No. 148 **18 February *2005***

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

SAQA QUAL ID	*QUALIFICATION TITLE*		
49449	National Certificate: Plastics Manufacturing		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
QUAL TYPE		*FIELD*	*SUBFIELD*
National Certificate		Manufacturing, Engineering and Technology	Manufacturingand Assembly
ABET BAND	*MINIMUM CREDITS*	*NQF LEVEL*	*QUALIFICATION CLASS*
Undefined	126	Level 3	Regular-Unit Stds Based

PURPOSE AND RATIONALE OF THE QUALIFICATION

The purpose of the qualification is to provide learners, education and training providers and employers with the standards and the range of learning required to satisfy the challenges of participating effectively in the plastics manufacturing industry.

For those who have been in the workplace for a long time, this qualification can be used in the Recognition of Prior Learninq (RPL) process to assess and recognise workplace skills acquired without the benefit of formal education or training.

For the new entrant or for someone changing from another field, this qualification describes the learning outcomes (the skills, knowledge and values) required to effectively participate in a structured workplace.

For education and training providers, this qualification provides guidance for the development of appropriate learning programmes. For employers, this qualification enables skills gaps to be identified and programmes to close skills gaps to be developed, and acts as an external benchmark for fulfilling the criteria of national and international quality standards such as ISO 9000:2000.

This qualification recognises the skills, knowledge and values acquired by learners involved in controlling operations in plastics manufacturing processes and influencing decisions in enterprises which use such processes. The chief skills required for this qualification are:

> Understanding and implementing basic approaches to using and looking after machinery and equipment.
> Understanding and implementing procedures related to various aspects of the production process.
> Relating principles and concepts to workplace activities, materials and equipment.

Hand skills play a minor role in this qualification.

Qualified learners will also understand:

> The basics of how a business functions.
> Their role in the business, i.e. in production 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.

Qualifying learners will also be able *to* relate what they see and experience to scientific and technological principles and concepts. They will also understand how they should operate within the legislative, safety and

quality systems which govern their workplace.

What learners achieve in this qualification will also serve as a basis for further learning where they will engage more directly in controlling and troubleshooting the production processes.

This qualification can be obtained in the context of any volume plastics manufacturing process, e.g.

> Injection moulding.
> Blow moulding.
> Various kinds of extrusion.
> Variations of thermoforming.
> Rotational moulding.
> Calendaring.
> Compression and related moulding processes.
> Reaction injection moulding.
> Polymer composites fabrication processes such as pultrusion, filament winding and resin injection.

The volume production process also includes the regeneration of recycled materials and the manufacture of intermediate products such as sheet, profiles, compounds and master batches.

Rationale:

The plastics manufacturing industry is characterized by sophisticated manufacturing processes operating in a competitive and challenging environment. The manufactured products have to respond to a wide variety of exacting customer and consumer requirements. In addition, the industry has to respond to competition from imports, export markets, on-going development of new products as the result of changing customer needs, and environmental issues.

This means that people working in the industry require a range of skills and knowledge to help them respond to the exacting quality requirements and ongoing change.

This is the second qualification in a series in a career path involving plastics manufacturing processes. This series of aualifications reflects the skills, knowledge and understanding required to participate effectively in the plastics manufacturing industry, whether in micro, small, inedium or iarge operations.

RECOGNIZE PREVIOUS LEARNING?

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LEARNING ASSUMED TO BE IN PLACE

The credits and the related unit standards assume that the learner has a National Certificate in Plastics Manufacturing **NQF** Level 2 or an equivalent qualification, or has experience of plastics manufacturing production processes.

If a learner does not already have such qualifications or experience, this does not preclude him/her from starting. It will, however, require an increase in learning time.

The credits also assume that the learner will be working towards this qualification as part of a learning programme which integrates all the required unit standards.

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 should be provided to assist the learner in the process of developing a portfolio. The guidelines for integrated assessment should be used to develop the RPL assessment process. **As** with integrated assessment, 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.

QUALIFICATION RULES

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EXIT LEVEL OUTCOMES

1. Perform routine operations on plastics manufacturing equipment using related information.

2. Understand, use and apply policies and procedures to maintain materials, equipment, work-place relations, safety and quality.

3. Contribute to workgroup efforts.

ASSOCIATED ASSESSMENT CRITERIA

1:
> Materials, moulds, dies and forming devices and finished product are transported safely and effectively.
> Routine operations, including cleaning, starting and stopping processes and assistance with the installation of moulds, dies and forming devices are carried out safely, effectively and together with other team members.

2:
> Procedures can be explained and applied routinely and effectively.
> Reports, recording of conditions, outputs and incidents is done accurately and timeously.

3:
> Production schedules and assignments are met.
> Production workflow is managed efficiently.
>Workgroup goals are met.
> Assistance and support is provided where required.
> Active participation in workgroup discussions, in workgroup problem solving activities and in the implementation of solutions.
> Relevant information is received and passed on.

Integrated Assessment:

To achieve the aims of integrated assessment it is recommended that the assessor assesses all components of the learning for this qualification simultaneously and that credits are awarded for the unit standards during this assessment.

It is recommended that learning components (i.e. fundamental and core) are combined into assignments and projects which are then included in the portfolio of evidence. This will form the basis for the bulk of the assessment. The assessor can then focus on specific areas for further probing and verification.

The assessment process should:

> Cover both the explicit tasks required for the qualification as well as the understanding of the concepts and principles which underpin the activities and the manufacturing process.
> Establish how the critical outcomes have been advanced by the learning process.

The integrated assessment 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:

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

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.

Assessors should also evaluate evidence that the learner has been performing consistently over a period of time.

INTERNATIONAL COMPARABILITY

The 2002 version of this series of qualifications was largely based on the qualifications developed by the Plastics Industry Training Board in 1995. These had been benchmarked against the German trade qualification Kunstoffformber/in in terms of duration, training content and occupational competency but had been broken down into three stages corresponding eventually to NQF levels 2, 3 and 4 which mapped to

the three year duration of the apprenticeship. The German qualifications were chosen as a result of a survey of qualifications in the plastics industry in the early 1990s. The South African industry had, however, identified a need for one further NQF level which represented a further development of the occupational competencies (i.e. level 5).

The original German qualification was subsequently revised in 1997 and was extended by a further year and contained some of the elements contained in the NQF level 5 qualification. The German qualification is now called Kunststoffverfahrersmechaniker/in.

The German qualification has also subsequently become a benchmark for many other European countries, except the United Kingdom.

The NQF qualifications also broadly correspond to other occupational profiles in Germany which represent other skill sets related to plastics manufacturing (occupations not based on extended apprenticeships).

Table: a comparison between NQF levels, German occupational qualifications, and South African occupational titles.

NQF 5; Kunststoff-Kautschuktechikerlin; Process technician, Setter/supervisor
NQF 4; Kunststoffwarenmacherlin; Setter
NQF 2; Kunststoffpresser/in or Kunststoffspritzer/in; Operator

The NQF level 3 represents a learning stage between NQF 2 and NQF 4 and does not map to a specific occupation or to a formal job designation in industry. Level 3 practitioners are variously referred to as 'senior operator' or 'trainee setter'.

A search for qualifications in other countries has revealed little useful information. While there are hints of qualifications in India and the mid- and far-eastern countries, very little concrete information can be obtained. India appears, in part, o be making use of NVQs from the United Kingdom. Most of the other certifications appear to be based on short courses and occupational competence is not described.

No evidence of African qualifications was found. There *is* some evidence of qualifications in South America (Brazil & Mexico) but there is no concrete information.

There are no formal national qualifications in the United States of America, but there is evidence of regional qualifications of the apprenticeship type and some voluntary qualifications from the major employer association. These have a skew towards engineering and machine maintenance rather than manufacturing processes. The SGB therefore used:

> The occupational profile generated by the Bureau of Labor Statistics within the U.S. Department of Labor for Machine Setters, Operators, and Tenders-Metal and Plastics.
> The generic manufacturing skills standards produced by the Manufacturing Skills Standards Council.
> The National Certification in Plastics (NCP), the NCP Body of Knowledge (BOK) and the NCP Study Guide of the Society of Plastics Industry Inc, (SPI).

The SPI programme for operators is a voluntary certification programme.

The Canadian Plastics Sector Council commissioned a project in 2001 to develop occupational standards but there are no published results yet.

The qualifications were therefore compared to:

> NVQ/SVQ Levels 1, 2 and 3 and modern apprenticeship qualifications in the United Kingdom, Polymer Technology Higher National Certiiicate (BTEC), National Certificate in Polymer Technology.
> National Certificate in Plastics Processing Technology Levels 1 - 4 and National Certificate in Plastics Engineering (Level 4) both the unit standards and the modern apprenticeship (Plastics Process Technician and Plastics Engineer).
> Certificate II, III in Plastics and Certificate IV in Polymer Technology and some of the training materials in Australia.
> United States Manufacturing Skills Standards.

The comparison was done in the following ways:

> Entry requirements.

> Duration.
> Occupational profile, duties, responsibilities.
> Course content or essential knowledge.

Findings: There is an overall pattern to the occupational roles, the occupational levels and hence the qualifications, both those based on an apprenticeship and those based on assessment against competency standards. Each country has small areas that are different but by-and-large the levels, occupational roles and course content is similar. This is not surprising since the machinery and the processes are very similar around the world and so the demands on people would also be similar. What is interesting since the last comparison in 2001 is the constant review and continuous improvement in the level and quality of certifications exhibited. Increasingly sophisticated processes require higher-order skills and greater knowledge.

The South African qualifications correspond very closely to this overall pattern. The only exceptional areas were:

> NQF level 3: the qualification and some of the skills are not significantly reflected elsewhere - this is generally an invisible transition.

> NQF level 5: The outcomes in this level of learning are beyond the normal qualification exit points, i.e. the level of those who have recently completed training - the South African qualification represents additional learning and experience and forms a transition to the national certificates or diplomas in polymer technology, generally offered by institutions of higher education in most countries.

> Mathsmatics and communication: No other qualification elsewhere in the world requires the levels of communication and mathematics that are imposed on these qualifications by SAQA policies.

