No. 1192

### 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 <u>www.saqa.org.za</u>. 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

SAMUEL B.A. ISAACS EXECUTIVE OFFICER

## NATIONAL CERTIFICATE IN REFRACTORIES MASONRY NQF 3

Field:

Level:

Physical Planning and Construction - NSB 12 Sub-field: **Civil Engineering Construction** 3.

Credits:

Issue date:

**Review date:** 

#### Rationale of the qualification

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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 are individuals that progressed using applied competencies such as mixing monolithics, cutting pre-formed refractory materials and packing refractory bricks.

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

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

The long history of refractory installers in the engineering context adds value to the refractory construction specialisation and recognises the need for formal recognition and acknowledgement of the individuals, which is absolutely necessary and essential for career development and portability value within the civil engineering and building construction context (see the National Certificate in Refratories Installation NQF 02).

#### Purpose of the qualification

This gualification will allow a person to advance to learning for construction supervision or equivalent type of qualification at NQF 4. This qualification will contribute to the full development of the learner within the construction environment by providing recognition, further mobility and transportability within the building construction and civil engineering field.

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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 as a team leader, work independently, install and maintain refractory linings using different installation and maintenance techniques, whilst adhering to safety, risk, quality and environmental requirements and specifications to reduce environmental impact in terms of air pollution and other related factors.

# Access to the Qualification

Access to this qualification is open to construction personnel in general.

# Learning assumed to be in place

- A knowledge, comprehension and application of language, mathematics, natural science and technology on NQF 2.
- Safety, fundamental risk management and quality practices and procedures in the construction field and fundamental engineering practices,
- A National Certificate in Refractories Installation NQF 2 will be an advantage.

#### **Exit level Outcomes**

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

Exit level 1:

Communicate with peers, customers and members of the supervisory/ management levels by demonstrating the ability to summarise information in a verbal or written form. Exit level 2:

Explain, interpret scientific and technology systems, procedures and equipment required for refractory linings installations, using shaped brick/ blocks, monolithics and insulation materials Exit level 3:

Execute roles and responsibilities by being able to solve contextual problems, estimate application processes through mathematical calculations, summarizing construction and engineering information and diagrams.

Exit level 4:

Lead and encourage team members using mentoring principles.

Exit level5

Maintain safety, health, environmental, and quality assurance practices

#### 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

Benchmarking against international standards and qualifications against the NVQ from Britain and New Zealand qualifications.

International comparability could be found for qualifications on this level in terms of the qualification outcomes, notional learning time and degree of difficultly.

New Zealand Qualification framework:

National Certificate in Masonry (Bricklaying) with strands in Brick and Block Laying, and Refractory Installation Level 3

NVQ

National Certificate Refractory Installations Level 2

### 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 identification and solving of problems, team working, organising one-self, the use of applied science, and the implication of actions and reactions in the world as a set of related systems must be assessed during any combination of practical, foundational and reflexive competencies in order for assessment methods and tools to determine the whole person's development and integration of applied knowledge and skills.

Applicable assessment tool(s) to be used 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 the 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. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflective competencies.

### **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 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 construction supervision at NQF level 4. 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 mentoring and leadership, logistics and certain refractory specialisations.

#### 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 within the field of refractories construction and maintenance and quality assurance practices and The assessor must have completed:

The assessor must have completed.

A similar qualification at or above this level or

 National certificate in construction supervision from the same family of qualifications on NQF 4 or above.

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.

