

No. 1246

28 December 2007

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

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

Plastics Manufacturing

registered by 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 1 February 2008**. All correspondence should be marked **Standards Setting – Plastics Manufacturing** and addressed to

The Director: Standards Setting and Development
SAQA

Attention: Mr. D. Mphuthing

Postnet Suite 248

Private Bag X06

Waterkloof

0145

or faxed to 012 – 431-5144

e-mail: dmphuthing@saqa.org.za

DR. S. BHIKHA

DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:**National Certificate: Inspection and Assessment (Non-Metallics)**

SAQA QUAL ID		QUALIFICATION TITLE	
60070		National Certificate: Inspection and Assessment (Non-Metallics)	
ORIGINATOR		PROVIDER	
SGB Plastics Manufacturing			
QUALIFICATION TYPE	FIELD	SUBFIELD	
National Certificate	6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	138	Level 5	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 is the second in a series of qualifications which recognise learning in respect of skills and knowledge needed to carry out inspection and assessment of thermoplastic and polymer composite (non-metallic) components and installations.

People who have achieved this qualification are able to monitor the quality of manufacturing processes and the manufactured components and installations; perform statutory and routine maintenance inspections of installed pressure and vacuum vessels, tanks, containers, piping and equipment; and propose solutions to quality problems.

This qualification represents the skills, knowledge and understanding required by competent practitioners to:

- Use inspection techniques to monitor non-metallic pressurised components, installations, equipment and systems during manufacturing, installation and testing, and while in service.
- Conduct third-party inspections, interpret results and write inspection reports.
- Gather, summarise and analyse information from a range of sources in order to identify problems and determine trends.
- Compile quality plans and produce documentation for a variety of purposes.

The achievement of this qualification would be an indicator that a candidate has the requisite knowledge and skills in order to engage in inspection and assessment activities. The practitioner at this level would typically carry out third party inspections. The third party inspector gives written assurance that the manufactured item or installation conforms to the relevant specification. This may also involve determining which the relevant standard or code is.

The requirements for licensing of such a third party inspector, eg a number of inspections conducted under the supervision of a qualified inspector, would continue to be the responsibility of the bodies accredited for this purpose.

This series of qualifications builds the required manufacturing, inspection and assessment skills and knowledge in a systematic way. The three qualifications in the series correspond broadly to the different grades of inspectors, ie in-house inspector, competent person and inspector of pressure vessels. But they also go beyond the licensing requirements and develop the competence for a broader quality assurance function.

This and the related qualifications will act as a framework for providers, assessors and learners to plan, implement and measure the outcomes of suitable learning programmes, or the recognition of prior learning. These qualifications can also be used by the relevant accreditation authority to licence and register inspectors.

This qualification will also assist manufacturers, end-users and inspection authorities to inspect manufacturing processes and installations and to assess these against quality standards, especially where there is a need for an independent person to perform these activities. This qualification will also provide status for people involved in this function and will build a greater awareness of the need for quality assurance amongst manufacturing staff, customers and end-users.

This qualification is a qualification in its own right but it is also designed so that the credits and the exit level outcomes form a part of the National Diploma in Inspection and Assessment (Non-Metallics) NQF Level 5.

Rationale:

This qualification has been developed to address the lack of qualifications for the inspection and assessment of non-metallics. Non-metallics are relatively new polymeric materials. They are being increasingly used in the manufacture of installations, plant and equipment, including systems under pressure. These materials include thermoplastics, thermosets (including polymer composites) and elastomers which are used in a range of applications, in particular for their resistance to corrosion and a variety of chemicals. Applications include plant, equipment, vessels, piping, valves, linings, coatings, insulations and attachments. Complex installations are manufactured and assembled from a variety of components.

Since these applications are generally safety critical in nature, quality assurance is required in the whole life cycle of the manufactured items, from their design to their disposal. Such quality assurance processes require qualified people to perform the inspections and assessments.

While the activity of inspection and assessment is an important component of quality assurance in the manufacturing field generally, it is particularly important for the manufacture of installations and especially systems under pressure. Inspection and assessment is required during the design, manufacture, testing, installation and service life of the manufactured items.

