

No. 470

30 April 2008

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

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

Manufacturing and Assembly

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

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

Comment on the Qualification and Unit Standards should reach SAQA at the address below and *no later than 30 May 2008*. All correspondence should be marked **Standards Setting – SGB for Manufacturing and Assembly** 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.org.za

P.P. 
DR. S. BHIKHA
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION: National Certificate: Tyre Repair and Maintenance

SAQA QUAL ID	QUALIFICATION TITLE		
61809	National Certificate: Tyre Repair and Maintenance		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
QUALIFICATION TYPE	FIELD	SUBFIELD	
National Certificate	6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	120	Level 2	Regular-Unit Stds Based

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

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose:

This qualification recognises the competencies required to work effectively within the tyre retreading and servicing industries.

Individuals who achieve this qualification in terms of the tyre retreading specialisation area will be able to carry out all aspects of the retreading process within a particular retreading context, and to meet quality and quantity requirements. Qualifying learners will have the skills, knowledge and values to:

- > Inspect and select tyres suitable for retreading.
- > Prepare the casing through removal of old rubber to achieve the required profile.
- > Perform a range of repair techniques to restore the integrity of the casing.
- > Apply new tread.
- > Cure and perform final finishing and inspection of the retreaded tyre.

Competencies acquired for the tyre retreading specialisation area may be assessed in terms of either the Hot or the Precure retreading process and in the following tyre contexts:

- > Passenger vehicle tyres.
- > Light or heavy commercial vehicle tyres.
- > Agricultural machine/equipment tyres.
- > Off-the-road (OTR) machine/equipment tyres.

Individuals achieving this qualification in terms of the tyre and tube repair and fitting specialisation area will be able to carry out all aspects of tyre replacement, maintenance, repair and fitting processes within a particular tyre servicing context, meeting safety, quality and productivity requirements. Qualifying learners will understand tyre construction types and characteristics and fault rectification and will have the skills, knowledge and values to:

- > Inspect tyres and determine servicing/repair suitability and requirements.

- > Use a range of tools, equipment, materials, products/components and techniques to perform the services required.
- > Apply a range of specialised handskills.

Competencies acquired for the tyre and tube repair and fitting specialisation area may be assessed in terms of the following tyre contexts:

- > Passenger vehicle tyres.
- > Light or heavy commercial vehicle tyres.
- > Industrial machine/equipment tyres.
- > Agricultural machinery/equipment tyres.
- > Off-the-road (OTR) machine/equipment tyres.

Qualifying learners will be able to contribute to the achievement of workplace objectives by maintaining quality standards and applying safe, efficient and productive work practices. They will have a basic understanding of the scientific and technological principles and concepts which underpin tyre retreading or servicing processes, and will be able to relate these to their own work activities. They will also understand how they should operate within the management, quality and safety systems which govern their workplace.

Rationale:

This qualification recognizes the skills, knowledge and values required by the tyre retreading and servicing industries.

The tyre retreading specialisation area addresses the retreading of passenger, light and heavy commercial vehicles and agricultural and off-the-road (OTR) machine tyres and includes both hot and precure retreading processes. Qualifying learners will be equipped with the full range of competencies required to work effectively in a retreading environment. At the same time the qualification is sufficiently flexible to accommodate the particular requirements of the various contexts within the retreading industry. Within the work environment, tyre retreaders usually specialise in a type of tyre and in a particular aspect of the process. The broad base of skills, knowledge and values that this qualification provides will equip qualifying learners to work effectively within the retreading environment and will enable them to adapt to changes within their working environment. Qualifying learners would be competent to operate a range of machinery, to use a range of tools, materials and techniques and to apply a range of specialised handskills required to produce quality retreaded tyres.

The tyre and tube repair and fitting specialisation area addresses the needs of the tyre servicing industry which is characterized by the provision of tube and tyre maintenance, repair and fitting services for a range of tyre contexts including passenger, light and heavy commercial vehicles, industrial, agricultural and off-the-road (OTR) machine/equipment tyres. This qualification provides a broad base of skills, knowledge and values related to tyre repair and fitting and enables the learner to achieve the more specialised skills and knowledge required by particular tyre contexts. It also recognises and accommodates the differing needs resulting from factors such as geographical situation, company type and size, and the tendency towards specialisation. This will enable qualifying learners to adapt to changes within their working environment, and will allow them a greater degree of flexibility in their employment and career path choices.

