No. 787 **31 August 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

Chemical Industries

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.saqa.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 31 September 2007.*** All correspondence should be marked **Standards Setting – Chemical Industries** and addressed to

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SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:
National Certificate: Gas Installations

SAQA QUAL ID	*QUALIFICATION TITLE*		
59015	National Certificate: Gas Installations		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
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

PURPOSE OF THE QUALIFICATION
Purpose:

This qualification is used to recognise the competence of people to install gas equipment and perform maintenance of gas equipment in an existing or new domestic or commercial gas installation site under the supervision of a qualified gas installer.

Qualifying learners will:

- Demonstrate knowledge of gases, instruments and equipment.
- Apply safety, health, environmental, productivity and quality procedures to installations.
- Work according to drawings, specifications and building standards relating to installation of gas systems.
- Perform a range of gas installation and maintenance activities under supervision.

This competence provides the foundation needed to take responsibility for a significant operation in the gas installation industry. It also provides the basis upon which further related learning and career development can take place.

Social development and economic transformation are enhanced through efficient task performance, and career development and personal job satisfaction of installation personnel are facilitated through the learning process used to achieve the competency specified.

Rationale:

The National Certificate in Gas Installations NQF Level 2 is designed to contribute towards developing competence in the installation and maintenance of gas equipment.
National Certificate in Gas Installations NQF Level 2 is the second qualification in a series for learners who want to follow an independent career in gas installations and maintenance. The majority of learners for this qualification are likely to be learner-installers in small independent gas companies. Competent learners will progress to the National Certificate in Gas Installations NQF Level 3 and it is foreseen that the learners will eventually be able to independently run their own gas installation and maintenance operations.

This qualification will contribute to the full development of the learner within the gas installation industry by providing recognition, further mobility and transportability within the gas field. The skills, knowledge and understanding demonstrated within this qualification are essential for

social and economic transformation and contribute to the progression and economic growth within the gas installation and maintenance fraternity.

Through the employment of competent installation personnel, employers and, in turn, the field and sub-field, have confidence that this critical work in the industry is efficiently carried out.

RECOGNIZE PREVIOUS LEARNING?
Y

LEARNING ASSUMED IN PLACE
This qualification has been designed as the second in a series of three qualifications for gas installations and maintenance in an existing or new domestic or commercial gas installation site. Competence in the following is necessary:,

- GET Certificate: Chemical Operations or equivalent.

Embedded knowledge upon commencement of the qualification includes:

- Language and mathematical literacy at ABET Level 4/NQF Level 1.

Recognition of Prior Learning:

Recognition of prior learning must be carried out in accordance with the policy and rules specified and used by the ETQA responsible for evaluation of people seeking RPL for a part of the whole qualification.

Access to the Qualification:

Access is open to anyone with access to learning opportunities and work experience on an appropriate selection of systems. The learning assumed to be in place is essential to the learning specified in this qualification. If the learner is not yet competent in this regard the shortfalls must be addressed prior to commencing with learning specified in this qualification. This is necessary to ensure the safety of the learner, co-workers, the work process and the environment.

Access for learners with disabilities is dependant on the:

- Type and severity of the disability.
- Nature of the operational processes and requirements of the equipment.

QUALIFICATION RULES
- In the compulsory Fundamental Component of the qualification, a learner must demonstrate his/her competence in the 20 credits in the field of Communication plus 16 credits in the field of Mathematical Literacy.

- The unit standards in the compulsory Core Component of the qualification reflect the skills and competencies needed for building expertise in the gas installations industry. In the Core Component, the learner must demonstrate his/her competence in the total of 74 credits.

- The Elective Component of the qualification requires the learner to select additional specialist gas and/or general application Unit Standards covering aspects such as computer skills, life skills and business. In total the learner must demonstrate his/her competence in a minimum of 10 credits selected from the Elective component.

EXIT LEVEL OUTCOMES

When the exit level outcomes for the qualifications were developed, each critical cross-field outcome and the specific skills covered by the qualification was considered and included in the exit level outcomes for the qualification so that these outcomes reflect both in an integrated manner. In terms of process, the exit level outcomes were established first and were based on a skills profile of an operator in that field at that level.

1. Demonstrate knowledge of gases, instruments and equipment.

2. Apply safety, health, environmental, productivity and quality procedures to installations.

3. Work according to drawings, specifications and building standards relating to installation of gas systems.

4. Perform a range of gas installation and maintenance activities under supervision.

Critical Cross-field Outcomes:

Each critical cross-field outcome was considered in terms of its applicability to each of the specific outcomes for each unit standard. Where it was found to be applicable, the nature of the skills being developed was specified by the working group and captured in the standard.