The lack of suitably qualified people has resulted in numerous problems in the field, ranging from poor design to inadequate maintenance. Of particular concern is the fact that, because of the shortage of specialised inspectors for non-metallics, inspectors qualified in other materials or other industries are making judgements about materials of which they have little knowledge. As a result, non-metallic materials and the non-metallic manufacturing industry have suffered a loss of credibility.

This qualification, which is part of a series, is therefore designed to provide recognition for the skills, knowledge and values required for this important function of performing inspections and assessment in order to assure the quality of items manufactured from non-metallic materials.

At the time of development of this qualification there were no qualifications registered on the National Qualifications Framework for inspection and assessment activities. Since inspection and assessment are fairly generic activities found in a variety of industries, this qualification has

been designed in such a way that it can also act as the basis for the development of qualifications for inspection and assessment in other contexts.

The qualification is also designed to align with:

- Draft Pressure Equipment Regulations, 2004, Government Gazette No 26794 on 17 September 2004.
- Draft South African National Standard SANS 00347: Categorization and conformity assessment criteria for all pressure equipment.
- Draft South African National Standard 519: Management and implementation requirements for projects that use non-metallic materials in dangerous or pressurized applications.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

It is assumed that learners are already competent in Communication and Mathematical Literacy at NQF Level 4.

The design of this qualification, the credits allocated to this qualification and the related unit standards are based on the assumption that the learner is formally qualified in the inspection and assessment of non-metallics at NQF Level 4 or is formally qualified at NQF Level 4 in thermoplastic fabrication or polymer composite fabrication, or has extensive experience in these fields. This means that it is assumed that the learner will already have had extensive experience in, and be able to:

- Read and interpret drawings, understand manufacturing instructions and plan inspection processes.
- Implement inspection processes, evaluate manufactured components and determine compliance with specifications.
- Maintain the required documentation, compile quality assurance reports and report findings related to the quality assurance of non-metallic manufacturing processes.
- Interact, liaise and communicate with manufacturing personnel, members of supervisory and management levels, and end-users.

If a learner does not have such experience or formal qualifications, the learning time will be increased to enable the learner to acquire the necessary knowledge and skills related to a manufacturing process, quality issues related to the manufacturing process, business processes, work organisation and knowledge and skills associated with working in such an environment as specified in the Further Education and Training Certificate: Inspection and Assessment (Non-Metallics), the Further Education and Training Certificate: Thermoplastic Fabrication or the Further Education and Training Certificate: Polymer Composites Fabrication.

Recognition of Prior Learning:

This qualification may be obtained through the 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. While this is primarily a work-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. While a component of the learning can be obtained through courses, the largest amount of learning in this qualification is based on real-life, real-time work experience, specialising in a particular manufacturing process and range of products

in the non-metallic field. A workplace is, therefore a prerequisite to obtaining the relevant work experience and evidence required for the Exit Level Outcomes.

QUALIFICATION RULES

- All the Fundamental Unit Standards (62 Credits) are compulsory.
- All the Core Unit Standards (60 Credits) are compulsory.
- A minimum of 16 Credits is to be chosen from the Elective category. Where drawing skills are required by the context, the unit standard 'Develop and produce computer aided drawings' (ID 14473) should be included in the selection of Elective Unit Standards.
- A minimum of 138 Credits is required to obtain the qualification.

EXIT LEVEL OUTCOMES

1. Use inspection techniques to monitor non-metallic pressurised components, installations, equipment and systems during manufacturing, installation and testing, and while in service.
2. Conduct third-party inspections, interpret results and write inspection reports.
3. Gather, summarise and analyse information from a range of sources in order to identify problems and determine trends.
4. Compile quality plans and produce documentation for a variety of purposes.

Critical Cross-field Outcomes:

These are embedded in the unit standards which make up this qualification and are thus also reflected in the Exit Level Outcomes and Associated Assessment Criteria for this qualification.

The Critical Cross-Field Outcomes are supported by the Exit Level Outcomes as follows:

1. Identifying and solving problems in which responses display that responsible decisions using critical thinking have been made (ELO's 1, 2, 3, 4).
2. Working effectively with others as a member of a team, group, organization and community (ELO's 1, 2, 3, 4).
3. Organising and managing oneself and one's activities responsibly and effectively (ELO's 1, 2, 3, 4).
4. Collecting, analyzing, organizing and critically evaluating information (ELO's 1, 2, 3, 4).
5. Communicating effectively using visual, mathematical and/or language skills (ELO's 1, 2, 3, 4).
6. Using science and technology effectively and critically, showing responsibility toward the environment and health of others (ELO's 1, 2, 3, 4).
7. Demonstrating an understanding of the world as a set of related systems by recognizing that problem contexts do not exist in isolation (ELO's 1, 2, 3, 4).

