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GOVERNMENT NOTICES

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

No. 1189 **20 September 2002**

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

Civil Engineering and Construction

Registered by NSB 12, Physical Planning and Construction, publishes the following qualifications 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 upon which qualifications are based. 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, 659 Pienaar street, Brooklyn, Pretoria.

Comment on the unit standards should reach SAQA at the address ***below and no later than 21 October 2002.*** All correspondence should be marked **Standards Setting – SGB Civil Engineering and Construction** 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 – 482 0907

pr **SAMUEL B.A. ISAACS**
EXECUTIVE OFFICER

NATIONAL CERTIFICATE IN REFRACTORIES INSTALLATION NQF2

Field: Physical Planning and Construction - NSB 12

Sub-field: Civil Engineering Construction

Level: 2

Credits: 120

Issue date:

Review date:

Rationale of the qualification

This qualification reflects the workplace-based needs of employers and employees within the civil engineering and construction disciplines and especially the refractories specialisation field, both now and for the future.

The range of typical learners include individuals that are in progression from semi-skilled workers with little or some formal education.

A qualifying learner will operate as a valuable team member within refractory installation or maintenance procedures. This will provide valuable training, embedded knowledge and fundamental experience towards a refractory construction career that will be beneficial to an individual and also the economy / industry.

This qualification provides the learner with accessibility to be employed within the construction industry and especially within the refractory installation domain and will be providing portability and articulation possibilities within the building construction and civil engineering construction contexts.

The long history of refractory installers in the construction context adds value to the refractory construction specialisation and also seeks to gain formal recognition and acknowledgement of these individuals which is absolutely necessary and essential for career development and portability value within the civil engineering and building construction context.

Purpose of the qualification

This qualification will allow a person to advance to learning for a refractories masonry or equivalent type of qualification at NQF 3 within the construction context. This qualification will contribute to the full development of the learner within the construction environment by providing recognition, further mobility and transportability within building and civil engineering 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 construction fraternity.

A person acquiring this qualification will be able to communicate project actions to team members, build refractory construction units using monolithic materials, mortars and shaped refractory products, as well as use and care for tools and equipment whilst adhering to safety, risk, quality and environmental requirements and specifications under supervision to reduce environmental impact in terms of air pollution and other related factors.

Access to the Qualification
Access to this qualification is open to all personnel in the construction industry.

Learning assumed to be in place
A knowledge, comprehension and application of language, mathematics, natural science and technology on NQF 1. A GETC in Fundamental Construction Practices NQF 1 will be an advantage.

Exit level Outcomes
The outcomes are specified in terms of specific and critical cross-field outcomes.

Exit level 1:
Explain, interpret and use knowledge in performing tasks related to refractory product, materials and processes.
Exit level 2:
Collect, analyse, organise and critically evaluate information by interpreting engineering drawings.
Exit level 3:
Use science and technology required for refractory linings installation procedures during mixing of refractory monolithics, cutting of pre-formed refractories materials and packing of refractory bricks.
Exit level 4:
Maintain safety, health, environmental and good manufacturing practices in a construction context.

Associated assessment criteria

The assessment criteria of the qualification are embodied in the unit standards. The knowledge, skills and understanding will be assessed across several specialised contexts and are clearly defined within the relevant specific outcomes, assessment criteria and range statements within these unit standards

International comparability
The qualification has been benchmarked against international standards and qualifications against the NVQ from Britain and New Zealand qualifications.

Basically, international comparability could not be found for a similar qualification on this level in terms of the qualification outcomes, notional learning time and degree of difficulty due to differing framework levels. Although no direct international comparability can be found, the construction sub-field needs to acknowledge the proposed qualification to establish articulation and portability options as well as formal recognition for individuals within these fields.

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.

The assessor should ensure that the assessment methods and tools must use a combination of practical, foundational and reflexive competencies in order to guarantee whole persons development and integration of applied knowledge and skills. In essence, the assessor assesses

the identification and solving of problems; working as a team; organising one-self; the use of applied science; and determining the implication of actions and reactions in the world as a set of related systems is assessed in a combined manner.

Applicable assessment tool(s) to establish the foundational, reflective and embedded knowledge to problem solving and application of the world as a set of related systems within the refractories installation and maintenance field.

A detailed portfolio of evidence is required to prove practical, applied and foundational competencies of the learner.

Assessors and moderators should develop and conduct their own integrated assessment by making use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.

Unit standards in the qualification must be used to assess specific and critical cross-field outcomes. The assessor should make use of both formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflective competencies when conducting integrated assessments.

Recognition of prior learning
This qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience. A learner wishing to be assessed towards this qualification may arrange to do so without attending any further training or education. The assessor and the learner will jointly decide on the most appropriate method to be taken.

Articulation possibilities
This qualification will allow a person to advance to learning for a refractory qualification at NQF level 3 or a similar qualification at this level. The qualification provides the learner with flexibility to pursue different careers in the refractory construction industry and articulation within the engineering industries. The level of flexibility with the range of electives will allow the individual to pursue further learning within the construction industry.