Critical cross-field outcomes are assessed per unit standards and are part of all exit level outcomes.

Critical cross-field outcomes have been addressed by the exit level outcomes as follows:

Critical cross-field outcomes:

While performing gas installation and maintenance functions, qualifying learners can:

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

- Applying knowledge and comprehension of safety procedures, Evident in Exit Level Outcome 2.
- Monitoring and controlling quality assurance practices, Evident in Exit Level Outcome 2.
- Applying knowledge of problem solving techniques to activities, Evident in Exit Level Outcome 2.
- Performing corrective maintenance of gas equipment and appliances, Evident in Exit Level Outcome 4.

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

- Working in a coordinated team during installations and maintenance, Evident in Exit Level Outcome 4.
- Co-ordinating one's work with that of others in the direct surrounding area, Evident in Exit Level Outcome 4.

Organise and manage oneself and one's activities responsibly and effectively by:

- Applying knowledge of the use and application of pressure-, temperature- and flow measurement and -gauges to activities, Evident in Exit Level Outcome 1 and 4.
- Procuring and maintaining stock levels of equipment and consumables, Evident in Exit Level Outcome 4.
- Planning and implementing productivity principles to activities, Evident in Exit Level Outcome 2.

• Working according to a work breakdown structure, Evident in Exit Level Outcome 2.

Collect, analyse, organise and critically evaluate information by:

• Performing the planning of resources for the installation, Evident in Exit Level Outcome 4.
• Applying safety, health, environmental and quality procedures to installations and maintenance activities, Evident in Exit Level Outcome 4.
• Managing records, reports and stock, Evident in Exit Level Outcome 2 and 4.

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

• Demonstrating effective site protocol and communication with the client, Evident in Exit Level Outcome 4.
• Reading and interpreting drawings, specifications and building standards, Evident in Exit Level Outcome 3.
• Completing all relevant workplace documentation, Evident in Exit Level Outcome 4.

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

• Working according to health and safety regulations, Evident in Exit Level Outcome 2.
• Controlling technologically advanced equipment according to operating procedures, Evident in Exit Level Outcome 4.
• Controlling power equipment according to operating procedures, Evident in Exit Level Outcome 4.

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

• Monitoring and controlling quality assurance practices, Evident in Exit Level Outcome 2.
• Applying knowledge of problem solving techniques to activities, Evident in Exit Level Outcome 2.

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

• Maintaining and applying safety practices on the worksite, Evident in Exit Level Outcome 2 and 4.
• Maintaining and applying quality practices during the installation, Evident in Exit Level Outcome 2 and 4.
• Performing core installation functions, Evident in Exit Level Outcome 4.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria For Exit Level Outcome 1:

• Gas properties are described in accordance to the applicability to gas installations.
• General principles of gas instrumentation are explained with relevance to gas installations.
• The use and application of pressure-, temperature- and flow measurement and -gauges are explained in accordance with gas installations.
• The application of gas system equipment are explained according to its uses in gas installations.
• The application of piping and fittings in gas systems are explained according to its uses in gas installations.

Associated Assessment Criteria For Exit Level Outcome 2:

• The understanding of the organisation and its relationships with employees and the industry in which it operates are demonstrated within the context of gas installations.
• Safety, health and environmental objectives, standards and regulations pertaining to installation procedures are discussed and explained within the context of gas installations.
• Work is completed within the requirements of the work permit for the gas installations task.
• Working conditions are compliant with prescribed safety rules during installations.
• Emergency action is taken in line with emergency procedures and as may be dictated by situational considerations to ensure the safety of both personnel and equipment.
• A workplace based quality control and quality assurance system is implemented within the context of gas installations.
• Problem solving strategies to solve equipment and installation problems are applied during gas installations using relevant technologies.
• The quality of own work is evaluated within the context of gas installations.

Associated Assessment Criteria For Exit Level Outcome 3:

• Relevant drawings and specifications are read and accurately interpreted.
• A dimensioned free-hand construction site drawing of a proposed or existing gas system is produced.
• Information from drawings are applied in work activities.
• Pipe networks in gas systems are traced and analysed within the context of gas installations.
• The knowledge of the regulatory environment applicable to gas installations are applied.