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

1. Production is certified in accordance with mandatory and statutory provisions and regulations.
 2. Consistency of the quality system is reviewed and evaluated.
 3. Discussion and response to questioning demonstrates understanding of the quality assurance system, the mandatory and legal requirements and the role and nature of the assessment process.
- Range: Understanding is appropriate to the level of the qualification.

Associated Assessment Criteria for Exit Level Outcome 2:

1. State of inspected installation either correlates with specifications, or non-conformances are identified.
 2. Ability to justify conformance or non-conformance is demonstrated.
 3. Specification guidelines are followed.
 4. Discussion and response to questioning demonstrates understanding of the importance of decisions taken, the responsibility of the inspector and the consequences of the decisions.
- Range: Understanding is appropriate to the level of the qualification.

Associated Assessment Criteria for Exit Level Outcome 3:

1. Information is gathered from a range of sources and accurately summarised.
2. Data gathered through diagnostic procedures is examined systematically and analysis is repeated until the problem is solved.
3. Opportunities for improvement are identified and presented to responsible parties.
4. Discussion and response to questioning demonstrates understanding of the principles of quality assurance, specifically conformance to specification and continuous improvement.

Associated Assessment Criteria for Exit Level Outcome 4:

1. The quality plans lead to conformance with specification throughout the manufacturing process.
2. Records are available for scrutiny and future reference.
3. Successful implementation of a series of interventions which ensure the progressive conformance to specification is demonstrated.

Integrated Assessment:

The integrated assessment must be based on a summative assessment guide. The guide must spell out 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 and 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 assessment.

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.

The assessment process should cover the explicit tasks required for the qualification as well as the understanding of the concepts and principles that underpin the activities. The assessment process should also establish how the learning process has advanced the Critical Cross-field Outcomes.

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

INTERNATIONAL COMPARABILITY

The competence profile, for which this series of qualifications is designed, is aligned with local and international pressure equipment directives and regulations. The United States has a very mature inspection and assessment system and provides information for making the comparison. In addition an international organisation (the World Health Organisation) has also been chosen to provide additional information based on the fact that such competence profiles transcend national boundaries. In the absence of information for relatively new materials such as fabricated polymers and polymer composites, the following provide guidance and a basis for comparison:

- Inspection and assessment qualifications are closely related to quality assurance qualifications and share many elements with them.
- Inspection and assessment qualifications for traditional materials such as steel or for other industries such as the manufacture of pharmaceuticals contain many similar elements.

In the absence of information for relatively new materials such as fabricated polymers and polymer composites the following provide guidance and a basis for comparison:

- Inspection and assessment qualifications are closely related to quality assurance qualifications and share many elements with them.
- Inspection and assessment qualifications for traditional materials such as steel or for other industries such as the manufacture of pharmaceuticals contain many similar elements.

In general these qualifications (ie 1 and 2, above) are not well-specified to enable comparisons of qualifications developed to meet SAQA requirements. They do, however, in general conform to the pattern described for the Certified Quality Technician (CQT) Program of the American Society for Quality. The applied competence is described as:

- First, a candidate must have at least 4 years of on-the-job experience in one or more "body of knowledge" areas that make up the primary work of the quality technician. These areas include quality control concepts, techniques, and applications; fundamentals of practical statistical methods; and applications of sampling principles. If a candidate has completed a degree program from a university, college, or technical school with accreditation accepted by ASQ, part of the 4 year experience requirement will be waived as follows: 3 years for a bachelor's, master's or doctorate degree in any field; 2 years for an associate degree; and 1 year for completing a "quality technology program" in a community college or technical school. In addition, a candidate previously certified under most of the other ASQ programs may use the same experience time to qualify for the CQT certification.

- Second, a candidate must demonstrate to ASQ "proof of professionalism". This may be done in one of three ways:

- Membership in ASQ or one of its foreign affiliates, or another society that belongs to the American Association of Engineering Societies or Accreditation Board for Engineering and Technology.
- Registration as a professional engineer; or) obtaining the signatures of two persons -- either ASQ, foreign affiliate, other recognized professional society members -- verifying that the candidate is "a qualified practitioner of the quality sciences".