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Fundamental	NI DO	-	c								
Field of Communication and		L	د	Core	NLRD	_	C	Flantive (short is in the			
Language				Materials			,	Processes	NLKU		ပ
Accommodate audience and context	8968	6	5	Demonstrate an understanding of	_						
needs in oral communication.			,	refractory materials and products		e	5	Install ceramic fibre		3	7
Miles pret and use information from texts.	8969	ო	ي. م	Processes and environment			1				
vertice texts for a range of communicative	8970	<b></b>	5	Install and maintain refraction.	0010			Handle and care for materials	12387	6	12
lee language and				brickwork/blockwork	0002	5	Z	People leading and developing			
occupational learning programmes	8973	e	2	Install and maintain castable/mouldable	9657	6	4	Support and C. 4- H- F			
Field of Physical, Mathematical.				refractory materials		>	>	aupport aria Guide the Leame	7875	4	÷-
Computer and Life Sciences				Install gunite materials for refractory	9659	3	ç	Supervise work unit to achieve work	10981	-	ç
Demonstrate understanding of numbers	9010	~	0	Cofet 11				objectives (individuals and teams)		t	2
and relationships among numbers and	2	>	4	salety and quality assurance				Facilitate the preparation and	To he		
number systems and interpreter				-				presentation of assessment evidence	renistered	+	t
numbers in different ways								by candidates			_
Use mathematics to investigate and	9011	3	5	Monitor and control quality assurance		4					
business and national issues.				practices (to be sourced)	:	n	 ρ	Business concepts			
Work with a wide range of patterns and	9012	6									
basic functions and solve related	-	°		Maintaining Occupational Health, Safety	8016	3		Relate to the role of business.		6	ц
problems.								customers and markets (to be		2	
Shape and motion in 2 and 3	9013	3	4				-	sourced)			
dimensional shapes in different contexts.											
Science		$\dagger$	T			-	-				
Read and interpret engineering drawings	9885	6	12								
Demonstrate knowledge of introductory	9122	2	4			+	┥				
Total		1									
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NATIONAL CERTIFCATE IN C	ONSTRUCTION SUPERVISION / FIRST LINE MANAGEMENT: CIVIL ENGINEERING
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NATIONAL CERTIFICATE IN RI	EFRACTORIES INSTALLATION
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# NATIONAL CERTIFICATE IN REFRACTORIES MASONRY NQF3

#### UNIT STANDARDS AT NQF LEVEL 3

- Title 1: Demonstrate an understanding of refractory materials and products
- Title 2: Install and maintain refractory brickwork / block work
- Title 3: Install and maintain castable / mouldable refractory materials
- Title 4: Install gunite materials for refractory linings
- Title 5: Install ceramic fibre

## UNIT STANDARDS AND SPECIFIC OUTCOMES IN NATIONAL CERTIFICATE IN REFRACTORIES MASONRY NQF3

# **UNIT STANDARDS AT NQF LEVEL 3**

1. Title: Demonstrate an understanding of refractory materials and products

Specific outcome 1.1:	Demonstrate an understanding of the composition of materials and
	products used in refractory installations or repairs,
Specific outcome 1.2:	Demonstrate an understanding of the purpose and function of materials or products used in refractory installations or repairs,
Specific outcome 1.3:	Demonstrate an understanding of material specifications and regulations
Specific outcome 1.4:	Demonstrate an understanding of equipment and mechanical aids used during refractory installation and maintenance procedures

#### 2. Title: Install and maintain refractory brickwork / blockwork

Specific outcome 2.1:	Collect information and organise activities for refractory brick
	work/block work installation and repair
Specific outcome 2.2:	Install refractory bricks/blocks
Specific outcome 2.3:	Remove and re-instate damaged refractory brickwork/blockwork
Specific outcome 2.4:	Perform end of work activities

# 3. Title: Install and maintain castable/mouldable refractory materials

Specific outcome 3.1:	Collect information and organise activities for castable/mouldable refractory materials installation and repair
Specific outcome 3.2:	Install castable/mouldable refractory materials
Specific outcome 3.3:	Remove and re-instate damaged castable/mouldable refractory materials
Specific outcome 3.4:	Perform end of work activities
4. Title: Install gunite n	naterials for refractory linings

Specific outcome 4.1:	Collect information and organise activities for gunite material
	installation
Specific outcome 4.2:	Install refractory gunite materials
Specific outcome 4.3:	Perform quality control and assurance activities
Specific outcome 4.4:	Perform end of installation activities

Specific outcome 5.1:	Collect information and organise activities for ceramic fibre materials installation
Specific outcome 5.2:	Install ceramic fibre materials
Specific outcome 5.3:	Perform guality control and assurance activities
Specific outcome 5.4:	Perform end of installation activities.