Associated Assessment Criteria For Exit Level Outcome 4:

• Pressure-, temperature- and flow measurement and -gauges are used under supervision during installation activities.
• Knowledge of piping and fittings are applied during installation activities.
• Stock levels of equipment and consumables required are procured and maintained for gas system installations and maintenance.
• A range of gas equipment and systems are installed under supervision.
• Routine maintenance functions are performed on gas equipment and appliances.
• Corrective maintenance functions are performed on gas equipment and appliances.

Integrated Assessment:

The applied competence (practical, foundational and reflexive competencies) of this qualification will be achieved if a candidate is able to achieve all the exit level outcomes of this qualification.

Appropriate methods and tools must be used to assess practical, foundational and reflexive competence of the learner in all the exit level outcomes listed above, as well as to determine a learner's ability to solve problems, work in a team, organise him/herself, use applied science, and understand the implications of actions and reactions in the world as a set of related systems. Such an assessment process will determine development of the whole person, and the integration of applied knowledge and skills.

Assessors should develop, conduct, and ensure integration of, assessment by making use of a range of formative and summative assessment methods against the unit standards that make up the qualification. Combinations of applied, foundational and reflective competencies, including critical cross-field outcomes, should be assessed wherever possible.

Moderators should ensure that assessment is valid, consistent and integrated into work or learning, and that there is sufficient and authenticated evidence of learner competence against the whole qualification.

INTERNATIONAL COMPARABILITY

An extensive international comparability was done which included the United States of America, Australia, New Zealand, Britain and relevant African countries.

United States of America:

In the USA gas installation training is generally included as a component of the construction plumbing qualification. There are 120 registered Plumber and Pipefitter Colleges and Universities in the USA where this training is done. These qualifications include understanding how to read blueprints, safely handle pipe-cutting and pipe-bending equipment, and conform to local building codes. Some specific medical gas fitting training modules are offered by private providers.

Africa and SADC:

African countries (including SADC countries) were searched for applicable qualifications or training programmes, but no relevant qualifications are offered in any of these countries.

Britain:

A comparison with the British qualification was included, because the British gas installation industry is very well developed due to a much higher demand and the NVQ is an educational structure comparable to the NQF. An internet search revealed the following British Level 2 and 3 qualifications:

- City & Guilds Level 2 NVQ in Domestic Natural Gas Installation and Maintenance. The scope of the qualification is very specific and all units are compulsory. It includes units on worksite- and gas safety, teamwork and gas installation units such as Commission and de-commission domestic natural gas systems and Service and Maintain natural gas systems and components. A comparison shows that although the proposed South African qualification places equal emphasis on safety and work procedures, it has a much higher knowledge component to provide the learner with more foundational knowledge related to the properties of gases, quality and problem solving procedures.

- City & Guilds Level 3 NVQ in Domestic Natural Gas Installation and Maintenance. Compulsory units in this qualification include business improvement, safety, teamwork, natural gas system design, installation and maintenance of a range of domestic appliances. The new South African Level 3 qualification compares very well with this qualification.

- City & Guilds Level 3 Certificate in Complex Domestic Natural Gas Installation and Maintenance. Compulsory units in this qualification include business improvement, complex gas processes, a range of complex domestic gas activities such as laundry, central heating and water heating, gas pipework and metering systems. The new South African qualification contains no areas that can be compared to this qualification.

Australia:

The Australian gas installation industry is of a similar size and sophistication as the South African industry. For this reason a comparison with the Australian qualification was included, as well as the AQF being an educational structure comparable to the NQF. An internet search of the AQF revealed that there are registered qualifications in Gas Industry Operations from Levels 2 to 4 as well as a Diploma and Advanced Diploma on Levels 5 and 6 respectively.

The Certificate II in Gas Industry Operations contains compulsory core units in safety, health and environment, teamwork and the organising of work procedures. The learner is allowed a

choice of elective units from the following three learning pathways to complete the qualification: Meter reading, LPG transport and Cylinder distribution.

These learning pathways limit the learner to the specific competencies required for these functions and the learner is not provided with the opportunity to gain any specific gas installation skills on Level 2.

The Certificate III in Gas Industry Operations allows the learner to choose between Meter repair and Billing specialisation areas. The title of this qualification is misleading because no gas installation or maintenance training is included in the qualification and as such no comparison can be made with the proposed South African qualification.