The outcomes of this qualification combine practical and theoretical learning in the technical, inter-personal and business spheres, which will enable the qualifying learner to perform the operational aspects of the work, function within an organisational context and contribute to value-adding processes in the workplace.

Typical learners would be persons who are currently employed in a tyre retreading or servicing environment who have not received formal recognition for their skills and knowledge, and new entrants to the industry.

This qualification recognises skills, knowledge and values relevant to a workplace and requires workplace experience. It is suitable for learners who:

- > Attend courses and then apply the knowledge gained to activities in the workplace (portfolio to reflect formative assessment).
- > Are already workers and have acquired the skills and knowledge without attending formal courses (RPL can be done through the summative assessment and portfolio of evidence).
- > Participate in skills programmes and have the appropriate work experience.
- > Are part of a learnership programme which integrates structured learning and work experience.
- > Acquire their learning through any combination of the above.

Although this is a single qualification which specifically addresses the needs of the tyre retreading and servicing industries, it provides a sound basis for further learning and career path development.

Qualifying learners would be equipped for further career development in such areas as training, sales, management and stores. The skills and knowledge gained would also provide a foundation for small business development in the tyre servicing field. Further technical development would be possible in the new tyre and industrial rubber manufacturing fields for those who select the retreading specialisation area.

This qualification will benefit society and the economy as the skills and understanding gained by qualifying learners will improve work standards and efficiency, and contribute to economic growth and the upliftment of employees within the tyre retreading and servicing environments. The emphasis in the qualification on quality of product and service will enhance the safety and well-being of all road users. Qualifying learners will also develop an awareness of their role in conserving resources, in behaving responsibly towards the environment in general, and in observing safety and legal requirements.

This qualification will contribute to social upliftment and development by allowing employees to gain recognition for their skills and knowledge through the recognition of prior learning, and by providing a basis for further learning and career development within the broader tyre industry.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

The following competencies are assumed for a learner embarking on this qualification:

- > Communication at NQF Level 1.
- > Mathematical Literacy at NQF Level 1.

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 of evidence. 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.

Access to the Qualification:

There is open access to this qualification. A workplace is, however, a prerequisite to obtaining the relevant work experience and evidence required for the assessment of the Exit Level Outcomes.

QUALIFICATION RULES**Fundamental Component:**

All the Fundamental Unit Standards are compulsory and consists of:

- > Communication to the value of 20 credits.
- > Mathematical Literacy to the value of 16 credits.

Core Component:

All the Core Unit Standards to the value of 41 credits, are all compulsory.

Elective Component:

The Elective component consists of two specialisation areas, each with its own set of Unit Standards. Learners are to select a specialisation area and Elective Unit Standards to the value of 43 credits from the Elective Unit Standards listed under that specialisation area, so as to attain a minimum of 120 credits for the qualification. The Unit Standards selected should meet the needs of the particular tyre retreading or servicing context and reflect the interests of the learner.

Specialisation Area A: Tyre Retreading (Hot or Precure):

The following Elective Unit Standards totalling 30 credits are compulsory:

- > ID 256175: Prepare casings for retreading, Level 2, 16 credits.
- > ID 256177: Apply tread rubber to casing, Level 2, 8 credits.
- > ID 256178: Perform activities to cure retreaded and repaired tyres, Level 2, 6 credits.

A further 13 credits are to be chosen from the following Unit Standards to make up a minimum of 120 credits for the qualification:

- > ID 256174: Operate equipment for repairing and retreading off-the-road (OTR) tyres, Level 3, 4 credits.
- > ID 9868: Demonstrate knowledge of, and rectify faults in, motor vehicle tyres and wheels, Level 3, 7 credits.
- > ID 114902: Operate a computer in a Wholesale/Retail outlet, Level 2, 6 credits.
- > ID 117898: Move, pack and maintain stock in a distribution centre/warehouse, Level 2, 12 credits.
- > ID 9874: Direct, receive and communicate with customers on the forecourt, Level 2, 4 credits.
- > ID 242981: Operate defined purpose lift trucks, Level 2, 4 credits.
- > ID 12481: Sling loads, Level 2, 4 credits.
- > ID 242978: Operate truck-mounted cranes, Level 3, 8 credits.
- > ID 242976: Operate overhead/gantry cranes, Level 2, 5 credits.
- > ID 12484: Perform basic fire fighting, Level 2, 4 credits.
- > ID 12483: Perform basic first aid, Level 2, 4 credits.
- > ID 9268: Manage basic personal finances, Level 2, 6 credits.
- > ID 13202: Apply study and learning techniques, Level 2, 3 credits.

