 11

**Lay out and mark off regular and irregular shapes for thermoplastic fabrication**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14700 | Lay out and mark off regular and irregular shapes for thermoplastic fabrication |

| *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 PLAS | Regular | Level 3 | 25 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Interpret job instructions, determine sequence of operations & prepare for laying out & marking off.

***SPECIFIC OUTCOME*** 2

Mark out surface developments.

***SPECIFIC OUTCOME*** 3

Apply quality checks on materials.

***SPECIFIC OUTCOME*** 4

Identify and report non-conformances, record information on work done & provide feedback.

***SPECIFIC OUTCOME*** 5

Apply safe working practices and discuss issues related to safety.

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 12

**Adapt to working in a client's work environment**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14720 | Adapt to working in a client's work environment |

| *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 PLAS | Regular | Level 3 | 3 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Understand, describe and discuss my employer's rules and procedures related to working off site.

***SPECIFIC OUTCOME*** 2

Determine the client's workplace policies and procedures and adapt my work processes.

***SPECIFIC OUTCOME*** 3

Understand, describe and discuss the relationship between contractor and client.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 13

**Contribute to the implementation and maintenance of business processes**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 13254 | Contribute to the implementation and maintenance of business processes |

| *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 Outcomes:**

***SPECIFIC OUTCOME*** 1

Discuss the purpose of implementing and maintaining business processes

***SPECIFIC OUTCOME*** 2

Explain, implement and maintain the organisation's vision, mission and values

***SPECIFIC OUTCOME*** 3

Explain, implement and maintain procedures related to legislation

***SPECIFIC OUTCOME*** 4

Reflect on the role of the individual in contributing to implementation and maintenance

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 14

**Fabricate complex welded thermoplastic assemblies and shapes**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14702 | Fabricate complex welded thermoplastic assemblies and shapes |

| *SGB NAME* | *ABET BAND* | *PROVIDER NAME* |
|---|---|---|
| SGB Plastics Manufacturing | 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 PLAS | Regular | Level 4 | 28 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Verify materials specified against the drawing or works instruction.

***SPECIFIC OUTCOME*** 2

Prepare for development of procedure qualification records by a third party inspection authority.

***SPECIFIC OUTCOME*** 3

Plan fabrication sequence and give instructions to workgroup members.

***SPECIFIC OUTCOME*** 4

Weld and assemble complex assemblies and shapes and verify that tasks have been completed.

***SPECIFIC OUTCOME*** 5

Identify and rectify welding and fabrication faults and complete records.

***SPECIFIC OUTCOME*** 6

Verify conformance, test and hand over the final product.

***SPECIFIC OUTCOME*** 7

Interact with work group members and clients.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

### *UNIT STANDARD:* 15

**Maintain the quality of welded thermoplastic products**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14704 | Maintain the quality of welded thermoplastic products |

| *SGB NAME* | *ABET BAND* | *PROVIDER NAME* |
|---|---|---|
| SGB Plastics Manufacturing | 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 PLAS | Regular | Level 4 | 24 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Plan the welding sequence and approve the control documentation.

***SPECIFIC OUTCOME*** 2

Inspect and measure welds, determine acceptability and identify problems.

***SPECIFIC OUTCOME*** 3

Inspect fabrication and installation.

***SPECIFIC OUTCOME*** 4

Record and report inspection findings and make recommendations.

***SPECIFIC OUTCOME*** 5

Liaise with parties involved and monitor the rectification of problems.

***SPECIFIC OUTCOME*** 6

Request and witness pressure tests for systems under pressure.

***SPECIFIC OUTCOME*** 7

Conduct internal audits and send measuring instruments for calibration.

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 16

**Commission and hand over thermoplastic fabrications**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14708 | Commission and hand over thermoplastic fabrications |

| *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 PLAS | Regular | Level 4 | 10 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Verify fabrication against drawings and specifications.

***SPECIFIC OUTCOME*** 2

Set up, test and verify performance of the fabrication assembly.

***SPECIFIC OUTCOME*** 3

Gather and scrutinise all relevant quality records.

***SPECIFIC OUTCOME*** 4

Identify faults; initiate and verify corrective actions.

***SPECIFIC OUTCOME*** 5

Complete records and reports and generate handover certificates.

***SPECIFIC OUTCOME*** 6

Liaise with client during the process and obtain client approval on completion.