A further search of the AQF revealed a Level 3 qualification in Gas Fitting which resorts under the Plumbing and Construction fields. A range of piping and gas installation units are included with one unit dealing with the maintenance of type A gas appliances. The scope of the new South African qualification is much wider and includes a high safety and environmental protection component, organisation and industry knowledge, gas systems design, installation and maintenance.

New Zealand:

An internet search in the NZQA showed the following registered qualifications:

• A Level 2 National Certificate in Gas Industry (Gas Distribution): Similar to the new South African Level 2 qualification this entry-level qualification also contains a high knowledge component. Compulsory unit standards on safety, drawings and gas equipment and instrumentation are included. The new South African qualification differs in that it includes unit standards on problem solving and quality that are not addressed in the New Zealand qualification.

• Six Level 3 National Certificates related to the gas industry are registered on the NZQA. The scope of these qualifications range from Gas Network Operations, Gas Network Planning and Development, Gas Utilisation to Gas Transmission. No comparison with these qualifications is possible because they are very specific to the oil and gas industry and include no domestic and commercial gas installations.

• A Level 4 National Certificate in Gas Fitting. This qualification has replaced the trade certificate in Gasfitting and qualifying learners may apply for registration as a gasfitter under the Plumbers, Gasfitters and Drainlayers Act 1976. The scope of this qualification is similar to the new NQF Level 3 qualification and includes similar core unit standards on installing and maintaining a range of domestic, commercial and industrial gas appliances and gas meters.

A comparison with the above international qualifications shows that the Gas Installation Qualification compares well with the best international qualifications and training programmes offered. The compulsory theoretical and technical content incorporated in the qualification will serve to support qualifying learners to make better informed, autonomous decisions within a more compact timeframe than international learners and will increase transportability of the qualification considerably.

ARTICULATION OPTIONS

Successful completion of the National Certificate: Chemical Operations NQF Level 1 will allow the learner vertical progression into the gas installation qualification on NQF Level 2. The NQF Level 2 Qualification will allow the learner a vertical progression to the NQF Level 3 Gas Installation qualification. The very specific nature of the training offered in this qualification limits the possibilities for vertical articulation into other NQF Level 3 qualifications, but vertical articulation is possible with the following qualifications:

- ID 21853: National Certificate: Construction Plumbing.
- ID 48963: National Certificate: Air-conditioning, Refrigeration and Ventilation.
- National Certificate: Plumbing: Futher Education and Training Phase.
- ID 49056: National Certificate: Domestic Appliance Repair.

Horizontal articulation within the plumbing, construction and related industries can occur with the following registered NQF level 2 qualifications:

- National Certificate: Plumbing: Futher Education and Training Phase.
- ID 48959: National Certificate: Air-conditioning, Refrigeration and Ventilation.

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 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 according to the ETQAs policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQAs (including professional bodies); and in terms of the moderation guideline detailed immediately below.

- Moderation should also encompass achievement of the competence described both in individual unit standards, exit level outcomes as well as the integrated competence described in the qualification.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

In order to assess this qualification, the assessor needs:

- Assessors to meet the requirements of the generic assessor standards.
- Competence against the unit standard "Conduct outcomes-based assessments".
- Detailed documentary proof of educational qualification, practical training undergone, and/or experience gained at an appropriate level in the work concerning gas installation operations. This must meet the relevant ETQA policies and guidelines. The subject matter expertise of the assessor can be established through the recognition of prior learning.
- Registration with, or recognition by, the relevant ETQA as specified through an appropriate memorandum of understanding.

NOTES

Range statements:

This qualification addresses the foundational knowledge required by learners in the gas installation industries.

Knowledge relating to the gas installations includes gas specific equipment and technology, communication, mathematics, applied science, and SHEQ.

This qualification may be applicable to other installation operations. This is subject to its acceptance by appropriate subject matter experts.

Range of equipment covered:

The typical context of this unit standard assumes an existing or new domestic or commercial gas installation site.