ARTICULATION OPTIONS

The qualification has been designed and structured so that qualifying learners can move from one manufacturing context to another. They will have to acquire the specific knowledge related to the new context and adjust their skills and values accordingly.

.Employers or institutions should De able to evaluate the outcomes of this qualification against the needs of their context and structure top-up learning appropriately.

Holders of other qualifications may be evaluated against this qualification for the purpose of RPL and placement in learning programmes.

MODERATION OPTIONS

Moderators for the qualification should be qualified and accredited with an appropriate Education, Training Quality Assurance Body **(ETQA)** and have a qualification in manufacturing, preferably in plastics manufacturing.

To assure the quality of the assessment process, the moderation should cover one of more of the following:

> Assessor credentials.
> The assessment instrument.
> The assessment process (including preparation and post-assessment feedback).

CRITERIA FOR THE REGISTRATION OF ASSESSORS

The following criteria should be applied by the relevant ETQA:

1. Appropriate qualification in the field of plastics manufacturing at NQF Level 4.

2. A minimum of 18 months' experience in a plastics manufacturing environment. The subject matter expertise of the assessor can be established by recognition of prior learning.

3. Be active in the industry and be familiar with the materials, machinery, products and level of technology in which the learner has contextualised his/her skills and knowledge.

4. Assessed successfully against a nationally recognised unit standard/s reflecting experience and understanding of assessment theory, processes and practices.

5. 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.
> An understanding of outcomes-based education and training methodologies and the principles and policies related to the National Qualifications Framework.

6. Registration as an assessor with a relevant ETQA.

7. Any other criteria required by a relevant ETQA.

NOTES

This qualification replaces qualification 20889, "National Certificate: Plastics Manufacturing", Level 3, 120 credits.

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	9530 Manage work time effectively	Level 3	3	Reregistered
Core	9533 Use communication skills to handle and resolve conflict in the workplace	Level 3	3	Reregistered
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 safety, health and environmental protection procedures	Level 3	6	Reregistered
Core	13234 Apply quality procedures	Level 3	8	Registered
Core	119169 Work with and look after matenak in the plastics manufacturing production process	Level 3	12	Draft - Prep for P Comment
Core	119174 Perform routine maintenance tasks on plasbcs manufaduring equipment	Level 3	2	Draft - Prep for P Comment
Elective	14445 Frame and implement an individual action plan to improve productivity within an oraanisabonal unit	Level 1	3	Registsred
Elective	12463 Understand and deal with HIV/AIDS	Level 2	3	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	114104 Handle production waste	Level 2	3	Registered
Elective	7567 Produce and use spreadsheets for business	Level 3	5	Reregistered
Elective	7570 Produce word processing documents for business	Level 3	5	Reregistered
Elective	8038 Operating lift trucks	Level 3	6	Reregistered
Elective	8039 Operating cranes	Level 3	10	Registered
Elective	12455 Perform the role of a safety, health and environmental protection representative	Level 3	4	Registered
Elective	119179 Conduct simple tests during the plastics manufactunng process	Level 3	4	Draft - Prep for P Comment
Elective	119182 Control matenals and consumables for plastics manufactunng processes	Level 3	4	Draft - Prep for P Comment
Fundamental	9357 Develop and use keyboard skills to enter text	Level 1	4	Registered
Fundamental	7456 Use mathematics to invesngate and monitor the financial aspects of personal, business and national issues	Level 3	5	Reregistered
Fundamental	7460 Use structured models to descnbe, represent and analyse shape and motion in 2- and 3-dimensional space	Level 3	4	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	9010	Demonstrate an understanding of Me 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	9303	Communicate verbally with clients in a financial environment	Level 3	3	Reregistered
Fundamental	10712	Manage personal expenditure	Level 3	3	Registered
Fundamental	12429	Develop a personal financial plan	Level 3	2	Registered
Fundamental	12488	Complete feasibility and commissioning reports	Level 3	3	Registered

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

SAQA QUAL ID	*QUALIFICATION JITLE*		
49451	Further Education and Training Certificate: Plastics Manufacturing		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
QUAL TYPE		*FIELD*	*SUBFIELD*
National Certificate		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*MINIMUM CREDIJS*	*NQF LEVEL*	*QUALIFICATION CLASS*
Undefined	163	Level 4	Regular-Unit Stds Based

PURPOSE ***AND RATIONALE OF THE QUALIFICATION***

The purpose of the qualification is to provide learners, education and training providers and employers with the standards and the range of learning required to satisfy the challenges of participating effectively in the plastics manufacturing industry.
For those who have been in the workplace for a long time, this qualification can be used in the Recognition of Prior Learning (RPL) process to assess and recognise workplace skills acquired without the benefit of formal education or training.

For the new entrant or for someone changing from another field, this qualification describes the learning outcomes (the skills, knowledge and values) required to effectively participate in a structured workplace.
For education and training providers, this qualification provides guidance for the development of appropriate learning programmes. For employers, this qualification allows skills gaps to be identified and programmes to close skills gaps to be developed, and acts as an external benchmark for fulfilling the criteria of national and international quality standards such as ISO 9000:2000.

This qualification recognises the skills, knowledge and values acquired by learners to initiate and maintain plastics manufacturing processes by:
> Setup manufacturing equipment and set processes to manufacture good quality products
> Solving common problems to produce quality products to meet customer needs
> Interacting with others to achieve manufacturing objsctives.
Hand skills play a role in this qualification,
What learners achieve in this qualification will also serve as a basis for further learning where they will maintain production efficiencies and optimise the production processes.

This qualification can be obtained in the context of any volume plastics manufacturing process, eg
> Injection moulding
> Blow moulding
> Various kinds of extrusion
> Variations of thermoforming
> Rotational moulding
> Calendaring
> Compression and related moulding processes
> Reaction injection moulding
> Polymer composites fabrication processes such as pultrusion, filament winding and resin injection.
The volume production process also includes the regeneration of recycled materials and the manufacture of intermediate products such **as** sheet, profiles, compounds and master batches.

Rationale for the qualification:

The plastics manufacturing industry is characterized by sophisticated manufacturing processes operating in a competitive and challenging environment. The manufactured products have to respond to a wide variety of exacting customer and consumer requirements. In addition, the industry has to respond to competition from imports, export markets, on-going development of new products as the result of changing customer needs, and environmental issues.
This means that people working in the industry require a range of skills and knowledge to help them respond to the exacting quality requirements and ongoing change.
This is the third qualification in a series in a career path involving plastics manufacturing processes. This series of qualifications reflects the skills, knowledge and understanding required to participate effectively in the plastics manufacturing industry, whether in micro, small, medium or large operations.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED TO BE IN PLACE

The credits and the related unit standards assume that the learner has a National Certificate in Plastics Manufacturing NQF Level 3 or an equivalent qualification, or has experience of plastics manufacturing production processes.
If a learner does not already have such qualifications or experience, this does not preclude him/her from starting It will, however, require an increase in learning time.
The credits also assume that the learner will be working towards this qualification as part of a learning programme which integrates all the required unit standards.

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 should be provided to assist the learner in the process of developing a portfolio. The guidelines for integrated assessment should be used to develop the RPL assessment process. As with integrated assessment, 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.

QUALIFICATION RULES

N/A

EXIT LEVEL OUTCOMES

1. Install required tooling, set up and start up the manufacturing process, achieving efficiency of the process and the quality of the manufactured product.
2. Solve manufacturing process problems and identify areas for improvement.
3. Maintain a safe, effective and efficient workplace, developing the skills and performance of workgroup members.
Range: Safe includes issues of health and issues relating to reducing negative impacts on the environment.
4. Understand and work with internal customers and partners.
Range: Internal customers and partners include those with roles relating to material preparation and supply, quality assurance, safety, health and the environment, sales and marketing, management, unions or worker representatives and any others who interact with the manufacturing environment.

ASSOCIATED ASSESSMENT CRITERIA

1.
> The manufacturing process and the manufactured products conform to all specifications
> Installation, setup and start up process are planned, organised and carried out efficiently and safely and within standard times
> Instructions to workgroup members are clear and records and instructions are maintained
> Issues relating to product design, the manufacturing process and the materials used are discussed and resolved

2.
> Problems are identified and resolved quickly, systematically and in such a way as to minimise reoccurrence
> Problems and solutions are recorded and monitored for reoccurrence
> Problems and solutions and opportunities for improvement are discussed and resolved with workgroup members and internal customers and partners
> The underlying causes and related issues are explained or discussed (science and technology)

3.
> The conditions in the workplace and the condition of the tools and equipment, safety equipment and services are safe and arranged to reduce waste
> Hazards are dealt with quickly and effectively
> Workgroup members are supported. coached and influenced to work effectively, efficiently and safely

4
> Key issues are identified, discussed and resolved
> Actions, responsibilities, timeframes and reporting issues are clarified
> Other persons' opinions, suggestions and alternatives are listened to
> Key ideas, decisions and plans are recorded and implemented

Integrated assessment:

To achieve the aims of integrated assessment it is recommended that the assessor assesses all components of the learning for this qualification simultaneously and that credits are awarded for the unit standards during this assessment.
It is recommended that learning components (ie fundamental and core) are combined into assignments and projects which are then included in the portfolio of evidence. This will form the basis for the bulk of the assessment. The assessor can then focus on specific areas for further probing and verification.

The assessment process should:
> Cover both the explicit tasks required for the qualification as well as the understanding of the concepts and principles which underpin the activities and the manufacturing process
> Establish how the critical outcomes have been advanced by the learning process.

The integrated assessment 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:
> Looking at records and reports in the portfolio and reviewing previous assessments
> Asking questions and initiating short discussions to test understanding
> Observing the learnsr at work (in the primary activity as well as in other inieractions)

The learner may choose in which languages/he wants to De 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.

Assessors should also evaluate evidence that the learner has been performing consistently over a period of time.

INTERNATIONAL COMPARABILITY

The 2002 version of this series of qualifications was largely based on the qualifications developed by the Plastics Industry Training Board in 1995. These had been benchmarked against the German trade qualification Kunstoffformber/in in terms of duration, training content and occupational competency but had been broken down into three stages corresponding eventually to NQF levels 2, 3 and 4 which mapped to the three year duration of the apprenticeship. The German qualifications were chosen as a result of a survey of qualifications in the plastics industry in the early 1990s. The South African industry had, however, identified a need for one further NQF level which represented a further development of the occupational competencies (ie level 5).