> ID 120313: Investigate work opportunities in order to make a personal employment or work decision, Level 2, 2 credits.

Specialisation Area B: Tyre and Tube Repair and Fitting:

The following Elective Unit Standards totalling 21 credits are compulsory:

- > ID 12213: Select and use automobile lifting equipment, Level 2, 3 credits.
- > ID 9868: Demonstrate knowledge of, and rectify faults in, motor vehicle tyres and wheels, Level 3, 7 credits.
- > ID 9867: Remove and replace wheels and tyres, and balance wheels, Level 2, 2 credits.
- > ID 9869: Repair punctures and fit tyres to wheels, Level 3, 9 credits.

A further 22 credits are to be chosen from the following Elective Unit Standards to make up a minimum of 120 credits for the qualification:

- > ID 9864: Repair and replace light and heavy commercial vehicle tyres, Level 3, 17 credits.
- > ID 256176: Remove and replace off-the-road (OTR) wheels and tyres, Level 2, 8 credits.
- > ID 256179: Repair off-the-road (OTR) tyres, level 3, 10 credits.
- > ID 9865: Remove and replace wheels and tyres from industrial machines and equipment, Level 3, 10 credits.
- > ID 15100: Check and adjust steering geometry, Level 3, 4 credits.
- > ID 114902: Operate a computer in a Wholesale/Retail outlet, Level 2, 6 credits.
- > ID 117898: Move, pack and maintain stock in a distribution centre/warehouse, Level 2, 12 credits.
- > ID 9874: Direct, receive and communicate with customers on the forecourt, Level 2, 4 credits.
- > ID 242981: Operate defined purpose lift trucks, Level 2, 4 credits.
- > ID 12481: Sling loads, Level 2, 4 credits.
- > ID 242978: Operate truck-mounted cranes, Level 3, 8 credits.
- > ID 12484: Perform basic fire fighting, Level 2, 4 credits.
- > ID 12483: Perform basic first aid Level 2, 4 credits.
- > ID 9268: Manage basic personal finances, Level 2, 6 credits.
- > ID 13202: Apply study and learning techniques, Level 2, 3 credits.
- > ID 120313: Investigate work opportunities in order to make a personal employment or work decision, Level 2, 2 credits.

Please note that for the agricultural machinery/equipment tyre context, the following Elective Unit Standard should be contextualised for assessment purposes:

- > ID 9864: Repair and replace light and heavy commercial vehicle tyres, Level 3, 17 credits.

EXIT LEVEL OUTCOMES

1. Perform routine tasks related to tyre retreading/tyre servicing and repair processes.
2. Use and care for tools, accessories, equipment and materials.
3. Collect and use information and communicate issues related to tyre retreading/tyre servicing and repair processes.
4. Contribute to maintaining a safe and productive work environment.

Critical Cross-field Outcomes:

1. Identify and solve problems in which response displays that responsible decisions, using critical and creative thinking, have been made:

> Identify and take appropriate action in response to routine problems and faults related to tool and material use, equipment operation and product/service quality.

2. Work effectively with others as a member of a team, group, organisation or community:

- > Understand own work role and responsibilities and their contribution to team performance.
- > Participate in co-operative work practices to achieve group objectives.

3. Organise and manage oneself and one's activities responsibly and effectively:

- > Identify work requirements and carry out activities in a systematic manner, in accordance with procedures, standards and safe work practices.

4. Collect, analyse, organise and critically evaluate information:

- > Collect and process information related to tyre retreading/servicing processes and determine an appropriate response.

5. Communicate effectively by using mathematical and/or language skills in the modes of oral and/or written presentations:

- > Record and report information related to tyre retreading/servicing processes.

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

- > Apply knowledge of underpinning principles to use of tools and materials, operation of equipment and quality of the product/service.
- > Work in accordance with health and safety regulations.

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

- > Apply knowledge of tyre types and characteristics and of tyre retreading/servicing processes to provide a quality product/service.

8. Contribute to the full personal development of each learner and the social and economic development of the society at large:

- > Provide a structured environment within which the learner is able to develop a range of skills applicable to society and the workplace.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

- 1.1 Routine tasks are performed safely and effectively and in accordance with company standards.
- 1.2 Quality of product/service conforms to company requirements, manufacturers' specifications and relevant standards.
- 1.3 Common faults and routine problems that occur during work processes are recognised, the causes are identified and appropriate action is taken.
- 1.4 Concepts and principles applicable to the performance of the tasks are described and explained with examples.
- 1.5 The implications of not performing routine tasks correctly are described and explained.