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	246569	Apply quality principles on a gas installation project	Level 2	3
Core	246575	Apply safety concepts to a gas installation site	Level 2	3
Core	114669	Carry out basic electric arc welding in an electrical environment	Level 2	8
Core	246571	Demonstrate understanding of gas piping, fittings and valves	Level 2	4
Core	246577	Demonstrate understanding of gas properties	Level 2	4
Core	119753	Perform basic welding/joining of metals	Level 2	8
Core	246567	Perform corrective maintenance on gas equipment and appliances	Level 2	4
Core	246570	Perform routine maintenance on gas equipment and appliances	Level 2	6
Core	246576	Procure and maintain stock levels of equipment and consumables required for gas system installations and maintenance	Level 2	3
Core	246574	Read and interpret drawings and make freehand drawings related to gas installations	Level 2	5
Core	119744	Select, use and care for engineering hand tools	Level 2	8
Core	10255	Select, use and care for power tools	Level 2	5
Core	246566	Understand basic gas instrumentation	Level 2	5
Core	246568	Understand the regulatory environment applicable to gas installations	Level 2	3
Core	14684	Weld thermoplastics with electrofusion equipment	Level 2	5
Elective	10006	Demonstrate an understanding of entrepreneurship and develop entrepreneurial qualities	Level 1	2
Elective	14664	Demonstrate knowledge of diversity within different relationships in the South African society	Level 1	3
Elective	12203	Demonstrate knowledge of issues relating to HIV and AIDS	Level 1	2
Elective	9357	Develop and use keyboard skills to enter text	Level 1	4
Elective	117943	Install a Personal Computer (PC) peripheral device, in a GUI environment	Level 1	2
Elective	117867	Managing files in a Graphical User Interface (GUI) environment	Level 1	3
Elective	116933	Use a Graphical User Interface (GUI)-based presentation application to create and edit slide presentations	Level 1	3
Elective	116938	Use a Graphical User Interface (GUI)-based word processor to create and edit documents	Level 1	4
Elective	246578	Apply productivity principles on a gas installation project	Level 2	4
Elective	116935	Enhance, edit and organise electronic messages using a Graphical User Interface (GUI)-based messaging application	Level 2	2
Elective	119672	Manage marketing and selling processes of a new venture	Level 2	7
Elective	116256	Sling and communicate during crane operations	Level 2	4
Elective	246572	Solve equipment and installation problems during gas installations using relevant technologies	Level 2	5
Elective	116937	Use a Graphical User Interface (GUI)-based spreadsheet application to create and edit spreadsheets	Level 2	4
Elective	116931	Use a Graphical User Interface (GUI)-based web-browser to search the Internet	Level 2	4
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	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	119460	Use language and communication in occupational learning programmes	Level 2	5
Fundamental	7469	Use mathematics to investigate and monitor the financial	Level 2	2

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
		aspects of personal and community life		
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

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Understand basic gas instrumentation

SAQA US ID	*UNIT STANDARD TITLE*		
246566	Understand basic gas instrumentation		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	5

SPECIFIC OUTCOME 1
Demonstrate understanding of the general principles of gas instrumentation.

SPECIFIC OUTCOME 2
Demonstrate understanding of pressure measurement and -gauges.

SPECIFIC OUTCOME 3
Demonstrate understanding of temperature measurement and -gauges.

SPECIFIC OUTCOME 4
Demonstrate understanding of flow measurement and -gauges.

SPECIFIC OUTCOME 5
Demonstrate understanding of level measurement and -gauges.

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UNIT STANDARD:

Perform corrective maintenance on gas equipment and appliances

SAQA US ID	*UNIT STANDARD TITLE*		
246567	Perform corrective maintenance on gas equipment and appliances		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	4

SPECIFIC OUTCOME 1
Plan fault finding and maintenance functions.

SPECIFIC OUTCOME 2
Conduct fault finding and testing of gas equipment and appliances.

SPECIFIC OUTCOME 3
Repair gas equipment or appliances.

SPECIFIC OUTCOME 4
Conclude gas equipment or gas appliance repair.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Understand the regulatory environment applicable to gas installations

SAQA US ID	*UNIT STANDARD TITLE*		
246568	Understand the regulatory environment applicable to gas installations		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	3

SPECIFIC OUTCOME 1
Outline business rules in terms of its impact on gas installers.

SPECIFIC OUTCOME 2
Explain the contents and relevance of various local and international standards on gas installations.

SPECIFIC OUTCOME 3
Explain the relevance of various OHS regulations on gas installations.

SPECIFIC OUTCOME 4
Describe the role and impact of other laws on gas installations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Apply quality principles on a gas installation project

SAQA US ID	*UNIT STANDARD TITLE*		
246569	Apply quality principles on a gas installation project		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	3

SPECIFIC OUTCOME 1
Implement workplace based quality.

SPECIFIC OUTCOME 2
Establish quality based work methods.

SPECIFIC OUTCOME 3
Implement Quality Control.