- Third, a candidate must pass the CQT certification examination that measures comprehension of quality control concepts, principles, and practices. This quality control body of knowledge is constantly evolving as a result of new technologies, policies, and the changing dynamics of manufacturing and service industries.

This submission deals with the first and third criteria discussed above. The inspection authority would take these into account when deciding on the second criterion.

This extract demonstrates, too, that this is a qualification for occupational competence. While courses play a role in the awarding of such a qualification, experience in a field or sub-field is an essential ingredient of the overall applied competence. A written examination is not enough on its own to prove competence.

As this extract demonstrates, there is little evidence of progression or career pathing for inspection and assessment practitioners. A career path can be constructed using the different levels of inspection described by the World Health Organisation for inspection of pharmaceutical manufacturers:

Level Descriptors:

The Boiler and Pressure Vessel Inspector job family has three levels of work which are distinguished by the complexity of job assignments, the extent of responsibility assigned and the level of expertise required for completion of assigned tasks.

Level I; Code: J16A; Salary Band: I.

This is the basic level where employees perform inspection and compliance duties with close supervision and receive specialized training on boilers, pressure vessels, steam lines, weld procedures and applicable rules, methods and techniques. Performs inspection and compliance duties with close supervision.

Knowledge, Skills and Abilities required at this level are knowledge of pressure retaining items such as boilers, pressure vessels and steam lines, of basic mechanical apparatus/equipment theory and operation, of inspection and investigative methods and procedures, of report writing, and of the application of safety concepts, rules and codes. Ability to conduct inspections and investigations; to write reports; to apply safety codes and standards; to establish and maintain effective working relationships with others; and to communicate effectively, both orally and in writing. Ability to learn complex mathematical formula. Ability to work in close, confined spaces and to work in high places.

Education And Experience requirements at this level consist of sixty semester hours of college, including twelve hours of mathematics or physical science and one year of experience in the construction, operation or inspection of boilers or pressure vessels, or production experience in the oil and gas industry or physical plant operation; or an equivalent combination of education and experience, substituting one year of experience in the construction, operation or inspection of pressure retaining items such as boilers, air tanks or pressure vessels for the sixty semester hours of college.

Level II; Code: J16B; Salary Band: J.

This is the career level where tasks are performed independently and incumbents are given some latitude technically with freedom to develop their own work sequence under established guidelines and policies. Incumbents also inspect and review quality control and safe operation standards evaluation and assessment, and evaluate the engineering and design capabilities as well as the configuration of the environment in which installation and operation occurs, using a variety of applicable standards and calculations.

Knowledge, Skills and Abilities required at this level include those identified in Level I, plus knowledge of quality control methods and procedures; and of mechanical engineering and scientific formula and their specific application to a variety of sophisticated devices and complex installations. Ability is required to provide consultation and advice; and to discern appropriate formulas and codes for complex applications.

Education and Experience requirements at this level consist of those included in Level I and possession of a valid Commission issued by the National Board of Boiler and Pressure Vessel Inspectors. (No substitution will be allowed for the valid Commission).

Level III; Code: J16C; Salary Band: L.

This is the leadership level of the job family where employees are assigned responsibility for planning, directing and supervising the work activities of inspectors who are conducting boiler and pressure vessel inspections and investigations. Positions are assigned responsibility for the supervision of Boiler and Pressure Vessel Inspectors, including reviewing and assigning work, providing training and evaluating performance. Some positions may provide direct supervision which includes responsibilities for employee development, approving leave and initiating disciplinary actions, as well as performing related administrative functions.

Knowledge, Skills and Abilities required at this level include those identified in Level II plus knowledge of supervisory principles and practices. Ability is required to direct the work of others and to conduct multiple projects simultaneously.

Education and Experience requirements at this level consist of those identified in Level II plus four years of experience in the inspection of boilers and pressure vessels to also include in-service inspections, accident and incident investigations and review of repair and alteration plans and computations, substituting the successful completion of the "B" endorsement examination, offered by the National Board of Boiler and Pressure Vessel Inspectors, for twelve months of the required experience.