Associated Assessment Criteria for Exit Level Outcome 2:

- 2.1 Tools, accessories, equipment and materials are selected and used in accordance with task requirements and relevant standards.
- 2.2 Equipment is operated in accordance with standard operating procedures.
- 2.3 The implications of not using and caring for tools, accessories, equipment and materials correctly are described and explained.

The following Associated Assessment Criterion is relevant for Specialisation Area A (Tyre Retreading):

- 2.4. Equipment is set up and equipment functions are monitored and adjusted in accordance with product requirements.

Associated Assessment Criteria for Exit Level Outcome 3:

- 3.1 Information relevant to routine work tasks and requirements is identified and interpreted and an appropriate response is made.
- 3.2 Information relevant to faults and non-conformances is identified, interpreted, assessed and used to inform the work process.
- 3.3 Information gathered is reported, where relevant, in accordance with organisational requirements.
- 3.4 Required documentation is completed in accordance with organisational requirements.

The following Associated Assessment Criterion is relevant for Specialisation Area B (Tyre and Tube Repair and Fitting) in contexts where the learner interfaces with the client:

- 3.5 Information is received and supplied accurately and in a courteous manner.

Associated Assessment Criteria for Exit Level Outcome 4:

- 4.1 Instructions received are accurately interpreted and acted upon in accordance with company requirements.
- 4.2 Unsafe conditions are recognised and appropriate action is taken to minimise hazards.
- 4.3 The work station is maintained in a clean and organised manner.
- 4.4 Workflow is maintained in accordance with organisational requirements.
- 4.5 The contribution of own role to the achievement of group objectives is described and explained.

Integrated Assessment:

The integrated assessment should be based on a summative assessment guide. The guide will specify how the assessor will assess different aspects of the performance and will include:

- > Evaluating evidence in a portfolio of evidence, particularly projects which integrate various aspects of the qualification and which demonstrate the integration of all aspects of learning: fundamental and core knowledge, skills and values; the development of the critical outcomes.
- > Observing and listening to the learner at work, both in primary activities as well as in other interactions, or in relevant simulations.
- > Asking questions and initiating short discussions to test understanding and to verify other evidence.
- > Looking at records and reports.
- > Formative and summative assessment of unit standards.

Assessment of competence for this qualification is based on experience acquired by the learner in the workplace, within the particular context. The assessment process should cover the explicit

tasks required for the qualification as well as the learner's understanding of the relevant concepts and principles. The assessment process should also establish how the learning process has advanced the Critical Cross-Field Outcomes.

The learner may choose in which language he/she 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 presented if pertinent to any of the Exit Level Outcomes.

Assessors should also evaluate evidence that the learner is able to perform consistently over a period of time.

INTERNATIONAL COMPARABILITY

Internationally, the tyre industry is characterised by large multinational companies which extend their influence throughout the world. The quality and scope of training is thus determined by international standards for safety and quality in addition to specific product or process issues and localised statutory requirements.

Specialisation Area A: Tyre Retreading (Hot or Precure):

Research was carried out to identify the scope, methods and trends in training for tyre retreading in countries which have a retreading industry, such as Australia, Europe, the United Kingdom, India, Canada, the United States of America, South America and Africa. Nearly all of this training is either in-house or in the form of short courses offered by industry associations and product or material suppliers, with only a few countries, such as the Australia and the United Kingdom, offering national qualifications.

Australia:

Australia has been selected for detailed comparison because it has a national qualification which covers tyre retreading, and conditions in the industry are similar to those in South Africa.

The 'Certificate II in Rubber' (PMB20201), is part of a series of qualifications for Plastics, Rubber and Cable making. It is generic in nature and flexible in order to meet the needs of a range of sectors within the rubber industry. This is achieved through a design based on units of competency which are clustered into competency groupings' covering three areas:

- > Core: Competencies that are essential to working in any type of industry (compulsory).
- > Production: Competencies that relate specifically to the equipment and processes of the particular industry.
- > Support: Competencies that have a broader application, such as those relating to interpersonal relationships or the environment.