SPECIFIC OUTCOME 4
Evaluate quality of own work.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Perform routine maintenance on gas equipment and appliances

SAQA US ID	*UNIT STANDARD TITLE*		
246570	Perform routine maintenance on gas equipment and appliances		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	6

SPECIFIC OUTCOME 1
Plan and prepare for routine maintenance.

SPECIFIC OUTCOME 2
Obtain all materials required to perform the job.

SPECIFIC OUTCOME 3
Perform routine maintenance activities.

SPECIFIC OUTCOME 4
Monitor the condition of machinery and equipment.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate understanding of gas piping, fittings and valves

SAQA US ID	*UNIT STANDARD TITLE*		
246571	Demonstrate understanding of gas piping, fittings and valves		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	4

SPECIFIC OUTCOME 1
Demonstrate an understanding of piping and fittings in gas applications.

SPECIFIC OUTCOME 2
Demonstrate an understanding of pipe coverings.

SPECIFIC OUTCOME 3
Identify valve components and explain valve functioning in a process system.

SPECIFIC OUTCOME 4
Trace and analyse pipe networks.

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UNIT STANDARD:

Solve equipment and installation problems during gas installations using relevant technologies

SAQA US ID	*UNIT STANDARD TITLE*		
246572	Solve equipment and installation problems during gas installations using relevant technologies		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	5

SPECIFIC OUTCOME 1
Identify deviations from the normal operating conditions.

SPECIFIC OUTCOME 2
Determine likely cause of the deviation experienced.

SPECIFIC OUTCOME 3
Implement corrective action.

SPECIFIC OUTCOME 4
Evaluate the impact of corrective action.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Read and interpret drawings and make freehand drawings related to gas installations

SAQA US ID	*UNIT STANDARD TITLE*		
246574	Read and interpret drawings and make freehand drawings related to gas installations		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	5

SPECIFIC OUTCOME 1
Explain the role of drawings and specifications.

SPECIFIC OUTCOME 2
Identify drawings and symbols used on a construction.

SPECIFIC OUTCOME 3
Read and interpret process flow diagrams (P&IDs).

SPECIFIC OUTCOME 4
Produce a dimensioned free-hand construction site drawing of a proposed or existing gas system.

SPECIFIC OUTCOME 5
Apply information from drawings in work activities.

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UNIT STANDARD:

Apply safety concepts to a gas installation site

SAQA US ID	*UNIT STANDARD TITLE*		
246575	Apply safety concepts to a gas installation site		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	3

SPECIFIC OUTCOME 1
Understand hazards associated with gases.

SPECIFIC OUTCOME 2
Work within the requirements of a work permit or site owner's permission to work.

SPECIFIC OUTCOME 3
Establish safe working conditions.

SPECIFIC OUTCOME 4
Perform installations safely.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Procure and maintain stock levels of equipment and consumables required for gas system installations and maintenance

SAQA US ID	*UNIT STANDARD TITLE*		
246576	Procure and maintain stock levels of equipment and consumables required for gas system installations and maintenance		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	3

SPECIFIC OUTCOME 1
Explain stock control concepts in accordance with typical industry practices.

SPECIFIC OUTCOME 2
Maintain appropriate stock levels.

SPECIFIC OUTCOME 3
Procure stock for a given period or specific contract.

SPECIFIC OUTCOME 4
Count and evaluate materials stocked.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate understanding of gas properties

SAQA US ID	*UNIT STANDARD TITLE*		
246577	Demonstrate understanding of gas properties		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	4

SPECIFIC OUTCOME 1
Describe the different gas groupings as applicable to the gas manufacturing industry.

SPECIFIC OUTCOME 2
Demonstrate understanding of the application of inert/non-reactive gases.

SPECIFIC OUTCOME 3
Demonstrate understanding of the application of flammable gases.

SPECIFIC OUTCOME 4
Demonstrate understanding of the application of oxidising gases.

SPECIFIC OUTCOME 5
Demonstrate understanding of the application of toxic/corrosive gases.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Apply productivity principles on a gas installation project

SAQA US ID	*UNIT STANDARD TITLE*		
246578	Apply productivity principles on a gas installation project		
ORIGINATOR		*PROVIDER*	
Chemical Industries SGB			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	4

SPECIFIC OUTCOME 1
Explain the concept of workplace based productivity.

SPECIFIC OUTCOME 2
Establish increased volume objectives for gas installations.

SPECIFIC OUTCOME 3
Establish reduced cost objectives for gas installations.

SPECIFIC OUTCOME 4
Establish improved service or product objectives for gas installations.