Criteria for registration of assessors
For an applicant to register as an assessor, the applicant needs:
Interpersonal skills, subject matter expertise and assessment experience.
The assessor needs to be competent in the planning and conducting assessment of learning outcomes as described in the unit standards Plan and conduct assessment of learning outcomes NQF level 5. The subject matter experience must be well developed with in the field of refractories construction and maintenance and quality assurance practices.
The assessor must have completed:

- A similar qualification or from the same family of qualifications, at or above NQF 3, or
- National certificate in Refractories Masonry NQF 3 or construction supervision NQF 4.

The subject matter experience of the assessor can be established by recognition of prior learning. Assessors need to be registered with the relevant Education and Training Quality Assurance Body.

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 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 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.

NATIONAL CERTIFICATE IN REFRACTORIES INSTALLATION NQF 2

Fundamental	NLRD	L	C	Core	NLRD	L	C	Elective (choose a min of 24 credits	NLRD	L	C
Field of Communication and Language				**Techniques**				**Equipment**			
Maintain and adapt oral communication	8962	2	5	Identify and describe different materials used in construction	To be registered	2	4	Lift and move materials and equipment by means of a forklift	9599	2	3
Access and use information from texts	8963	2	5	Cut pre-formed refractories		2	4	Erect, use and dismantle access equipment	9967	3	4
Write for a defined context	8964	2	5	Pack refractory bricks to complete refractory linings.		2	10	Operating cranes	8039	3	10
Use Language and Communication in Occupational learning programmes	8967	2	5	Mix refractory monolithics		2	4	**People leading and developing**			
Field of Physical, Mathematical, Computer and Life Sciences				Interpret the composition, construction sequence and processes of the construction industry	To be registered	2	3	Maintain records on a construction site	To be registered	2	2
Demonstrate understanding of rational and irrational numbers, and number systems, within the context of relevant calculations	8982	2	3	**Safety and environment**				**Business concepts**			
Use mathematics to investigate and monitor the financial aspects of personal and community life	8983	2	2	Apply Health and Safety to a work area	9964	2	3	Demonstrate an understanding of contracts and their sources	To be registered	1	2
Apply basic knowledge of statistics in order to investigate life and work related problems	9009	2	4	**Equipment**				**Techniques**			
Identify, describe, compare, classify, explore shape and motion in 2- and 3-dimensional shapes in different contexts	9008	2	3	Operate and monitor machinery	12374	2	12	Handle, transport, store, utilise flammable gases	To be registered	2	4
Work with a wide range of patterns and basic functions and solve related problems	9007	2	5	Use and care for tools and equipment	12377	2	10	Perform basic welding/joining of metals	12382	2	8
				Read and interpret basic engineering drawings	9882	2	8				
Demonstrate effective self management skills.	7503	1	2								
Total			**38**				**58**				**33**

Qualification total:120 credits minimum

Proposed qualification framework

8	PROFESSIONAL DEGREE: ENGINEERING & OTHER RELATED QUALIFACTIONS
7	NATIONAL HIGHER DEGREE: REFRACTORIES ENGINEERING & OTHER RELATED QUALIFICATIONS
6	NATIONAL DEGREE: REFRACTORIES ENGINERING & OTHER RELATED QUALIFICATIONS
5	NATIONAL DIPLOMA: REFRACTORIES ENGINEERING & OTHER RELATED QUALIFICATIONS
4	NATIONAL CERTIFICATE IN CONSTRUCTION SUPERVISION / FIRST LINE MANAGEMENT: CIVIL ENGINEERING
3	NATIONAL CERTIFICATE IN REFRACTORIES MASONRY
2	NATIONAL CERTIFICATE IN REFRACTORIES INSTALLATION
1	GETC IN FUNDAMENTAL CONSTRUCTION PRACTICES

NATIONAL CERTIFICATE IN REFRACTORIES INSTALLATION NQF2

UNIT STANDARDS AT NQF LEVEL 2

Title 1: Cut pre-formed refractories
Title 2: Pack refractory bricks to complete refractory linings
Title 3: Mix refractory monolithics

UNIT STANDARDS AND SPECIFIC OUTCOMES IN NATIONAL CERTIFICATE IN REFRACTORIES INSTALLATION NQF2

UNIT STANDARDS AT NQF LEVEL 2

1. Title: Cut pre-formed refractories

Specific outcome 1.1: Plan and prepare for work activities
Specific outcome 1.2: Cut pre-formed refractories
Specific outcome 1.3: Perform quality control and assurance activities
Specific outcome 1.4: Perform end of work activities

2. Title: Pack refractory bricks to complete refractory linings

Specific outcome 2.1: Plan and prepare for work activities
Specific outcome 2.2: Pack refractory bricks
Specific outcome 2.3: Perform quality control and assurance activities
Specific outcome 2.4: Perform end of work activities

3. Title: Mix refractory monolithics

Specific outcome 3.1: Plan and prepare for work activities
Specific outcome 3.2: Mix refractory monolithics
Specific outcome 3.3: Perform quality control and assurance activities
Specific outcome 3.4: Perform end of work activities