This allows a selection to be made for the particular industry sector, ie tyre retreading, while allowing flexibility for enterprises and individuals to select combinations relevant to their training needs. Learning may comprise a wide range of learning methods and programmes, provided that an integration of theoretical learning, practical application and workplace experience is achieved. Assessment is workplace based and includes the use of portfolios of evidence.

A typical selection of units of competency for an individual who operates machines and performs related duties for retreading tyres would be as follows:

Core Units:

- > Shift materials safely by hand.
- > Follow OH&S policies and procedures.
- > Apply quality processes.
- > Apply work procedures and practices.
- > Complete workplace documents.

Production Units:

- > Inspect tyres for retreading.
- > Prepare tyre casings for retreading.
- > Lay on retreads.
- > Operate retread curing equipment.
- > Undertake basic maintenance.
- > Use materials and process knowledge to complete work operations.

Support Units:

- > Work with others in a team.
- > Collect waste for recycling or safe disposal.

The 'Employability Skills' defined for the 'Certificate 11' provide insight into the level of skills, knowledge and generic abilities required for this qualification. Some examples are as follows:

- > Teamwork: Work as part of a team; identify own role and responsibility within a team.
- > Problem solving: Recognise known faults that occur during the operation; identify and take action on causes of routine faults; identify non-routine process and quality problems and take appropriate action; respond to routine problems.
- > Initiative and enterprise: Determine problems needing action; report problems outside area of responsibility.
- > Planning and organising: Achieve production targets; recognise hazards and follow appropriate hazard control methods.
- > Self-management: Identify work requirements; operate within appropriate time constraints and work standards; select and use appropriate equipment, materials, processes and procedures; identify task outcomes and work role.
- > Technology: Carry out pre-operational checks on equipment; monitor equipment operation; use appropriate instruments, power tools and electrical systems; monitor and adjust machine functions.

United States of America:

Training practices and standards for training in the USA were examined because it has a well-established retreading industry and a strong international presence in retreading technology and training through the relationships that exist between American companies and their subsidiaries worldwide, including South Africa.

In the USA, training for tyre retreading is provided through companies and associations. For example, the 'Tire Industry Association' and the 'Rubber Manufacturers' Association' supply a variety of reference and learning materials for in-company use. These associations also certificate learning achieved for regulatory purposes. Training of new entrants is typically company-based and in-house, with individuals learning on-the-job under the guidance of experienced practitioners and with the support of learning resources and materials supplied by the parent company or industry association. Short courses for on-going professional development of industry members are also available.

Conclusion:

The South African qualification is very similar in content and scope to the retreading aspect of the Australian 'Certificate 11 in Rubber'. Both qualifications require an integration of theoretical learning and workplace experience, and they share a common approach to assessment. The Australian version does not specify fundamental learning of the type that the South African qualification does. The content and level of the associated 'Employability Skills' shows a close correspondence with the Critical Cross-Field Outcomes embedded in the South African qualification.

South African company-based training is similar in nature, content and scope to that provided in the United States of America.

Specialisation Area B: Tyre and Tube Repair and Fitting:

Research was carried out to identify the scope, methods and trends in training for the tyre and tube repair and fitting industry. Most of this training is in-house, company- or franchise-based, or in the form of short courses offered by industry associations and product or equipment suppliers. A few countries, such as the United Kingdom, New Zealand and Australia, offer national qualifications.

Australia:

Australia has been selected for detailed comparison because it has national qualifications for tyre and tube repair and fitting, and because road and industry conditions are similar to those in South Africa.

The Certificate II in Automotive: Mechanical: Tyre Fitting & Repair forms part of a series of qualifications for the automotive industry. It is generic in nature and flexible in order to meet the needs of the various contexts within the tyre industry, which range from light passenger tyres to heavy commercial vehicle and off-the-road (OTR) machine/equipment tyres. This is achieved through a design based on units of competency which are clustered into 'competency groupings' covering three areas:

- > Common Core: competencies that are essential to working in any type of industry (compulsory).
- > Compulsory Stream: competencies that relate specifically to the equipment and processes of the particular industry.
- > Elective: competencies that have a broader or supporting application.

This allows a selection to be made for the particular industry context, with sufficient flexibility to select combinations relevant to individual or enterprise training needs. Learning may comprise a variety of learning methods and programmes, provided that an integration of theoretical learning, practical application and workplace experience is achieved. The learning programme will typically extend over a period of 12 months. Assessment is workplace based and includes the use of portfolios of evidence.

