No. 220

18 March 2005



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 NSB **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 standard. The qualification and unit standard can be accessed via the SAQA web-site at <u>www.saqa.org.za</u>. Copies may also be obtained from the Directorate **of** Standards Setting and Development at the SAQA offices, Hatfield Forum West, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the unit standards should reach SAQA at the address below **and no** later **than 18** April **2005.** All correspondenceshould be marked Standards Setting – SGB for Chemical Industries and addressed to

> The Director: Standards Setting and Development SAQA *Attention: Mr. E. Brown* Postnet Suite 248 Private Bag X06 Waterkloof 0145 or faxed to 012 – 431-5144 e-mail: <u>ebrown@saga.co.za</u>





inablished in terms of Act Sk of 199

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

National Certificate: operation of Mobile Explosives Manufacturing Units

SAQA QUAL I	D QUALIFICATION	QUALIFICATION TITLE					
49555	National Certificate	National Certificate: Operation of Mobile Explosives Manufacturing Units					
SGB NAME		NSB 06	PROVIDER NAME				
Chemical Industries SGB		Manufacturing, Engineering and Technology					
QUAL TYPE		FIELD	SUBFIELD				
National Certificate		Manufacturing, Engineering and Technology	Manufacturing and Assembly				
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUALIFICATION CLASS				
Undefined	120	Level 3	Regular-Unit Stds Based				

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose of this qualification

This qualification is used to recognise the competence of people to mix and place bulk explosives through the use of MMUs.

It is achieved through the following exit level outcomes:

> Apply knowledge skills and values in the manufacturing and placement of bulk explosives.

> Manufacture and placement of bulk explosives by operating a MMU.

> Evaluate the effectiveness of work done and the results arising from manufacturing and placement of bulk explosives.

Compliance with these exit level outcomes ensures that the placement of bulk explosives is done in compliance with the relevant legislation, regulations and instructions. It also promotes social development, the minimization of environmental damage, and economic transformation by enabling effective open cast mining and use of bulk explosives in similar industries where rock has to be broken.

Rationale of the qualification

In keeping with their commitment to excellence, manufacturers of explosive materials assume the responsibility for the safe, environmentally sensitive and efficient placement of mixed bulk explosive materials at clients' sites. This work is critical to surface mining and quarrying operations. The knowledge, skills and values needed to carryout this work is considered worthy of national recognition through **a** national qualification.

The qualification addresses the knowledge, skills and values necessary for the mixing and placing of the bulk explosive products, liaison with the clients, operating, driving and first line maintaining of the Mobile Explosives Manufacturing Unit (MMU), together with quality and related matters. This learning is underpinned by appropriate Mathematical Literacy and Science as applied in the context of explosives and their use.

An individual who qualifies in terms of this qualification will have the ability to carryout bulk explosives placement. This includes the ability to work independently, make judgements and decisions.

The qualification is designed for progression from an entry level in the bulk explosives industry at bulk explosives manufacturing factories or bulk explosives distribution depots. Individuals who have the required driving licence for an MMU and/or competence in open cast mining are also well positioned to register for this qualification.

Options for progression from this qualification are into supervision of distribution and placement or depot supervision. In addition, the qualification can lead to technical advising and technical marketing of explosives.

RECOGNIZE PREVIOUS LEARNING?

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LEARNING ASSUMED TO BE IN PLACE

Learners wishing to register for programmes leading to this qualification are expected to have achieved **NQF** Level 2 with competence in the following areas:

> Mathematics or Mathematical Literacy, Communications and Science (applied process chemistry and related technology)

> Basic safety

The level and extent d the above learning assumed to be in place should be equivalent to the relevant unit standards used by the chemical industry.

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. This may include a few or all the competencies described in the relevant unit standards. When RPL is recognised the demonstration of competence at, at least one production site is required.

QUALIFICATION RULES

N/A

EXIT LEVEL OUTCOMES

1. Apply knowledge, skills and values in the manufacturing and placement of bulk explosives.

2. Manufacture and place bulk explosives by operating a MMU.

3. Evaluate the effectiveness of work done and the results arising from the manufacturing operations.

ASSOCIATED ASSESSMENT CRITERIA

1.

> Knowledge of bulk explosives, including understanding of their composition, in the manufacture and placement of bulk explosives is applied to achieve the desired results.

> A quality system, as used in bulk explosives placement, is complied with to ensure that the desired results are achieved.

2.

> Instructions are interpreted prior to placing explosivas.

> The site is assessed prior to placing explosives.

> A MMU is used to mix and place explosives in accordance with instructions.

> Quality checks are conducted to ensure explosive material is correctly placed.

3.

> The documentation required for legal, technical and other purposes is completed in accordance with instructions.

> The manufacturing and placement activities carried out are compared with instructions and relevant explosives technology.

Integrated Assessment

> The applied competence (practical, foundational and reflexive competencies) of this qualification will be achieved when a candidate is able to carryout the activities required to place explosives in accordance with instructions. This is done by operating a MMU, understanding related concepts, applying the relevant technology and evaluating the results of the work done.

> 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 where the solutions are not always obvious, using known technology (including drawing on experience and using instruction manuals). The assessment requires that the work be carried out as part of the greater 'mining/quarrying or construction' team at a client's site. This requires that the candidate organizes him/herself, applies science and understands the implications of actions and reactions in the workplace as a set of related systems. Such a formative assessment process will determine development of the whole person, and the integration of applied knowledge and skills and values.

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

> Assessment must include workplacekite-based practical work, ensuring that quality of work is,done. Minimization of wastage must be emphasized and the effective operation and maintenance of the MMU also requires attention in the assessment process.