The original German qualification was subsequently revised in 1997 and was extended by a further year and contained some of the elements contained in the NQF level 5 qualification. The German qualification is now called Kunststoffverfahrersmechaniker/in.

The German qualification has also subsequently become a benchmark for many other European countries, except the United Kingdom.

The NQF qualifications also broadly correspond to other occupational profiles in Germany which represent other skill sets related to plastics manufacturing (occupations not based on extended apprenticeships).
Table: a comparison between NQF levels, German occupational qualifications, and South African occupational titles.

NQF 5-Kunststoff-Kautschuktechiker/in-Process technician, Setter/supervisor
NQF 4-Kunststoffwarenmacher/in-Setter

NQF 3--
NQF 2-Kunststoffpresser/in or Kunststoffspritzer/in-Operator

The NQF level 3 represents a learning stage between NQF 2 and NQF 4 and does not map to a specific occupation or to a formal job designation in industry. Level 3 practitioners are variously referred to as 'senior operator' or 'trainee setter'.

A search for qualifications in other countries has revealed little useful information. While there are hints of qualifications in India and the mid- and far-eastern countries, very little concrete information can be obtained. India appears, in part, to be making use of NVQs from the United Kingdom. Most of the other certifications appear to be based on short courses and occupational competence is not described.

No evidence of African qualifications was found. There is some evidence of qualifications in South America (Brazil & Mexico) but there is no concrete information.

There are no formal national qualifications in the United States of America, but there is evidence of regional qualifications of the apprenticeship type and some voluntary qualifications from the major employer association. These have a skew towards engineering and machine maintenance rather than manufacturing processes. The SGB therefore used:
> The occupational profile generated by the Bureau of Labor Statistics within the U.S. Department of Labor for Machine Setters, Operators, and Tenders-Metal and Plastics
> The generic manufacturing skills standards produced by the Manufacturing Skills Standards Council.
> The National Certification in Plastics (NCP), the NCP Body of Knowledge (BOK) and the NCP Study Guide of the Society of Plastics Industry Inc, (SPI).
The SPI programme for operators is a voluntary certification programme.

The Canadian Plastics Sector Council commissioned a project in 2001 to develop occupational standards but there are no published results yet.

The qualifications were therefore compared to:
> NVQ/SVQ Levels 1, 2 and 3 and modern apprenticeship qualifications in the United Kingdom, Polymer Technology Higher National Certificate (BTECJ, National Certificate in Poiymer Technology
> National Certificate in Plastics Processing Technology Levels 1 - 3 and National Certificate in Plastics Engineering (Level 4) both the unit standards and the modern apprenticeship (Plastics Process Technician and Plastics Engineer)
> Certificate II, III in Plastics and Certificate IV in Polymer Technology and some of the training materials in Australia
> United States Manufacturing Skills Standards.

The comparison was done in the following ways:
> Entry requirements
> Duration
> Occupational profile, duties, responsibilities
> Course content or essential knowledge

Findings: There is an overall pattern to the occupational roles, the occupational levels and hence the qualifications, both those based on an apprenticeship and those based on assessment against competency standards. Each country has small areas that are different but by-and-large the levels, occupational roles and course content is similar. This is not surprising since the machinery and the processes are very similar around the world and so the demands on people would also be similar. What is interesting since the last comparison in 2001 is the constant review and continuous improvement in the level and quality of certifications exhibited. Increasingly sophisticated processes require higher-order skills and greater knowledge.

The South African qualifications correspond very closely to this overall pattern. The only exceptional areas were:
> NQF level 3: the qualification and some of the skills are not significantly reflected elsewhere - this is generally an invisible transition
> NQF level 5: The outcomes in this level of learning are beyond the normal qualification exit points, ie the level of those who have recently completed training - the South African qualification represents additional learning and experience and forms a transition to the national certificates or diplomas in polymer technology, generally offered by institutions of higher education in most countries

> Mathematics and communication: No other qualification elsewhere in the world requires the levels of communication and mathematics that are imposed on these qualifications by SAQA policies.

ARTICULATION OPTIONS

> The qualification has been designed and structured so that qualifying learners can move from 'one manufacturing context to another. They will have to acquire the specific knowledge related to the new context and adjust their skills and values accordingly.

> 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.

> Holders of other qualifications may be evaluated against this qualification for the purpose of RPL and placement in learning programmes.

MODERATION OPTIONS

Moderators for the qualification should be qualified and accredited with an appropriate Education and Training Quality Assurance Body (ETQA) and have a qualification in manufacturing, preferably in plastics manufacturing.
To assure the quality of the assessment process, the moderation should cover one of more of the following:
> Assessor credentials
> The assessment instrument
> The assessment process (including preparation and post-assessment feedback)

CRITERIA FOR THE REGISTRATION OF ASSESSORS

The following criteria should be applied by the relevant ETQA:
> Appropriate qualification in the field of plastics manufacturing at NQF Level 4.
>.A minimum of 2 years' experience in a plastics manufacturing environment. The,subject matter expertise. of the assessor can be established by recognition of prior learning.
> Be active in the industry and be familiar with the materials, machinery, products and level of technology in which the learner has contextualised his/her skills and knowledge.
> Assessed successfully against a nationally recognised unit standard/s reflecting experience and understanding of assessment theory, processes and practices
> 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
> An understanding of outcomes-based education and training methodologies and the principles and policies related to the National Qualifications Framework
> Registration as an assessor with a relevant ETQA.
> Any other criteria required by a relevant ETQA.

NOTES

This qualification replaces qualification 20890, "Further Education and Training Certificate: Plastics Manufacturing: NQF Level 4", 135 credits.

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	116714 Lead a team, plan, allocate and assess their work	Level 3	4	Registered
core	13224 Monitor the application of safely, 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	119140 Changeover and set up tooling for plastics manufacturing processes	Level 4	10	Draft - Prep for P Comment
core	119155 Set and adjust plastics manufacturing machine conditions to produce quality finished product	Level 4	16	Draft - Prep for P Comment
core	119184 Conduct laboratory tests on plastic raw materials and manufactured products	Level 4	10	Draft - Prep for P Comment
Core	119186 Prepare and process plastics materials for manufacturing	Level 4	12	Draft - Prep for P Comment

Elective	119188 Set up ancillary process equipment for plastics manufaduring operations	Level 4	4	Draft - Prep for 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	9303 Communicate verbally with clients in a financial environment	Level 3	3	Reregistered
Fundamental	9885 Read and interpret engineering drawings	Level 3	12	Registered
Fundamental	12488 Complete feasibility and commissioning reports	Level 3	3	Registered
Fundamental	7468 Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues	Level 4	6	Reregistered
Fundamental	8975 Read analyse and respond to a variety of texts	Level 4	5	Reregistered
	effectiveiy communicate findings on life related problems			
Fundamental	9016 Represent analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts	Level 4	4	Reregistered
Fundamental	13941 Apply the budget function in a business unit	Level 4	5	Registered
Fundamental	110023 Present information in report format	Level 4	6	Registered

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

National Certificate: Plastics Manufacturing

SAQA QUAL ID	QUALIFICATION TITLE		
49448	National Certificate: Plastics Manufacturing		
SGB NAME		NSB 06	PROVIDER NAME
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
QUAL TYPE		FIELD	SUBFIELD
National Certificate		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUALIFICATION CLASS
Undefined	129	Level 5	Regular-Unit Stds Based

PURPOSE AND RATIONALE OF THE QUALIFICATION

The purpose of the qualification is to provide learners, education and training providers and employers with the standards and the range of learning required to satisfy the challenges of participating effectively in the plastics manufacturing industry.

For those who have been in the workplace for a long time, this qualification can be used in the Recognition of Prior Learning (RPL) process to assess and recognise workplace skills acquired without the benefit of formal education or training.

For the new entrant or for someone changing from another field, this qualification describes the learning outcomes (the skills, knowledge and values) required to effectively participate in a structured workplace.

For education and training providers, this qualification provides guidance for the development of appropriate learning programmes. For employers, this qualification enables skills gaps to be identified and programmes to close skills gaps to be developed, and acts as an external benchmark for fulfilling the criteria of national and international quality standards such as ISO 9000:2000.

This qualification recognises the skills, knowledge and values acquired by learners to maintain all aspects of an efficient production system by:

> Optimising current processes and practices
> Implementing new products, materials or technology
> Interact with the workgroup, customers, suppliers in order to achieve the above

What learners achieve in this qualification will also serve as a basis for further learning where they will engage with issues of management and advanced technology.

This qualification can be obtained in the context of any volume plastics manufacturing process, eg
> injection moulding
> Blow moulding
> Various kinds of extrusion
> Variations of thermoforming
> Rotational moulding
> Calendaring
> Compression and related moulding processes
> Reaction injection moulding
> Polymer composites fabrication processes such as pultrusion, filament winding and resin injection.

The volume production process also includes the regeneration of recycled materials and the manufacture of intermediate products such as sheet, profiles, compounds and master batches.

Rationale for the qualification:

The plastics manufacturing industry is characterized by sophisticated manufacturing processes operating in a competitive and challenging environment. The manufactured products have to respond to a wide variety of

exacting customer and consumer requirements. In addition the industry has develop export markets, engage in on-going development of new products as the result of changing customer needs, and environmental issues and *to* respond *to* competition from imports,

This means that people wcrking in the industry require a range of skills and knowledge to help them respond to the exacting quality requirements and ongoing change.
This is the fourth qualification in a series in a career path involving plastics manufacturing processes. This series of qualifications reflects the skills, knowledge and understanding required to participate effectively in the plastics manufacturing industry, whether in micro, small, medium or large operations.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED TO BE IN PLACE

The credits and the related unit standards assume that the learner has a National Certificate in Plastics Manufacturing NQF Level **4** or an equivalent qualification, or has extensive experience of plastics manufacturing production processes.
If a learner does not already have such qualifications or experience, this does not preclude him/her from starting. It will, however, require an increase in learning time.
The credits also assume that the learner will be working towards this qualification as part of a learning programme which integrates all the required unit standards.