A selection of units of competency for repairing and fitting tubes and tyres would typically be as follows:

Compulsory Common Core:

- > Follow workplace occupational health and safety procedures.
- > Use and maintain workplace tools and equipment.
- > Contribute to workplace communication.
- > Establish relations with customers.

Compulsory Stream:

- > Balance tyres/wheels.
- > Remove, fit and adjust wheel(s).
- > Select tyres and rims for specific applications.
- > Remove, repair and fit tyres and tubes.
- > Inspect vehicle systems/components and determine preferred repair action.

Electives (3 to be selected from the following typical list):

- > Carry out stock control procedures.
- > Receive and store stock.
- > Apply legal requirements relating to product sales.
- > Dispose of waste and maintain a tidy work area.
- > Identify, clarify and resolve problems.
- > Work with colleagues and customers.
- > Maintain industrial machinery in a soil free condition.
- > Repair rims.

This selection would be relevant for the heavy (AUR21499) or light (AUR21599) tyre contexts. There is also scope to meet the training requirements of the industrial, agricultural and off-the-road (OTR) tyre contexts.

United Kingdom:

Training practices and standards in the United Kingdom were examined because the technology and training standards of British tyre companies have considerable influence internationally, including in South Africa.

The National Vocational Qualifications in Vehicle Fitting Operations (Levels 1, 2 and 3) which cover tyre and tube repair and fitting and which provide evidence of competence in the workplace are available. Learning is provided through traineeships or apprenticeships. These typically consist of a few weeks' induction period followed by one to two years' on-the-job training, together with a theoretical component at a company or college training centre. Training combines theoretical, practical and workplace learning. Assessment is workplace-based. In some cases tyre and tube repair and fitting is combined in a single qualification with other competencies such as exhaust or windscreen fitting, or battery servicing and fitting. Even though national qualifications are available, in practice much of the training for the tyre and tube repair and servicing field is company-based, particularly in more specialised contexts such as that of off-the-road (OTR) tyres.

Conclusion:

The South African qualification is very similar in content and scope to the Australian Certificate II in Automotive: Mechanical: Tyre Fitting & Repair, with the difference that the South African qualification accommodates the various tyre contexts in one qualification. Both qualifications require an integration of theoretical learning and workplace experience, and they share a common approach to assessment. The Australian qualifications do not specify fundamental learning of the type that the South African qualification does. The scope and level of the 'underpinning skills' listed in the associated units of competency show a close correspondence with the Critical Cross-Field Outcomes embedded in the South African qualification.

The South African qualification corresponds in level and approach with national qualifications in the United Kingdom in the field of tyre and tube fitting and repair. In both cases, training combines theoretical, practical and workplace learning and assessment is workplace-based. However, the scope of the NVQ qualifications tends to be broader, with a greater emphasis on the client interface.

South African company-based training corresponds closely in nature, content and scope to that provided by companies in the United Kingdom.

South Africa's expertise in tyre retreading and repair is recognised internationally, with South Africa being viewed as the market leader in some areas of technology. The quality of South African training is similarly well-regarded. This expertise, both in technology and in training, is now being reflected in this qualification.

ARTICULATION OPTIONS

This qualification has been designed and structured so that qualifying learners can move from one context within the tyre retreading or servicing fields to another. They would have to acquire the specific knowledge related to the new context and adjust their skills and values accordingly.

Employers or institutions would have 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.

For Learners who complete this qualification in terms of Specialisation Area A: Tyre Retreading, Horizontal Articulation would be possible with the following qualifications:

- > ID 23257: National Certificate: Industrial Rubber Manufacturing, NQF Level 2.
- > ID 48800: National Certificate: Quality Checking and Finishing of Manufactured Tyres, NQF Level 2.
- > ID 48793: National Certificate: Tyre and Tyre Component Manufacturing, NQF Level 2.

For Learners who complete this qualification in terms of Specialisation Area B: Tyre and Tube Repair and Fitting, Horizontal Articulation would be possible with the following qualification:

- > ID 49689: National Certificate: Automotive Repair and Maintenance, NQF Level 2.

In the non-technical area, Horizontal Articulation would be possible with the following qualifications:

- > ID 49280: National Certificate: Wholesale and Retail Distribution, NQF Level 2.
- > ID 48764: National Certificate: Wholesale and Retail Sales Practice, NQF Level 2.