INTERNATIONAL COMPARABILITY

> No qualification specific to the Bulk Explosives Industry was found in other qualifications frameworks. The local industry was not able to source equivalent educational qualifications from international associates.

> However, this qualification is of a higher standard than the United Kingdom's NVQF qualification for **the** transport of explosives in that the application of technology required is of a more complex level. More advanced machine operating skills also form part of the qualification.

> No equivalent qualification or unit standards were found in the qualifications frameworks of New Zealand, Australia, Scotland, Ireland, the United Kingdom or American Curriculum and Assessment Authority.

> The experts involved in this qualification further commented that this is probably due to the lack of bulk explosive manufacture and placement practiced in countries that have well developed National Qualifications Frameworks. They also commented that South African programmes related to this qualification are used in SADEC.

ARTICULATION OPTIONS

This qualification articulates horizontally to qualifications relating explosive materials or component manufacture. Qualifications used for horizontal articulation include:

> National Certificate in Explosives Manufacturing Operations NQF Level 3 Articulation to other careers and associated qualifications relating to the manufacture of other chemical substances or manufacturing activities are possible. This qualification enables articulation into various road transport learning areas such as the transport of hazardous materials.

Vertical articulation is possible in the explosives industry using the following qualifications: > FETC Supervision of Explosives Placement

MODERATION OPTIONS

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. This checking should include confirmation of competence in a production context, over a period of time that is adequate to ensure customer and employer satisfaction with learners who are declared competent.

> Anyone moderating the assessment of learners against this qualification must be registered as a moderator with the relevant ETQA.

> Any institution offering learning that will enable the achievement of this qualification must be accredited **ar** recognized as a provider with the relevant ETQA. This accreditation must include both technical and **operational/production** learning and assessment.

> Assessment and moderation will be overseen by the relevant ETQA according to the ETQA's policies and guidelines for assessment and moderation.

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

> Anyone wishing to be assessed against this qualification may apply to be assessed by any assessment agency, assessor or provider institution that is accredited by the relevant ETQA.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

In order to assess this qualification, the assessor needs:

> Well developed interpersonal skills, personal credibility, and a record of ethical behaviour

> Registration with the relevant Education, Training and Development Practitioners' ETQA as a generic assessor.

> Competence against the unit standard 'Plan and conduct assessment d learning outcomes'.

> Documentary proof or 'peer/expert' recognition of educational qualification, practical training undergone, andlor experience gained at an appropriate level of bulk explosives manufacture and placement. This must meet the relevant ETQA policies and guidelines.

NOTES

N/A

UNIT STANDARDS

(Note: A blank space after this line means that the qualification is not based on Unit Standards.)

	UNIT STANDARD ID AND TITLE	LEVEL	CREDITS	STATUS
Core	14783 Conform to and apply legislationand operational instructions in chemical processing	Level3	4	Registered
core	14801 Solve operating problems using process chemistry and related technology	Level 3	10	Registered
Core	119354 Manufactureand place explosive material using a mobile manufacturing unit	Level 3	20	Draft - Prep for P Comment
Core	10953 Operate a rigid vehicle	Level 4	32	Reregistered
Elective	14080 Describe routes and locations and draw simple maps	Below Level	1 1	Registered
Elective	13221 Perform routine maintenance	Level 2	8	Registered
Elective	14784 Apply sampling theory and practice in the chemical industry	Level 2	5	Registered
Elective	7995 Communicating and conducting interpersonal relations in industry	Level 3	10	Reregistered
Elective	8000 Applying basic business principles	Level 3	9	Reregistered
Elective	9913 Perform first line maintenance	Level 3	14	Registered
Elective	11913 Obtain and communicatetransport operational information	Level 3	7	Reregistered
Elective	113847 Foster and maintain customer relations	Level 3	10	Registered
Fundamental	7456 Use mathematics to investigate and monitorthe financial aspects of personal, business and national issues	Level 3	5	Reregistered
Fundamental	8968 Accommodate audience and context needs in oral communication	Level 3	5	Reregistered
Fundamental	8969 Interpretand use information from texts	Level 3	5	Reregistered
Fundamental	8970 Write texts for a range of communicative contexts	Level 3	5	Reregistered
Fundamental	8973 Use language and communication in occupational learning programmes	Level 3	5	Reregistered
Fundamental	9010 Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations	Level 3	2	Reregistered
Fundamental	9012 Investigate life and work related problems using data and probabilities	Level 3	5	Reregistered
Fundamental	9013 Describe. apply, analyse and calculate shape and motion in 2-and 3- dimensionalspace in different contexts	Level 3	4	Reregistered



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

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UNIT STANDARD:

Manufacture and place explosive material using a mobile manufacturing unit

SAQA US ID	UNIT STANDARD TITLE					
119354	Manufacture and place explosive material using a mobile manufacturing unit					
SGB NAME		NSB 06	PROVIDER NAME			
Chemical Industries SGB		Manufacturing, Engineering and Technology				
UNIT STANDARD TYPE		FIELD DESCRIPTION	SUBFIELD DESCRIPTION			
Regular		Manufacturing, Engineering and Technology	Manufacturing and Assembly			
ABET BAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE			
Undefined	20	Level 3	Regular			

SPECIFIC OUTCOME 1

Interpret instructions in accordance with relevant technology.

SPECIFIC OUTCOME 2

Collect and move materials to the site.

SPECIFIC OUTCOME 3

Carry-out pre-manufacturing activities.

SPECIFIC OUTCOME 4

Manufacture and place bulk explosives in accordance with best practice.

SPECIFIC OUTCOME 5

Carry-out post manufacturing activities.

SPECIFIC OUTCOME 6

Review work done.

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