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 should be provided *to* assist the learner in the process of developing a portfolio. The guidelines for integrated assessment should be used to develop the RPL assessment process. As with integrated assessment, 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.

QUALIFICATION RULES

N/A

EXIT LEVEL OUTCOMES

1. Maintain and optimise all aspects of the manufacturing process and determine processing conditions for new tooling, equipment or materials.

2. Monitor and enforce systems relating to quality and safety, health and the environment.

3. ounsel, lead, guide and develop the workgroup and workgroup members.

4. Discuss and resolve issues with external customers and suppliers

ASSOCIATED ASSESSMENT CRITERIA

1.
> Current efficiencies are maintained
> Improvements and new settings or procedures are documented and result in products that meet and continue *to* meet customer needs
> Information on all aspects *of* the manufacturing process is collected, summarised and recorded
> Changes and improvements are reported, recorded in operating procedures and communicated *to* workgroup members
> Any changes or recommendations are based on systematic analysis and the effects of implementation are recorded and reported

2.
> Responses *to* deviations and non-conformance are appropriate and speedy
> The workplace *is* clean, safe, ordered and operating without bottlenecks or hazards
> Conditions and incidents are accurately documented in records and reports
> **All** workgroup members apply appropriate procedures and use appropriate protective equipment
> Issues and problems are discussed, decisions are made and implemented

3.
> Problems are identified and resolved

> Support, training and motivation of workgroup members is appropriate to their needs
> Issues raised by workgroup members are listened to and responded to in accordance with organisational policies and agreements

4.
> Key issues are identified, discussed and documented
> Resolutions are agreed and documented with clear actions, responsibilities, timeframes and reporting
> Views, suggestions and alternatives are listened to and evaluated
> Implementationand progress are reported internally and externally

Integrated assessment:
To achieve the aims of integrated assessment it is recommended that the assessor assesses all components of the learning for this qualification simultaneously and that credits are awarded for the unit standards during this assessment.
It is recommended that learning components (ie fundamental and core) are combined into assignments and projects which are then included in the portfolio of evidence. This will form the basis for the bulk of the assessment. The assessor can then focus on specific areas for further probing and verification.

The assessment process should:
> Cover both the explicit tasks required for the qualification as well as the understanding of the concepts and principles which underpin the activities and the manufacturing process
> Establish how the critical outcomes have been advanced by the learning process.

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

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, eviaence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes.

Assessors should also evaluate evidence that the learner has been performing consistently over a period of time.

INTERNATIONAL COMPARABILITY

The 2002 version of this series of qualifications was largely based on the qualifications developed by the Plastics Industry Training Board in 1995. These had been benchmarked against the German trade qualification Kunstoffformber/in in terms of duration, training content and occupational competency but had been broken down into three stages corresponding eventually *to* NQF levels 2, 3 and 4 which mapped to the three year duration of the apprenticeship. The German qualifications were chosen as a result of a survey of qualifications in the plastics industry in the early 1990s. The South African industry had, however, identified a need for one further NQF level which represented a further development of the occupational competencies (ie level 5).

The original German qualification was subsequently revised in 1997 and was extended by a further year and contained some *of* the elements contained in the NQF level 5 qualification. The German qualification is now called Kunststofherfahrersmechanikerlin.

The German qualification has also subsequently become a benchmark for many other European countries, except the United Kingdom.

The NQF qualifications also broadly correspond to other occupational profiles in Germany which represent other skill sets related to plastics manufacturing (occupations not based on extended apprenticeships).
Table: a comparison between NQF levels, German occupational qualifications, and South African occupational titles.

NQF 5 - Kunststoff-Kautschuktechiker/in: Process technician, Setter/supervisor
NQF 4 - Kunststoffwarenmacher/in: Setter
NQF 3

NQF 2 - Kunststoffpresser/in or Kunststoffspritzer/in: Operator

The NQF level 3 represents a learning stage between NQF 2 and NQF 4 and does not map to a specific occupation or to a formal job designation in industry. Level 3 practitioners are variously referred to as 'senior operator' or 'trainee setter'.

A search for qualifications in other countries has revealed little useful information. While there are hints of qualifications in India and the mid- and far-eastern countries, very little concrete information can be obtained. India appears, in part, to be making use of NVQs from the United Kingdom. Most of the other certifications appear to be based on short courses and occupational competence is not described.

No evidence of African qualifications was found. There is some evidence of qualifications in South America (Brazil & Mexico) but there is no concrete information.

There are no formal national qualifications in the United States of America, but there is evidence of regional qualifications of the apprenticeship type and some voluntary qualifications from the major employer association. These have a skew towards engineering and machine maintenance rather than manufacturing processes. The SGB therefore used:
1. The occupational profile generated by the Bureau of Labor Statistics within the U.S. Department of Labor for Machine Setters, Operators, and Tenders-Metal and Plastics
2. The generic manufacturing skills standards produced by the Manufacturing Skills Standards Council.
3. The National Certification in Plastics (NCP), the NCP Body of Knowledge (BOK) and the NCP Study Guide of the Society of Plastics Industry Inc, (SPI).
The SPI programme for operators is a voluntary certification programme.

The Canadian Plastics Sector Council commissioned a project in 2001 to develop occupational standards but there are no published results yet.

The qualifications were therefore compared to:
> NVQ/SVQ Levels 1, 2 and 3 and modern apprenticeship qualifications in the United Kingdom, Polymer Technology Higher National Certificate (BTEC), National Certificate in Polymer Technology
> National Certificate in Plastics Processing Technology Levels 1 - 4 and National Certificate in Plastics Engineering (Level 4) both the unit standards and the modern apprenticeship (Plastics Process Technician and Plastics Engineer)
> Certificate II, III in Plastics and Certificate IV in Polymer Technology and some of the training materials in Australia
> United States Manufacturing Skills Standards.

The comparison was done in the following ways:
> Entry requirements
> Duration
> Occupational profile, duties, responsibilities
> Course content or essential knowledge

Findings: There is an overall pattern to the occupational roles, the occupational levels and hence the qualifications, both those based on an apprenticeship and those based on assessment against competency standards. Each country has small areas that are different but by-and-large the levels, occupational roles and course content is similar. This is not surprising since the machinery and the processes are very similar around the world and so the demands on people would also be similar. What is interesting since the last comparison in 2001 is the constant review and continuous improvement in the level and quality of certifications exhibited. Increasingly sophisticated processes require higher-order skills and greater knowledge.

The South African qualifications correspond very closely to this overall pattern. The only exceptional areas were:
> NQF level 3: the qualification and some of the skills are not significantly reflected elsewhere - this is generally an invisible transition
> NQF level 5: The outcomes in this level of learning are beyond the normal qualification exit points, ie the level of those who have recently completed training - the South African qualification represents additional learning and experience and forms a transition to the national certificates or diplomas in polymer technology, generally offered by institutions of higher education in most countries
> Mathematics and communication: No other qualification elsewhere in the world requires the levels of communication and mathematics that are imposed on these qualifications by SAQA policies.

ARTICULATION OPTIONS

The qualification has been designed and structured so that qualifying learners can move from one manufacturing context to another. They will have to acquire the specific knowledge related to the new context and adjust their skills and values accordingly.

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.

Holders of other qualifications may be evaluated against this qualification for the purpose of RPL and placement in learning programmes.

MODERATION OPTIONS

Moderators for the qualification should be qualified and accredited with an appropriate Education, Training Quality Assurance Body (ETQA) and have a qualification in manufacturing, preferably in plastics manufacturing.
To assure the quality of the assessment process, the moderation should cover one of more of the following:
> Assessor credentials
> The assessment instrument
> The assessment process (including preparation and post-assessmentfeedback)

CRITERIA FOR THE REGISTRATION OF ASSESSORS

The following criteria should be applied by the relevant ETQA:
1. Appropriate qualification in the field of plastics manufacturing at NQF Level 4.
2. A minimum of 2 years' experience in a plastics manufacturing environment. The subject matter expertise of the assessor can be established by recognition of prior learning.
3. Be active in the industry and be familiar with the materials, machinery, products and level of technology in which the learner has contextualised his/her skills and knowledge.
4. Assessed successfully against a nationally recognised unit standard/s reflecting experience and understandingof assessment theory, processesand practices
5. Good interpersonal skills and the ability to balance the conflicting rsquirements of:
> Maintaining nationalstandards
> The interests of the learner
> The need for transformation and redressing the legacies of the past
> The cultural background and language of the learner
> An understanding of outcomes-based education and training methodologies and the principles and policies related to the National Qualifications Framework
6. Registrationas an assessor with a relevant ETQA.
7. Any other criteria required by a relevant ETQA.

NOTES

This qualification replaces qualification 20891, "National Certificate in Plastics Manufacturing", Level 5, 125 credits.

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	9897 Manage inventory	Level 5	3	Registered
core	9304 Coordinate work group to produce product	Level 5	8	Registered
(Core	12459 Optimise the safety, health and environmentalprotection system	Level 5	6	Registered
core	13237 Optimise the quality assurancesystem	Level 5	6	Registered
core	13256 Maintain business processes	Level 5	10	Registered
core	119159 Maintain plastics manufacturing efficiencies	Level 5	12	Draft - Prep for P Comment
Core	119163 Conduct tooling, material or equipment trials in plastics manufaduring processes	Level 5	12	Draft - Prep for P Comment
core	119166 Optimise plastics manufacturing processes	Level 5	24	Draft - Prep for P Comment
core	119180 Schedule and arrange maintenance and repairs for plastics manufacturing operations	Level 5	4	Draft - Prep for P Comment
Elective	12458 Develop the skills of a work team	Level 5	10	Registered

Elective	13203 Counsel workgroup members in respect of HIV/AIDS	Level 5	3	Registered
Elective	15237 Build teams to meet set goals and objectives	Level 5	3	Registered
Elective	119150 Co-ordinate the installation of plastics manufactunng and related equipment	Level 5	10	Draft - Prep for P Comment
Elective	119168 Order and ensure delwery from external suppliers for plastics manufacturing processes	Level 5	4	Draft - Prep for P Comment
Elective	119170 Plan, schedule and monitor plasbcs production	Level 5	8	Draft - Prep for P Comment
Elective	119183 Test and evaluate the quality of plasbcs raw materials and finished products	Level 5	10	Draft - Prep for P Comment
Fundamental	12432 Use mathematical and statistical techniques effectively	Level 5	20	Registered
Fundamental	12433 Use communication techniques effectively	Level 5	8	Registered
Fundamental	15219 Develop and implement a strategy and acbon plans for a team, department or division	Level 5	4	Registered

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 1

SAQA US ID	UNIT STANDARD TITLE		
119139	Monitor the quality of the input materials and the manufactured plastic product		
SGB NAME		NSB 06	PROVIDER NAME
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	12	Level 2	Regular

SPECIFIC OUTCOME 1

Conduct visual checks on incoming materials and components and the manufactured product.