For Learners who achieve this qualification in terms of Specialisation Area A: Tyre Retreading, Vertical Articulation would be possible with the following qualifications, provided that the Learner first obtained relevant experience and/or learning at NQF Level 2:

- > ID 23258: National Certificate: Industrial Rubber Manufacturing, NQF Level 3.
- > ID 48794: National Certificate: Quality Checking of Tyres and Tyre Components, NQF Level 3.
- > ID 48795: National Certificate: Tyre Assembly, NQF Level 3.
- > ID 48798: National Certificate: Tyre and Tyre Component Manufacturing, NQF Level 3.

In the non-technical area, Vertical Articulation would be possible with the:

- > ID 23654: National Certificate: Management, NQF Level 3.

MODERATION OPTIONS

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

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

> Assessment and moderation of assessment will be overseen by the relevant ETQA, or by an ETQA with an appropriate MOU with the ETQA, according to the ETQA's policies and guidelines for assessment and moderation.

> Moderation must include both internal and external moderation of assessments at exit points of the qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described in individual unit standards as well as in the integrated competence described in the qualification.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

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

1. An appropriate qualification with a minimum of 2 years' practical, relevant occupational experience in the fields of tyre retreading or servicing. The subject matter expertise of the assessor can also be established by recognition of prior learning.
2. To be active in the industry and be familiar with the particular aspect of tyre retreading/servicing and technology in which the learner has contextualised his/her skills and knowledge.
3. To be declared competent in all the outcomes of the National Assessor Unit Standards as stipulated by South African Qualifications Authority.

NOTES

Off-the-road (OTR) machines and equipment include but are not limited to military applications, cranes, earthmoving equipment and mining equipment.

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	119463	Access and use information from texts	Level 2	5
Fundamental	9009	Apply basic knowledge of statistics and probability to influence the use of data and procedures in order to investigate life related problems	Level 2	3
Fundamental	12461	Communicate at work	Level 2	5
Fundamental	7480	Demonstrate understanding of rational and irrational numbers and number systems	Level 2	3
Fundamental	9008	Identify, describe, compare, classify, explore shape and motion in 2-and 3-dimensional shapes in different contexts	Level 2	3
Fundamental	119454	Maintain and adapt oral/signed communication	Level 2	5
Fundamental	7469	Use mathematics to investigate and monitor the financial aspects of personal and community life	Level 2	2
Fundamental	9007	Work with a range of patterns and functions and solve problems	Level 2	5
Fundamental	119456	Write/present for a defined context	Level 2	5
Core	252259	Plan, organise and manage own activities in the organisation	Level 1	2
Core	13222	Deal with safety, health and environmental emergencies in the workplace	Level 2	4
Core	12465	Develop a learning plan and a portfolio for assessment	Level 2	6
Core	12466	Explain the individual's role within business	Level 2	4
Core	13220	Keep the work area safe and productive	Level 2	8
Core	13258	Participate in work group activities	Level 2	4
Core	12463	Understand and deal with HIV/AIDS	Level 2	3
Core	9879	Use and care for tools and equipment	Level 2	10
Elective	13202	Apply study and learning techniques	Level 2	3
Elective	256177	Apply tread rubber to casings	Level 2	8

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	9874	Direct, receive and communicate with customers on the forecourt	Level 2	4
Elective	120313	Investigate work opportunities in order to make a personal employment or work decision	Level 2	2
Elective	9268	Manage basic personal finance	Level 2	6
Elective	117898	Move, pack and maintain stock in a distribution centre/warehouse	Level 2	12
Elective	114902	Operate a computer in a Wholesale/Retail outlet	Level 2	6
Elective	242981	Operate defined purpose lift trucks	Level 2	4
Elective	242976	Operate overhead/gantry cranes	Level 2	5
Elective	256178	Perform activities to cure retreaded and repaired tyres	Level 2	6
Elective	12484	Perform basic fire fighting	Level 2	4
Elective	12483	Perform basic first aid	Level 2	4
Elective	256175	Prepare casings for retreading	Level 2	16
Elective	256176	Remove and replace off-the-road (OTR) wheels and tyres	Level 2	8
Elective	9867	Remove and replace wheels and tyres, and balance wheels	Level 2	2
Elective	12213	Select and use automobile lifting equipment	Level 2	3
Elective	12481	Sling loads	Level 2	4
Elective	15100	Check and adjust steering geometry	Level 3	4
Elective	9868	Demonstrate knowledge of, and rectify faults in motor vehicle tyres and wheels	Level 3	7
Elective	256174	Operate equipment for repairing and retreading off-the-road (OTR) tyres	Level 3	4
Elective	242978	Operate truck-mounted cranes	Level 3	8
Elective	9865	Remove and replace wheels and tyres from industrial machines and equipment	Level 3	10
Elective	9864	Repair and replace light and heavy commercial vehicle tyres	Level 3	17
Elective	256179	Repair off-the-road (OTR) tyres	Level 3	8
Elective	9869	Repair punctures and fit tyres to wheels	Level 3	9