The following table illustrates how the levels described above compare with our South African NQF Levels:

Level of Inspector; NQF Level:

- Self-inspection or internal audit of a factory or a part of it carried out by personnel of the company; NQF Level 4.
- Inspection by an independent person or group of persons as a review of the quality system of a company in compliance with the standards issued by the International Organization for Standardization (ISO 9000-9004 (4)) or the British Standards Institution (BS 5750 (5)) or with other equivalent national standards; NQF Level 5 - Certificate.
- Audit of a manufacturer or supplier by authorized agents of the customer; NQF Level 5 - Diploma.

Courses for the inspection component range, for example, from:

- Two weeks full time covering the following:
 - Basic aspects of inspection, Inspector's responsibilities, duties, attributes and the understanding of legislation, Boilers and Pressure equipment, Safety during Inspection, Methods of inspection, pressure equipment Inspection, Assessment of pressure equipment integrity, Materials, Manufacture, Common modes and causes of deterioration and failure, Repairs, alterations (modification), replacement and rerating, Documentation, Inspection and repair of specific pressure equipment (to AS/NZS3788).

To:

- 4 semesters for a diploma or 8 semesters for a Bachelor of Science degree which cover all aspects of design, manufacturing and quality as a basis for career in inspection and assessment and result in the following outcomes:

- Develop students' intellectual, scientific, technical, practical, communication, interpersonal and social skills, in an integrated fashion, in preparation for practice at the entry-level position in the major areas representing practice in the mechanical engineering technology field:
- Mechanical Design; where knowledge and skill are required to conceive requirements, provide analysis, integrated design solutions, testing and verification of concept, and the ability to present the design using acceptable methods.
- Manufacturing; where knowledge and skill are required to develop manufacturing plans, design integrated production systems with quality, cost and safety requirements, and considering operation in national and global environments.
- Applied Thermal Science; where knowledge and skill are required to analyze, design, test and correct fluid and thermal systems involved in various industrial conversion processes, and in comfort control.
- Plastics and Composites; where knowledge and skill are required to establish design requirements, provide manufacturing plans and systems for optimized performance.
- Communication Skills; requiring the use of various media to communicate concepts, technical assessments and design solutions to a variety of audience including those with limited engineering knowledge.
- Ethics, Interpersonal and Social Skills; expected for professional practice in an environment requiring team effort, where decisions and actions can effect citizens and communities.
- Instill in graduates the ability to further their knowledge through continuing and self directed studies.
- Maintain technological currency of the program and prepare graduates to practice in a technologically dynamic environment.
- Maintain interaction with the local and regional industrial and commercial community where the program graduates are expected to practice.

This latter qualification indicates some of the difficulties in designing a qualification for inspection and assessment. The inspection process is buried deep within the overall qualification which may have other purposes besides inspection. There are generally two routes to acquiring the competencies to perform inspection and assessment activities:

- Based on extensive experience in the manufacturing industry and quality assurance processes.
- Professional engineers and technicians who perform inspection and assessment as part of their professional function.

As a general rule, to gain experience and to qualify for registration, inspectors would have to perform inspections under the guidance of an experienced registered person at the same level or above. This is explained in relation to the pharmaceutical industry:

- Inspectors should have previous training and practical experience in the manufacture and/or quality control of pharmaceutical products. Graduate pharmacists, chemists, or scientists with an industrial background in pharmaceutical production would qualify for consideration.
- In-post training should include an element of apprenticeship gained by accompanying experienced inspectors on site visits as well as participation in courses and seminars on relevant subjects including modern pharmaceutical technology, microbiology, and the statistical aspects of quality control.

Embedded in the inspection and assessment competencies is the notion of maturity, as indicated by the American Society for Quality in relation to environmental analysts (who perform an inspection and assessment role in order to maintain safe and healthy working environments in factories, etc):

- In actuality, participants in Environmental Analyst Apprenticeship programs tend to be older individuals, reflecting the fact that employers and employees both tend to agree that experienced workers - those with at least several years of day-to-day, hands on pragmatic

knowledge of the hazards and problems of a particular manufacturing industry - often make the best environmental analysts.

As part of the development of these qualifications, the contents of two local courses were reviewed and incorporated into the qualifications. These courses, which are run at the Vaal University of Technology and the Durban Institute of Technology, have also been benchmarked against similar international courses.