SPECIFIC OUTCOME 2

Measure products, components and materials and conduct operational on-line tests.

SPECIFIC OUTCOME 3

Recognise defects and mark or remove dsfective materials, products or components.

SPECIFIC OUTCOME 4

Record production and defects and report incidents.

SPECIFIC OUTCOME 5

Receive and respond to instructions, information or communications.

SPECIFIC OUTCOME 6

Respond to 'what', 'what if and 'why' questions related to monitoring the quality of the input materials and the manufactured product.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **2**

SAQA US ID	*UNIT STANDARD TITLE*		
119146	Prepare manufactured plastics product for the next stage or for storage		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	10	Level 2	Regular

SPECIFIC OUTCOME 1

Determine packing and finishing requirements for manufactured product or components and prepare working area.

SPECIFIC OUTCOME 2

Perform finishing procedures.

SPECIFIC OUTCOME 3

Carry out post-production operations.

SPECIFIC OUTCOME **4**

Identify, respond to, record and report problems.

SPECIFIC OUTCOME 5

Respond to 'what', 'what if' and 'why' questions related to preparing manufactured product for the next stage or for storage

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **3**

SAQA US ID	*UNIT STANDARD TITLE*
119156	Respond to changes in plastics manufacturing processes

SGB NAME	*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing	Manufacturing, Engineering and Technology	

UNIT STANDARD TYPE	*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular	Manufacturing, Engineering and Technology	Manufacturing and Assembly

ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	*8*	Level 2	Regular

SPECIFIC OUTCOME 1

Recognise and report changes which affect the manufacturing process

SPECIFIC OUTCOME 2

Carry out housekeeping and simple maintenance processes as required by the process.

SPECIFIC OUTCOME 3

Monitor material flow and respond to shortages.

SPECIFIC OUTCOME **4**

Monitor the manufacturing equipment and respond to changes.

SPECIFIC OUTCOME 5

Record processing conditions, outputs, stoppages and changes and determine output figures.

SPECIFIC OUTCOME 6

Respond to 'what', 'what if' and 'why' questions relating to activities, changes and incidents in the plastics manufacturing process.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **4**

Use and care for services, tools and equipment required for plastics manufacturing

SAQA US ID	*UNIT STANDARD TITLE*		
119172	Use and care for services, tools and equipment required for plastics manufacturing		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	12	Level 2	Regular

SPECIFIC OUTCOME 1

Choose and use the right tools to cut, trim and finish product.

SPECIFIC OUTCOME 2

Choose and use the right tools to adjust and maintain equipment.

SPECIFIC OUTCOME 3

Choose and use the right tools and materials to clean equipment and product.

***SPECIFIC OUTCOME* 4**

Lift, load and unload products, equipment and containers.

SPECIFIC OUTCOME 5

Adjust, clean and store tools and equipment.

SPECIFIC OUTCOME 6

Respond to 'what', 'what if' and 'why' questions related to using and caring for services, tools and equipment required for plastics manufacturing.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 5

Conduct simple tests during the plastics manufacturing process

SAQA US ID	*UNIT STANDARD TITLE*
119179	Conduct simple tests during the plastics manufacturing process

SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	4	Level 3	Regular

SPECIFIC OUTCOME 1

Determine test requirements during the manufacturing process.

SPECIFIC OUTCOME 2

Obtain and prepare any equipment required for the tests and the work aria

SPECIFIC OUTCOME 3

Test product and record data.

SPECIFIC OUTCOME 4

Monitor variations on Statistical Process Control plots, identify whin production reaches an error condition and respond.

SPECIFIC OUTCOME 5

Care for and store any sample preparation and testing tools and equipment and follow quality procedures.

SPECIFIC OUTCOME 6

Complete and process all applicable documentation and respond to questions related to conducting the tests.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 6

Control materials and consumables for plastics manufacturing processes

SAQA US ID	*UNIT STANDARD TITLE*
119182	Control materials and consumables for plastics manufacturing processes

SGB NAME	*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing	Manufacturing, Engineering and Technology	

UNIT STANDARD TYPE	*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular	Manufacturing, Engineering and Technology	Manufacturing and Assembly

ABET BAND	*CREDITS*	*NQF LEVEL*	*UNITSTANDARD TYPE*
Undefined	4	Level 3	Regular

SPECIFIC OUTCOME 1

Receive, inspect and store materials.

SPECIFIC OUTCOME 2

Determine the requirements for materials from the production plan; count, measure and prepare materials for collection.

SPECIFIC OUTCOME 3

Determine and record stock levels and update records.

SPECIFIC OUTCOME **4**

Monitor stock levels and initiate ordering process.

SPECIFIC OUTCOME 5

Maintain storage environment.

SPECIFIC OUTCOME 6

Respond to questions and explain issues related to controlling materials and consumables for production.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 7

Perform routine maintenance tasks on plastics manufacturing equipment

SAQA US ID	*UNIT STANDARD TITLE*		
119174	Perform routine maintenance tasks on plastics manufacturing equipment		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	2	Level 3	Regular

SPECIFIC OUTCOME 1

Carry out routine checks on production machines and operations.

SPECIFIC OUTCOME 2

Perform routine maintenance activities, ____ _____ .

SPECIFIC OUTCOME 3

Update maintenance records.

SPECIFIC OUTCOME 4

Alert appropriate personnel *to* any identified problems.

SPECIFIC OUTCOME 5

Respond to questions and explain issues ralated to performing routine maintenance on a production machine.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: *8*

Perform routine operations on plastics manufacturing equipment

SAQA US ID	*UNIT STANDARD TITLE*		
119162	Perform routine operations on plastics manufacturing equipment		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	10	Level 3	Regular

SPECIFIC OUTCOME 1

Monitor equipment and material, conduct quality checks and resolve problems.

SPECIFIC OUTCOME 2

Perform start up and shutdown procedures on the manufacturing equipment.

SPECIFIC OUTCOME 3

Prepare for and perform purging and material or colour changeover procedures.

SPECIFIC OUTCOME 4

Report and record information related to manufacturing equipment and operations.

SPECIFIC OUTCOME 5

Discuss and explain issues related to manufacturing equipment and operations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **9**

Transport and care for tooling in plastics manufacturing processes

SAQA US ID	*UNIT STANDARD TITLE*		
119142	Transport and care for tooling in plastics manufacturing processes		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	6	Level 3	Regular

SPECIFIC OUTCOME 1

Prepare tooling for installation or storage.

SPECIFIC OUTCOME 2

Determine requirements; select and transport tooling.

SPECIFIC OUTCOME 3

Assist with the installation of tooling.

SPECIFIC OUTCOME 4

Maintain the condition of tooling during production.

SPECIFIC OUTCOME 5

Complete records; recognise and report problems.

SPECIFIC OUTCOME 6

Respond to questions and explain issues related to transporting and caring for tooling.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 10

Work with and look after materials in the plastics manufacturing production process

SAQA US ID	*UNIT STANDARD TITLE*
119169	Work with and look after materials in the plastics manufacturing production process

SGB NAME	*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing	Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE	*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular	Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET SAND / *CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined / 12	Level *3*	Regular

SPECIFIC OUTCOME 1

Determine material requirements and locate materials.

SPECIFIC OUTCOME 2

Plan and arrange transport of materials to the workstation.

SPECIFIC OUTCOME 3

Look after, transport and safely store materials.

SPECIFIC OUTCOME 4

Prepare materials and components for the production and post-production processes.

SPECIFIC OUTCOME 5

Record material quantities, report material usage and explain and discuss material-related issues.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 11

SAQA US ID	*UNIT STANDARD TITLE*		
119140	Changeover and set up tooling for plastics manufacturing processes		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	10	Level 4	Regular

SPECIFIC OUTCOME 1

Determine product and process requirements and pian the tooling changeover process.

SPECIFIC OUTCOME 2

Inspect and prepare tooling.

SPECIFIC OUTCOME 3

Co-ordinate the storing, transporting, iifting and lowering of tooling.

SPECIFIC OUTCOME 4

Remove axisting tooling; install and set up the replacement tooling and related services.

SPECIFIC OUTCOME 5

Recognise and respond to problems related to tooling.

SPECIFIC OUTCOME 6

Engage in discussions with other parties on issues related to the set up process and product requirements.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 12

Compound plastic materials

SAQA US ID	*UNIT STANDARD TITLE*		
119167	Compound plastic materials		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD* ***DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	7	Level 4 .	Regular

SPECIFIC OUTCOME 1

Determine preparation requirements; obtain and prepare materials for compounding.

SPECIFIC OUTCOME 2

Prepare mixing equipment, select, weigh and feed additives and materials in the required order and discharge the compound.

SPECIFIC OUTCOME 3

Set up compounding equipment, load materials and monitor the compounding conditions and output.

SPECIFIC OUTCOME 4

Carry out quality checks on compound materials, complete required documentation and report any problems.

SPECIFIC OUTCOME 5

Engage in discussions with other parties on issues related to the compounding process.

SOUTH AFRfCAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 13

SAQA US ID	UNIT STANDARD TITLE		
119184	Conduct laboratory tests on plastic raw materials and manufactured products		
SGB NAME		NSB 06	PROVIDER NAME
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	CREDITS	NQF LEVEL	UNIT SJANDARD TYPE
Undefined	10	Level 4	Regular

SPECIFIC OUTCOME 1

Determine test criteria from procedures manual and develop a testing schedule.

SPECIFIC OUTCOME 2

Collect and verify samples and related information.