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 17

**Manage and develop the performance of work group members in fabrication activities**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 14710 | Manage and develop the performance of work group members in fabrication activities |

| *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 PLAS | Regular | Level 4 | 6 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Assess strengths and weaknesses of work group members, and plan and allocate work accordingly.

***SPECIFIC OUTCOME*** 2

Monitor the contributions of work group members.

***SPECIFIC OUTCOME*** 3

Use company procedures to carry out tasks related to my work group members.

***SPECIFIC OUTCOME*** 4

Identify skill & knowledge gaps, & plan & implement a programme to close the skill & knowledge gaps.

***SPECIFIC OUTCOME*** 5

Maintain records and compile appropriate reports.

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 18

**Sling loads**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 12481 | Sling loads |

| *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 2 | 4 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Plan and prepare for load slinging activity.

***SPECIFIC OUTCOME*** 2

Prepare site and equipment for load slinging.

***SPECIFIC OUTCOME*** 3

Sling load.

***SPECIFIC OUTCOME*** 4

Care for and store load slinging equipment.

***SPECIFIC OUTCOME*** 5

Report on slinging equipment condition.

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 19

**Perform basic fire fighting**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 12484 | Perform basic fire fighting |

| *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 2 | 4 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Discuss and explain procedures for dealing with fires in the workplace

***SPECIFIC OUTCOME*** 2

Identify the type of fire, its context and select the appropriate fire fighting procedure

***SPECIFIC OUTCOME*** 3

Identify, select and check appropriate fire fighting and safety equipment

***SPECIFIC OUTCOME*** 4

Fight containable/extinguishable fires

***SPECIFIC OUTCOME*** 5

Retreat from fire site and hand over to appropriate personnel

***SPECIFIC OUTCOME*** 6

Report/record status of fire and equipment

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 20

**Operate and monitor a milling machine to produce simple components**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 13204 | Operate and monitor a milling machine to produce simple components |

| *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 2 | 12 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Prepare for work activity.

***SPECIFIC OUTCOME*** 2

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

***SPECIFIC OUTCOME*** 3

Record information on work done.

***SPECIFIC OUTCOME*** 4

Recognise and report problems, changes and/or malfunctions while operating.

***SPECIFIC OUTCOME*** 5

Apply quality checks on machined component.

***SPECIFIC OUTCOME*** 6

Set milling machine.

***SPECIFIC OUTCOME*** 7

Perform milling operations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 21

**Operate and monitor a lathe to produce simple components**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 13205 | Operate and monitor a lathe to produce simple components |

| *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 2 | 12 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Prepare for work activity.

***SPECIFIC OUTCOME*** 2

Set lathe.

***SPECIFIC OUTCOME*** 3

Perform turning operations.

***SPECIFIC OUTCOME*** 4

Apply quality checks on machined component.

***SPECIFIC OUTCOME*** 5

Recognise and report problems, changes and/or malfunctions while operating.

***SPECIFIC OUTCOME*** 6

Record information on work done.

***SPECIFIC OUTCOME*** 7

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

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 22

**Operate and monitor a drilling machine to produce simple components**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 13214 | Operate and monitor a drilling machine to produce simple components |

| *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 2 | 6 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Prepare for work activity.

***SPECIFIC OUTCOME*** 2

Set drilling machine.

***SPECIFIC OUTCOME*** 3

Perform drilling operations.

***SPECIFIC OUTCOME*** 4

Apply quality checks on machined component.

***SPECIFIC OUTCOME*** 5

Recognise and report problems, changes and/or malfunctions while operating.

***SPECIFIC OUTCOME*** 6

Record information on work done.

***SPECIFIC OUTCOME*** 7

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

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

***UNIT STANDARD:*** 23

**Develop a personal financial plan**

| *SAQA US ID* | *UNIT STANDARD TITLE* |
|---|---|
| 12429 | Develop a personal financial plan |

| *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-FBE-0-SGB MAP | Regular | Level 3 | 2 |

**Specific Outcomes:**

***SPECIFIC OUTCOME*** 1

Discuss and explain personal financial planning options.

***SPECIFIC OUTCOME*** 2

Evaluate own personal financial situation.

***SPECIFIC OUTCOME*** 3

Develop a personal financial plan.

***SPECIFIC OUTCOME*** 4

Reflect on learning experiences when developing a personal financial plan and benefits.