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION

None



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Operate equipment for repairing and retreading off-the-road (OTR) tyres**

SAQA US ID	UNIT STANDARD TITLE		
256174	Operate equipment for repairing and retreading off-the-road (OTR) tyres		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	4

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

SPECIFIC OUTCOME 1

Determine equipment parameters and set up the equipment.

SPECIFIC OUTCOME 2

Operate buffing machines, repair systems, tread winding and curing equipment.

SPECIFIC OUTCOME 3

Monitor equipment operations and adjust equipment settings.

SPECIFIC OUTCOME 4

Finalise the process and check the product.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

ID	QUALIFICATION TITLE	LEVEL
Elective 61809	National Certificate: Tyre Repair and Maintenance	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Prepare casings for retreading***

SAQA US ID	UNIT STANDARD TITLE		
256175	Prepare casings for retreading		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	16

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

SPECIFIC OUTCOME 1

Prepare workstation for work activity and check condition of materials, tools and equipment.

SPECIFIC OUTCOME 2

Carry out initial inspection of tyre and identify and mark damage, wear and faults.

SPECIFIC OUTCOME 3

Use buffing machine to remove oxidised rubber.

SPECIFIC OUTCOME 4

Identify and prepare imperfections and damaged areas for repair.

SPECIFIC OUTCOME 5

Identify repair requirements and perform repairs.

SPECIFIC OUTCOME 6

Apply cement to buffed and cleaned surfaces.

SPECIFIC OUTCOME 7

Apply quality checks on completed uncured casing and complete work operations.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	61809	National Certificate: Tyre Repair and Maintenance	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Remove and replace off-the-road (OTR) wheels and tyres***

SAQA US ID	UNIT STANDARD TITLE		
256176	Remove and replace off-the-road (OTR) wheels and tyres		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	8

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

SPECIFIC OUTCOME 1

Remove wheel from OTR machine/equipment.

SPECIFIC OUTCOME 2

Remove OTR tyre from wheel.

SPECIFIC OUTCOME 3

Refit OTR tyre to wheel.

SPECIFIC OUTCOME 4

Refit wheel to OTR machine/equipment.

SPECIFIC OUTCOME 5

Complete the work process and inspect refitted wheel.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	61809	National Certificate: Tyre Repair and Maintenance	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Apply tread rubber to casings***

SAQA US ID	UNIT STANDARD TITLE		
256177	Apply tread rubber to casings		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	8

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

SPECIFIC OUTCOME 1

Prepare workstation for work activity and check casing condition.

SPECIFIC OUTCOME 2

Prepare tread rubber.

SPECIFIC OUTCOME 3

Apply tread rubber to prepared casing.

SPECIFIC OUTCOME 4

Complete work operations.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	61809	National Certificate: Tyre Repair and Maintenance	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Perform activities to cure retreaded and repaired tyres***

SAQA US ID	UNIT STANDARD TITLE		
256178	Perform activities to cure retreaded and repaired tyres		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	6

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

SPECIFIC OUTCOME 1

Prepare for work activity and check processed casing.

SPECIFIC OUTCOME 2

Prepare equipment and tyre for curing process.

SPECIFIC OUTCOME 3

Load prepared tyre and initiate the curing process.

SPECIFIC OUTCOME 4

Complete curing process and unload tyre.

SPECIFIC OUTCOME 5

Perform final inspection and trimming of tyre and complete the work process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	61809	National Certificate: Tyre Repair and Maintenance	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Repair off-the-road (OTR) tyres**

SAQA US ID	UNIT STANDARD TITLE		
256179	Repair off-the-road (OTR) tyres		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	8

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

SPECIFIC OUTCOME 1

Inspect tyre and indicate internal and external injuries.

SPECIFIC OUTCOME 2

Determine repair requirements and select repair material.

SPECIFIC OUTCOME 3

Carry out repair.

SPECIFIC OUTCOME 4

Complete the work process.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	61809	National Certificate: Tyre Repair and Maintenance	Level 2