SPECIFIC OUTCOME 3

Select appropriate test method and prepare the samples and the equipment for testing.

SPECIFIC OUTCOME 4

Complete tests, interpret results, draw conclusions and compile reports.

SPECIFIC OUTCOME 5

Care for test equipment, store samples and archive data.

SPECIFIC OUTCOME 6

Engage in discussions with other parties on issues related to the process of conducting laboratory tests on raw materials and manufactured products.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **14**

SAQA US ID	*UNIT STANDARD TITLE*
119185	Maintain calibrated equipment and standards for plastics manufacturing processes

SGB NAME	*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing	(Manufacturing, Engineering and Technology	

UNIT STANDARD TYPE	*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular	Manufacturing, Engineering and Technology	Manufacturing and Assembly

ABET EAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	*6*	Level **4**	Regular

SPECIFIC OUTCOME 1

Determine the requirements listed in the calibration plan and develop a programme for calibrating the equipment.

SPECIFIC OUTCOME 2

Collect, package and send of equipment and standards to the standards authority.

SPECIFIC OUTCOME 3

Collect and calibrate measuring equipment against company standard and record in the register.

SPECIFIC OUTCOME 4

Isolate equipment which deviates from the standard and deal with it according to procedures.

SPECIFIC OUTCOME 5

Maintain and store calibration equipment and standards, record all actions, store ail certificates and track all activities.

SPECIFIC OUTCOME 6

Explain and discuss issues related to the calibration process.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 15

Monitor maintenance of plastics manufacturing equipment, tooling and **services**

SAQA US ID	*UNIT STANDARD TITLE*		
119187	Monitor maintenance of plastics manufacturing equipment, tooling and services		
SGB ***NAME***		***NSB 06***	***PROVIDER NAME***
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	**4**	Level **4**	Regular

SPECIFIC OUTCOME 1

Monitor the functioning of equipment, tooling and services during manufacturing operations and identify problems.

SPECIFIC OUTCOME 2

Discuss maintenance requirements, evaluate options and agree maintenance requirements with appropriate maintenance personnel.

SPECIFIC OUTCOME 3

Follow up on maintenance work done to ensure tooling, equipment and services are functioning optimally for production requirements.

SPECIFIC OUTCOME 4

Check and sign off all maintenance documentation.

SPECIFIC OUTCOME 5

Explain and discuss incidents and problems related to maintenance.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 16

Prepare and process plastics materials for manufacturing

SAQA US ID	*UNIT STANDARD TITLE*		
119186	Prepare and process plastics materials for manufacturing		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	12	Level 4	Regular

SPECIFIC OUTCOME 1

Determine product, preparation and process requirements and obtain the materials.

SPECIFIC OUTCOME 2

Prepare weighing and blending equipment and prepare material for the manufacturing process.

SPECIFIC OUTCOME 3

Carry out quality checks on the prepared materials; label and store material.

SPECIFIC OUTCOME 4

Monitor the use of the materials during the manufacturing process and arrange for material to be transported at appropriate intervals.

SPECIFIC OUTCOME 5

Record, summarise and report material-related data, incidents and events.

SPECIFIC OUTCOME 6

Explain and discuss materials and material properties related to preparation, processing and end-product properties.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 17

Set and adjust plastics manufacturing machine conditions to produce quality finished product

SAQA US ID	*UNIT STANDARD TITLE*
119155	Set and adjust plastics manufacturing machine conditions to produce quality finished product

SGB NAME	*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing	Manufacturing, Engineering and Technology	

UNIT STANDARD TYPE	*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular	Manufacturing, Engineering and Technology	Manufacturing and Assembly

ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	16	Level 4	Regular

SPECIFIC OUTCOME 1

Determine product and process requirements, plan the setting process and collect the necessary tools, instruments and materials.

SPECIFIC OUTCOME 2

Set process parameters and start up manufacturing equipment to manufacture first offs.

SPECIFIC OUTCOME 3

Conduct quality checks on manufactured products, determine conformance to standards and adjust machine settings for any deviations.

SPECIFIC OUTCOME 4

Identify and resolve product-and process-related problems and respond to emergency situations or critical events.

SPECIFIC OUTCOME 5

Hand-over the process to production staff, complete all relevant documentation and report incidents or issues.

SPECIFIC OUTCOME 6

Engage in discussions with other parties on issues related to the setting process.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 18

Set up ancillary process equipment for plastics manufacturing operations

SAQA US ID	*UNIT STANDARD TITLE*		
119188	Set up ancillary process equipment for plastics manufacturing operations		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	4	Level 4	Regular

SPECIFIC OUTCOME 1

Determine product and process requirements and identify and collect required ancillary process equipment.

SPECIFIC OUTCOME 2

Plan set up, prepare and set up ancillary equipment and connect related services.

SPECIFIC OUTCOME 3

Start up manufacturing process and adjust ancillary equipment.

SPECIFIC OUTCOME 4

Recognise and respond to problems with ancillary process equipment during production

SPECIFIC OUTCOME 5

Engage in discussions with other parties on issues related to setting up ancillary process equipment.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 19

Co-ordinate the installation of plastics manufacturing and related equipment

SAQA US ID	*UNIT STANDARD TITLE*
119150	Co-ordinate the installation of plastics manufacturing and related equipment

SGB NAME	*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing	Manufacturing, Engineering and Technology	

UNIT STANDARD TYPE	*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular	Manufacturing, Engineering and Technology	Manufacturing and Assembly

ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	10	Level 5	Regular

SPECIFIC OUTCOME 1

Plan the installation and liase with the maintenance team responsible for installation and the production personnel.

SPECIFIC OUTCOME 2

Co-ordinate the preparation of the work-area and the installation or modification to services required for the installation or operation.

SPECIFIC OUTCOME 3

Co-ordinate assembly of machine, connection of services and the commissioning of the equipment.

SPECIFIC OUTCOME 4

Coach operating personnel on operation of installed equipment.

SPECIFIC OUTCOME 5

Run manufacturing trials; develop or adjust operation procedures and setting sheets based on the trials and handover to production.

SPECIFIC OUTCOME 6

Document the installation process; discuss and explain the factors, variables and decisions associated with the installation of the equipment.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 20

Conduct tooling, material or equipment trials in plastics manufacturing processes

SAQA US ID	*UNIT STANDARD TITLE*		
119163	Conduct tooling, material or equipment trials in plastics manufacturing processes		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	12	Level 5	Regular

SPECIFIC OUTCOME 1

Collect and evaluate information relevant *to* the trials.

SPECIFIC OUTCOME 2

Formulate a project plan, select and brief project team and arrange for necessary resources.

SPECIFIC OUTCOME 3

Prepare materials, tooling and equipment for the trial.

SPECIFIC OUTCOME 4

Set up and run trials, collect and verify performance data and complete finishing procedures.

SPECIFIC OUTCOME 5

Compile and present final report and recommendations.

SPECIFIC OUTCOME 6

Engage in discussions with the workgroup and other partners on conducting tooling, material or equipment trials.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 21

Maintain plastics manufacturing efficiencies

SAQA US ID	*UNIT STANDARD TITLE*		
119159	Maintain plastics manufacturing efficiencies		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	12	Level 5	Regular

SPECIFIC OUTCOME 1

Collect and analyse process-related information, maintain records, summarise information and generate reports.

SPECIFIC OUTCOME 2

Set and improve targets and levels of efficiency.

SPECIFIC OUTCOME 3

Identify and respond to deviations, problems and incidents which impact on production efficiencies.

SPECIFIC OUTCOME 4

Monitor and evaluate activities, safety, product quality and housekeeping.

SPECIFIC OUTCOME 5

Share and discuss information with relevant people and resolve external issues which impact on quality and output.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **22**

Optimise plastics manufacturing processes

SAQA US ID	*UNIT STANDARD TITLE*		
119166	Optimise plastics manufacturing processes		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	24	Level 5	Regular

SPECIFIC Off ***TCOME*** 1

Collect and analyse data and identify opportunities for improvement.

SPECIFIC OUTCOME 2

Identify the root cause *of* the problem; generate and test options to achieve improvement.

SPECIFIC OUTCOME 3

Set objective(s), develop a plan and implement the improvement(s).

SPECIFIC OUTCOME 4

Monitor and evaluate the changes; review and adjust the optimisation process until objective(s) have been achieved.

SPECIFIC off TCOME 5

Adjust and update standards and report improvements.

SPECIFIC OUTCOME 6

Engage in discussions on continuous improvement issues with the workgroup and other partners.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 23

SAQA US ID	UNIT STANDARD TITLE		
119168	Order and ensure delivery from external suppliers for plastics manufacturing processes		
SGB NAME		NSB 06	PROVIDER NAME
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET SAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	4	Level 5	Regular

SPECIFIC OUTCOME 1

Determine requirements; plan logistics and order-raquired materials.

SPECIFIC OUTCOME 2

Prepare for delivery and monitor delivery and storing of materials.

SPECIFIC OUTCOME 3

Complete delivery documentation and complete documentation for processing payments.

SPECIFIC OUTCOME 4

Identify deviations, determine their causes and take corrective action.

SPECIFIC OUTCOME 5

Communicate with suppliers, resolve issues and maintain and improve customer-supplier relationships.

SPECIFIC OUTCOME 6

Measure performance and report on the effectiveness and efficiency of the suppliers.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

UNIT STANDARD: **24**

SAQA US ID	*UNIT STANDARD TITLE*
119170	Plan, schedule and monitor plastics production

SGB NAME	*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing	Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE	***FIELD DESCRIPTiON***	***SUBFIELD DESCRIPTION***
Regular	Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET SAND (CREDITS	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined 8	Level 5	Regular

SPECIFIC OUTCOME 1

Collect, ***sort*** and prioritise customer and internal orders.

SPECIFIC OUTCOME 2

Calculate production times for each order; determine optimum sequence of production and schedule each order

SPECIFIC OUTCOME 3

Develop production orders and schedules for each line and communicate with relevant personnel.

SPECIFIC OUTCOME 4

Monitor production progress, adapt the production schedule or make changes in response to events.

SPECIFIC OUTCOME 5

Calculate overall plant efficiency and productivity; report production progress and delays.