Conclusion:

The comparison demonstrates that the competence profile of the South African qualification conforms to various similar inspection and assessment profiles internationally.

ARTICULATION OPTIONS

This qualification articulates vertically with the National Diploma in Plastics Technology NQF Level 6.

This qualification articulates horizontally with the National Diploma in Inspection and Assessment (Non-Metallics) ID 60072: NQF Level 5.

MODERATION OPTIONS

Moderators for the qualification should be registered as assessors with the relevant ETQA.

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

- Assessor credentials.
- The assessment instrument.
- The assessment process.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

The following criteria should be applied by the relevant ETQA:

- Appropriate qualification in the field of non-metallic fabrication with a minimum of 3 years' experience in an inspection and assessment (non-metallics) environment. The subject matter expertise of the assessor can be established by recognition of prior learning.
- Appropriate 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.
- Registration as an assessor with a relevant ETQA.
- Any other criteria required by a relevant ETQA.

NOTES

N/A

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	115792	Access, process, adapt and use data from a wide range of texts	Level 5	5
Fundamental	252026	Apply a systems approach to decision making	Level 5	6
Fundamental	115855	Create, maintain and update record keeping systems	Level 5	5
Fundamental	15219	Develop and implement a strategy and action plans for a team, department or division	Level 5	4

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	10147	Supervise a project team of a technical project to deliver project objectives	Level 5	14
Fundamental	12433	Use communication techniques effectively	Level 5	8
Fundamental	12432	Use mathematical and statistical techniques effectively	Level 5	20
Core	117701	Address safety, health and environmental requirements and hazards in a technical context	Level 5	8
Core	116783	Analyse trends and implement continuous improvements	Level 5	10
Core	253996	Audit quality documentation	Level 5	10
Core	252037	Build teams to achieve goals and objectives	Level 5	6
Core	253995	Conduct third party inspections of non-metallic installations	Level 5	12
Core	116778	Develop quality plans and ensure overall quality of products or services in a small business or business unit	Level 5	10
Core	15225	Identify and interpret related legislation and its impact on the team, department or division and ensure compliance	Level 5	4
Elective	113830	Conduct costing and budgeting	Level 4	9
Elective	14473	Develop and produce computer aided drawings	Level 4	4
Elective	15234	Apply efficient time management to the work of a department/division/section	Level 5	4
Elective	116790	Commission machines and equipment or pilot and test a new technical service	Level 5	10
Elective	15223	Implement training needs for teams and individuals to upgrade skills levels	Level 5	3
Elective	114879	Promote a productivity improvement strategy	Level 5	10

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION**None**



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Conduct third party inspections of non-metallic installations

SAQA US ID	UNIT STANDARD TITLE		
253995	Conduct third party inspections of non-metallic installations		
ORIGINATOR	PROVIDER		
SGB Plastics Manufacturing			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

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

SPECIFIC OUTCOME 1

Identify appropriate specifications and criteria.

SPECIFIC OUTCOME 2

Prepare third party inspection plans.

SPECIFIC OUTCOME 3

Liaise with relevant parties and prepare for the inspections.

SPECIFIC OUTCOME 4

Conduct third party inspections and identify any non-conformances.

SPECIFIC OUTCOME 5

Evaluate results, make findings and compile report on findings.

SPECIFIC OUTCOME 6

Present findings and outcomes of inspections.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	60070	National Certificate: Inspection and Assessment (Non-Metallics)	Level 5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Audit quality documentation**

SAQA US ID		UNIT STANDARD TITLE	
253996		Audit quality documentation	
ORIGINATOR		PROVIDER	
SGB Plastics Manufacturing			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	10

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

SPECIFIC OUTCOME 1

Understand applicable mandatory and legal requirements and verify that they have been met.

SPECIFIC OUTCOME 2

Examine quality documentation against requirements and determine level of conformance.

SPECIFIC OUTCOME 3

Examine inspection and testing processes and determine level of conformance.

SPECIFIC OUTCOME 4

Perform audits on aspects of the manufacturing process, compile audit reports and present recommendations.

SPECIFIC OUTCOME 5

Provide advice, guidance, mentoring and coaching as appropriate.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	60070	National Certificate: Inspection and Assessment (Non-Metallics)	Level 5