SPECIFIC OUTCOME 6

Engage in discussions on planning and monitoring production with the workgroup and other partners.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **25**

Schedule and arrange maintenance and repairs for plastics manufacturing operations

SAQA US ID	*UNIT STANDARD TITLE*		
119180	Schedule and arrange maintenance and repairs for plastics manufacturing operations		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Plastics Manufacturing		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	4	Level 5	Regular

SPECIFIC Off ***TCOME*** 1

Consult and liase with maintenance personnel and production personnel and schedule maintenance and repairs on machinery and equipment.

SPECIFIC OUTCOME 2

Adapt the production plans to accommodate scheduled maintenance.

SPECIFIC OUTCOME 3

Together with maintenance personnel, develop solutions for recurring faults and maintenance problems.

SPECIFIC Off ***TCOME*** **4**

Conduct post-maintenance reviews to ensure work done was effective, alert maintenance personnel to further problems and determine the cost-effectiveness of the maintenance processes.

SPECIFIC OUTCOME 5

Evaluate maintenance documentation to identify problems.

SPECIFIC OUTCOME 6

Coach production personnel on maintenance issues.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT ***STANDARD:*** 26

Test and evaluate the quality of plastics raw materials and finished products

SAQA US ID	*UNIT STANDARD TITLE*
119183	Test and evaluate the quality of plastics raw materials and finished products

SGB NAME	*NSB 06*	*(PROVIDER NAME*
SGB Plastics Manufacturing	Manufacturing, Engineering and Technology	

UNIT STANDARD TYPE	*FIELD DESCRIPTION.*	*SUBFIELD DESCRIPTION*
Regular	Manufacturing, Engineering and Technology	Manufacturing and Assembly

ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	10	Level 5	Regular

SPECIFIC OUTCOME 1

Determine type of product io be tested and the type of test rsquired and select appropriate test specifications.

SPECIFIC OUTCOME 2

Prepare esting programme, sot tosting parameters if applicable and start and run the testing equipment.

SPECIFIC OUTCOME 3

Monitor testing process, collate and summarise data and compile and store reports.

SPECIFIC OUTCOME **4**

Store or dispose of samples used in the testing process.

SPECIFIC OUTCOME ***5***

Report, discuss and explain issues related to and raised by the testing process and the tests results.

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

Mining and Minerals

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 17*** March 2005. All correspondence should be marked Standards Setting – **SGB** for Mining and Minerals 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

ACTING DIRECTOR: STANDARDS SETTING AND DEVELOPMENT

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 1

Construct a concrete winch bed

SAQA US ID	*UNIT STANDARD TITLE*
119113	Construct a concrete winch bed

SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	1	Level 1	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the installation of a concrete winch bed.

SPECIFIC OUTCOME 2

Prepare to construct a concrete winch bed.

SPECIFIC OUTCOME 3

Construct a concrete winch bed.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 2

SAQA US ID	***UNIT STANDARD TITLE***		
119127	Extinguish a fire underground by means of a portable fire extinguisher		
SGB NAME		***NSB 06***	***PROVIDER NAME***
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	1	Level 1	Regular

SPECIFIC OUTCOME 1

Explain the critical factors pertaining to the extinguishing of a fire by means of a portable fire extinguisher.

SPECIFIC OUTCOME 2

Prepare to extinguish the fire.

SPECIFIC OUTCOME 3

Extinguish the fire.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: ***3***

Install a blasting barricade

SAQA US ID	*UNIT STANDARD TITLE*
119109	Install a blasting barricade

SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	1	Level 1	Regular

SPECIFIC OUTCOME **1**

Explain the specified requirements regarding the installation of a blasting barricade.

SPECIFIC OUTCOME 2

Prepare to install the blasting barricade.

SPECIFIC OUTCOME 3

Install the blasting barricade.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 4

SAQA US ID	UNIT STANDARD TITLE		
119120	Install a dust-allaying device		
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	1	Level 1	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the installation *of* a dust-allaying device.

SPECIFIC OUTCOME 2

Prepare to install the dust-allaying device.

SPECIFIC OUTCOME 3

Install the dust-allaying device.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 5

Load a battery onto and remove it from a locomotive

SAQA US ID	*UNIT STANDARD TITLE*		
119105	Load a battery onto and remove it from a locomotive		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	1	Level 1	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements pertaining to the loading and removing of a battery onto and from a locomotive.

SPECIFIC OUTCOME 2

Prepare to load and remove the battery.

SPECIFIC OUTCOME 3

Load and remove the battery.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **6**

SAQA US ID	***UNIT STANDARD TITLE***		
119124	Transport explosives and accessories by means of rolling stock		
SGB ***NAME***		***NSB 06***	***PROVIDER NAME***
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology .	Fabrication and Extraction
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	2	Level 1	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the transporting of explosives and accessories by means of rolling stock.

SPECIFIC OUTCOME 2

Prepare to transport explosives and accessories.

SPECIFIC OUTCOME 3

Transport explosives and accessories.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 7

SAQA US ID	*UNIT STANDARD TITLE*		
119121	Transport material and equipment by means of rolling stock		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	*2*	Level 1	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the transporting of material and equipment by means of rolling stock.

SPECIFIC OUTCOME 2

Prepare to transport material and equipment:

SPECIFIC OUTCOME 3

Transport material and equipment.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **8**

SAQA US ID	***UNIT STANDARD TITLE***		
119106	Transport persons by means of a locomotive and carriage		
SGB NAME		***NSB 06***	***PROVIDER NAME***
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	1	Level 1	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the transporting of persons by means of a locomotive and carriage.

SPECIFIC OUTCOME 2

Prepare to transport persons.

SPECIFIC OUTCOME 3

Transport persons.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

SAQA US ID	UNIT STANDARD TITLE		
119099	Break big rocks by means of blasting		
SGB NAME		**NSB 06**	**PROVIDER NAME**
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD 'E		**FIELD DESCRIPTION**	**SI DESCRIPTIC**
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	**CREDITS**	**NQF LEVEL**	**UNIT STANDARD TYPE**
Undefined	3	Level 2	Regular

SPECIFIC OUTCOME 1

Explain specified requirements regarding the breaking of big rocks by means of blasting.

SPECIFIC OUTCOME 2

Prepare to blast big rocks.

SPECIFIC OUTCOME 3

Blast big rocks.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 10

SAQA US ID	***UNIT STANDARD TITLE***		
119107	Charge shot holes with ammonium nitrate based explosives		
SGB NAME		***NSB 06***	***PROVIDER NAME***
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	2	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements pertaining **to** the charging of shot holes with ammonium nitrate based explosives.

SPECIFIC OUTCOME 2

Prepare to charge holes with ammonium nitrate based explosives.

SPECIFIC OUTCOME 3

Charge holes with ammonium nitrate based explosives.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

SOUTH AFRICAN QUALIFICATIONS AUTHORIN

UNIT STANDARD: 11

SAQA US ID	*UNIT STANDARD TITLE*		
119098	Charge shot holes with cartridged explosives and accessories		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	2	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements pertaining to the charging of shot holes with cartridged explosives and accessories.

SPECIFIC OUTCOME 2

Prepare to charge holes with cartridged explosives and accessories.

SPECIFIC OUTCOME 3

Charge holes with cartridged explosives and accessories.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 12

Conduct a preliminary investigation into workplace incidents and accidents

SAQA US ID	UNIT STANDARD TITLE		
119125	Conduct a preliminary investigation into workplace incidents and accidents		
SGB NAME		**NSB 06**	**PROVIDER NAME**
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		**FIELD DESCRIPTION**	**SUBFIELD DESCRIPTION**
Regular		nufa g and Technology	Fabrication and Extraction
ABET BAND	**CREDITS**	**NQF LEVEL**	**UNIT STANDARD N P E**
Undefined	4	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements pertaining to the investigation of accidents and incidents.

SPECIFIC OUTCOME 2

Investigate an accident and incident.

SPECIFIC OUTCOME 3

Complete and submit documentation.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNiT STANDARD: **13**

Construct a stopping to control airflow underground

SAQA US ID	*UNIT STANDARD TITLE*
119129	Construct a stopping to control airflow underground

SGB NAME	*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals	Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE	***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular	Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND ***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined 2	Level 2	Regular

SPECIFIC OUTCOME 1

Describe the specified requirements regarding the construction of a stopping.

SPECIFIC OUTCOME 2

Prepars to construct a stopping.

SPECIFIC OUTCOME 3

Construct the stopping.

SPECIFIC OUTCOME 4

Perform post construction activities.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 14

Construct an underground ladder-way

SAQA US ID	*UNIT STANDARD TITLE*
119118	Construct an underground ladder-way

SGB NAME	*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals	Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE	*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular	Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND (CREDITS	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined 2	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the installation of an underground ladder-way.

SPECIFIC OUTCOME 2

Prepare *to* construct an underground ladder-way.

SPECIFIC OUTCOME 3

Construct an underground ladder-way.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 15

SAQA US ID	***UNIT STANDARD TITLE***		
119115	Install a mono rope system		
SGB NAME		***NSB 06***	***PROVIDER NAME***
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	**4**	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the installation of a mono rope system.

SPECIFIC OUTCOME 2

Prepare to install the mono rope system.

SPECIFIC OUTCOME 3

Install the mono rope system.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 16

Install a rail turn-out in an underground workplace

SAQA US ID	*UNIT STANDARD TITLE*		
119110	Install a rail turn-out in an underground workplace		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	2	Level 2	Regular

SPECIFIC OUTCOME 1

Explain specified requirements regarding the installation of a rail turn-out.

SPECIFIC OUTCOME 2

Prepare to install a rail turn-out.

SPECIFIC OUTCOME 3

Install a rail turn-out.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 17

Install a set of rails in an underground workplace

SAQA US ID	*UNIT STANDARD TITLE –*
119108	Install a set of rails in an underground workplace

SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	2	Level 2	Regular

SPECIFIC OUTCOME 1

Explain specified requirements regarding the installation of a set of rails.

SPECIFIC OUTCOME 2

Prepare to install a set of rails.

SPECIFIC OUTCOME 3

Install a set of rails.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 18

Install a stope box front and chute

SAQA US ID	*UNIT STANDARD TITLE*
119111	Install a stope box front and chute

SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	5	Level 2	Regular

SPECIFIC OUTCOME 1

Explain specified requirements regarding the installation of **a** stope box front and chute.

SPECIFIC OUTCOME 2

Prepare to install *a* stope ***box*** front and chute.

SPECIFIC OUTCOME 3

Install the stope **box** front and chute.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 19

SAQA US ID	***UNIT STANDARD TITLE***		
119123	Install a stope grizzly		
SGB ***NAME***		***NSB 06***	***PROVIDER NAME***
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	***3***	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the installation of a stope grizzly.

SPECIFIC OUTCOME 2

Prepare to install the stope grizzly.

SPECIFIC OUTCOME 3

Install the stope grizzly.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 20

SAQA US ID	***UNIT STANDARD TITLE***		
119116	Install and remove pipes and accessories		
SGB NAME		***NSB 06***	***PROVIDER NAME***
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD ***TYPE***		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	***3***	Level 2	Regular

SPECIFIC OUTCOME 1

Explain specified requirements regarding the installation and removal of pipes and accessories.

SPECIFIC OUTCOME 2

Prepare to install and remove pipes and accessories.

SPECIFIC OUTCOME 3

Install and remove pipes and accessories.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

SAQA US ID	UNIT STANDARD TITLE		
119094	Mark service holes underground		
SGB NAME		**NSB 06**	**PROVIDER NAME**
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		**FIELD DESCRIPTION**	**SUBFIELD DESCRIPTION**
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	**CREDITS**	**NQF LEVEL**	**UNITSTANDARD TYPE**
Undefined	4	Level 2	**Regular**

SPECIFIC OUTCOME 1

Explain specified requirements pertaining to the marking of service holes.

SPECIFIC OUTCOME 2

Prepare to mark service holes.

SPECIFIC OUTCOME 3

Mark *service* holes.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 22

Mark shot holes and pilot holes in an underground development end

SAQA US ID	*UNIT STANDARD TITLE*
119097	Mark shot holes and pilot holes in an underground development end

SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	*6*	Level 2	Regular

SPECIFIC OUTCOME 1

Explain specified requirements pertaining to the marking of shot holes and pilot holes.

SPECIFIC OUTCOME 2

Prepare to mark shot holes and pilot holes.

SPECIFIC OUTCOME 3

Mark shot holes.

SOUTH AFRfCAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **23**

Mark shot holes in an underground stope

SAQA US ID	*UNIT STANDARD TITLE*		
119093	Mark shot holes in an underground stope		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	6	Level 2	Regular

SPECIFIC OUTCOME 1

Explain specified requirements pertaining to the marking *of* shot holes.

SPECIFIC ***OUTCOME*** 2

Prepare to mark shot holes.

SPECIFIC OUTCOME 3

Mark shot holes.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 24

Measure, plot and interpret area measurements within an underground workplace

SAQA US ID	UNIT STANDARD TITLE		
119130	Measure, plot and interpret area measurements within an underground workplace		
SGB NAME		NSB 06	PROVIDER NAME
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	3	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the measuring, plotting and interpreting of area measurements within an underground workplace.

SPECIFIC OUTCOME 2

Prepare to measure, plot and interpret area measurements within an underground workplace.

SPECIFIC OUTCOME 3

Measure, plot and interpret area measurements within an underground workplace.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **25**

Operate a battery locomotive underground

SAQA US ID	*UNIT STANDARD TITLE*		
119103	Operate a battery locomotive underground		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	*3*	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the operating of a battery locomotive.

SPECIFIC OUTCOME 2

Prepare to operate the battery locomotive.

SPECIFIC OUTCOME 3

Operate the battery locomotive.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: ***26***

Operate a diesel locomotive underground

SAQA US ID	*UNIT STANDARD TITLE*
119102	Operate a diesel locomotive underground

SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	3	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the operating of diesel locomotive.

SPECIFIC OUTCOME 2

Prepare to operate the diesel locomotive.

SPECIFIC OUTCOME 3

Operate the diesel locomotive.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 27

Operate a monorail system

SAQA US ID	*UNIT STANDARD TITLE*		
119114	Operate a monorail system		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	4	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified rsquirements regarding the operation of a monorail system.

SPECIFIC OUTCOME 2

Prepare to operate the monorail system.

SPECIFIC OUTCOME 3

Operate the monorail **system.**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 28

Operate an electric locomotive underground

SAQA US ID	*UNIT STANDARD TITLE*
119104	Operate an electric locomotive underground

SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	*3*	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the operating of an electric locomotive.

SPECIFIC OUTCOME 2

Prepare to operate the electric locomotive.

SPECIFIC OUTCOME 3

Operate the electric locomotive.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

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SAQA US ID	*UNIT STANDARD TITLE*		
119100	Re-rail a track bound unit		
SGB NAME		***NSB 06***	***PROVIDER NAME***
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD*** *TYPE*
Undefined	***3***	Level **2**	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the re-railing of a track bound unit.

SPECIFIC OUTCOME 2

Prepare to re-rail the unit.

SPECIFIC OUTCOME 3

Re-rail the unit.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **30**

SAQA US ID	*UNIT STANDARD TITLE*
119095	Support an underground working place by means of a thin-sprayed lining

SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	4	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements pertaining to the support of an underground workplace by means of a thin-sprayed lining.

SPECIFIC OUTCOME 2

Prepare to support an Underground workplace by means of a thin-sprayed lining.

SPECIFIC OUTCOME 3

Supporting an underground workpiace by means of a thin-sprayed lining.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 31

Support an underground working place by means of mechanical anchors

SAQA US ID	*UNIT STANDARD TITLE*		
119119	Support an underground working place by means of mechanical anchors		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	4	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements pertaining to the installation of mechanical anchors.

SPECIFIC OUTCOME 2

Prepare to install mechanical anchors.

SPECIFIC OUTCOME 3

Install mechanical anchors.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: *32*

Support an undergroundworking place by means of sets

SAQA US ID	*UNIT STANDARD TITLE*		
119092	Support an underground working place by means of sets		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	4	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements pertaining to the installation of sets.

SPECIFIC OUTCOME 2

Prepare to install sets.

SPECIFIC OUTCOME 3

Install sets.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY
NATIONAL QUALIFICATIONS FRAMEWORK

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SAQA US ID	UNIT STANDARD TITLE
119122	Transport broken rock by means of rolling stock

SGB NAME		NSB 06	PROVIDER NAME
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		**FIELD DESCRIPTION**	**SUBFIELD DESCRIPTION**
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	**CREDITS**	**NQF LEVEL**	**UNIT STANDARD TYPE**
Undefined	2	Level 2	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the transporting of broken rock by means of roiling stock.

SPECIFIC OUTCOME 2

Prepare to transport broken rock.

SPECIFIC OUTCOME 3

Transport broken rock.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **34**

SAQA US ID	*UNIT STANDARD TITLE*
119112	Transport material and equipment by means of a mono rope system

SGB ç and		Manufacturing, Engineering and	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	***3***	Level 2	Regular

SPECIFIC OUTCOME 1

Explain specified requirements regarding the transportation of material and equipment with a mono rope system.

SPECIFIC OUTCOME 2

Prepare to transport material and equipment with a mono rope system.

SPECIFIC OUTCOME 3

Transport material and equipment with a mono rope system.

Established in terms of Act 58 of 1995

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 35

SAQA US ID	*UNIT STANDARD TITLE*		
/19126	Analyse and solve problems		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQFLEVEL*	*UNIT STANDARD TYPE*
Undefined	4	Level 3	Regular

SPECIFIC OUTCOME 1

Analyse the problem.

SPECIFIC OUTCOME 2

Apply problem-solving techniques.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **36**

Identify and deal with rock strata conditions pertaining to daily mining operations within an underground-working place

SAQA US ID	*UNIT STANDARD TITLE*		
119128	Identify and deal with rock strata conditions pertaining to daily mining operations within an underground-working place		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	5	Level 3	Regular

SPECIFIC OUTCOME 1

Demonstrate understanding of rock strata conditions.

SPECIFIC OUTCOME 2

Identify and deal with rock strata conditions.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Established in terms of Act 58 of 1995

UNIT STANDARD: 37

Time connect and initiate a blast of a development end using elctric/electronic delay detonators

SAQA US ID	*UNIT STANDARD TITLE*		
119117	Time connect and initiate a blast of a development end using elctric/electronic delay detonators		
SGB NAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	6	Level 3	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the timing, connecting and initiating of a blast of a development end using electric/electronic delay detonators.

SPECIFIC OUTCOME 2

Prepare to time, connect and initiate the blast of a development end using electric/electronic delay detonators.

SPECIFIC OUTCOME 3

Time, connect and initiate the blast of a development end using electric/electronic delay detonators.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **38**

Time connect and initiate a blast of a development end using fuses and igniter cord

SAQA US ID	***UNIT STANDARD TITLE***		
119101	Time connect and initiate a blast of a development end using fuses and igniter cord		
SGB NAME		***NSB 06***	***PROVIDER NAME***
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	***5***	Level ***3***	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the timing, connecting and initiating of a blast of a development end using fuses and igniter cord.

SPECIFIC OUTCOME 2

Prepare *to* time, connect and initiate the blast of a development end using fuses and igniter cord.

SPECIFIC OUTCOME 3

Time, connect and initiate the blast of a development end using fuses and igniter cord.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **39**

SAQA US ID	*UNIT STANDARD TITLE*		
119096	Time connect and initiate a blast of a stope face using fuses and igniter cord		
SGBNAME		*NSB 06*	*PROVIDER NAME*
SGB Mining and Minerals		Manufacturing, Engineering and Technology	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Manufacturing, Engineering and Technology	Fabrication and Extraction
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	*6*	Level 3	Regular

SPECIFIC OUTCOME 1

Explain the specified requirements regarding the timing, connecting and initiating **of** a blast of a stope face using fuses and igniter cord.

SPECIFIC OUTCOME 2

Prepare to time, connect and initiate the blast of a stope face using fuses and igniter cord.

SPECIFIC OUTCOME 3

Time, connect and initiate the blast of a stope face using fuses and igniter cord.