#### No. 926



### 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

#### Pulp and Paper

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 <u>www.saqa.org.za</u>. 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 5 November 2007.* All correspondence should be marked **Standards Setting** – **Pulp and Paper** 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



**QUALIFICATION:** Further Education and Training Certificate: Pulp and Paper Operations

SAQA QUAL ID	QUALIFICATION TITLE			
59077	Further Education and Training Certificate: Pulp and Paper Operations			
ORIGINATOR		PROVIDER		
SGB Pulp and Paper				
QUALIFICATION TYPE	FIELD	SUBFIELD		
Further Ed and Training	6 - Manufacturing,	Manufacturing and Assembly		
Cert	Engineering and			
	Technology	· ·		
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS	
Undefined	140	Level 4	Regular-Unit Stds	
			Based	

# PURPOSE AND RATIONALE OF THE QUALIFICATION Purpose:

This qualification is used to address the training needs of learners wishing to progress beyond NQF Level 2 in pulp and paper operations. The qualification allows the learner a choice of elective specialisation areas associated with the different operational areas of a pulp and paper production facility. This competence provides the foundation needed to take responsibility for a significant process in the pulp and paper manufacturing industry. It also provides the basis upon which further related learning and career development can take place.

Qualifying learners will:

- Apply problems solving strategies in a pulp and paper processing environment.
- Apply safety and environmental protection procedures in the workplace.
- Monitor and control pulp and paper operations in a range of specialised contexts.
- Maintain quality in a pulp and paper processing environment.

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

This qualification will contribute to the full development of the learner within the pulp and paper industry by providing recognition, further mobility and transportability within the 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 pulp and paper processing and maintenance fraternity.

# Rationale:

This qualification replaces the following:

- Further Education and Training: Chemical Pulp Manufacturing NQF Level 4 (ID 48643).
- Further Education and Training: Paper, Board or Tissue Manufacturing NQF Level 4 (ID 48644).
- Further Education and Training: Pulp and Paper Chemical Recovery NQF Level 4 (ID 48645).

This is the final qualification in a learning pathway for people working in the pulp and paper processing industry who need to progress beyond NQF Level 2 in Pulp and Paper Operations. The NQF Level 2, 3, and 4 qualifications in Pulp and Paper Operations are aimed at the learner who wants to gain competence in the skills needed for pulp and paper manufacturing operations in a pulp and paper mill.

The N.C. Pulp and Paper Operations NQF Level 4 allows the learner a choice of specialisation areas in the pulp and paper manufacturing industry. This competence provides the foundation needed to progress in the pulp and paper industry. Through the employment of competent personnel, employers and the industry have confidence that this critical work in the industry is efficiently carried out.

Typical learners are operating personnel working in a chemical or a pulp and paper processing plant. The pulp and paper industry is well established in South Africa and its success is dependant upon the efficient production of products. Achievement of this objective is largely dependant upon the competence, recognised by this qualification, of the people who operate processing equipment. An adequate number of people with these skills are needed to ensure that the pulp and paper production units in South Africa operate productively.

# RECOGNIZE PREVIOUS LEARNING?

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#### LEARNING ASSUMED IN PLACE

This qualification has been designed as the final in a series of four qualifications for pulp and paper operations in the pulp and paper processing and related manufacturing industry.

It is assumed that the learners are already competent in:

• National Certificate: Pulp and Paper Operations NQF Level 3 or equivalent.

• Communication, mathematical literacy, natural science and technology principles at NQF Level 3.

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 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

The Qualification consists of a Fundamental, a Core and an Elective Component.

To be awarded the Qualification, learners are required to obtain a minimum of 140 credits as detailed below.

### FUNDAMENTAL COMPONENT

The Fundamental Component consists of Unit Standards in:

- Mathematical Literacy at Level 4 to the value of 16 credits
- Communication at Level 4 in a First South African Language to the value of 20 credits
- Communication in a Second South African Language at Level 3 to the value of 20 credits

It is compulsory therefore for learners to do Communication in two different South African languages, one at Level 4 and the other at Level 3.

All Unit Standards in the Fundamental Component are compulsory.

### CORE COMPONENT

The Core Component consists of Unit Standards to the value of 53 credits all of which are compulsory.

### ELECTIVE COMPONENT

The Elective component of the qualification is made up of the following two sections:

Learners are to select Elective unit standards totalling 31 credits made up as follows:

At least 1 unit standard from the following unit standards:

• Produce chemical pulp; 114241 (Revised); Level 4;15 Credits.

• De-ink recycled fibres for use in pulp and paper manufacturing; 114256 (Revised); Level 4;15 Credits.

• Produce recyclable chemical compounds and steam by converting Kraft organic and inorganic pulping by-products; 114267 (Revised); Level 4;15 Credits.

• Produce recyclable chemical compounds and steam by converting magnesium sulphite organic and inorganic pulping by-products; 114280 (Revised); Level 4;15 Credits.

organic and inorganic pulping by-products; 114280 (Revised); Level 4,15 Credits.

• Produce chemical compounds by converting spent organic and inorganic pulping by-products using a fluidised bed reactor; 114240 (Revised); Level 4;12 Credits.

• Form and press paper, board or tissue; 114261 (Revised); Level 4;15 Credits.

Unit standards from the list below to make up 140 credits for the qualification:

• Demonstrate an understanding of the principles of work, energy and power in physics; 244097; Level 4; 6 Credits.

- Use automated control techniques to control a process; 244103; Level 4; 8 Credits.
- Apply integrated process control methods; 244100; Level 4; 15 Credits.
- Facilitate the preparation and presentation of evidence for assessment; 12544; Level 4; 4 Credits.
- · Coach a team member in order to enhance individual performance in work environment;
- 113909; Level 4; 5 Credits.
- Conduct outcomes-based assessment; 115753; Level 4; 15 Credits.
- Perform one-to-one training on the job; 117877; Level 4; 4 Credits.
- Explain basic economics; 117132; Level 4; 3 Credits.

# EXIT LEVEL OUTCOMES

1. Apply scientific principles in the pulp and paper processing industry.

Source: National Learners' Records Database

Qualification 59077

2. Act as a process expert to assist others to understand the process and operational issues better.

3. Control pulp and paper process operations in a range of specialised contexts.

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:

While performing integrated pulp and paper process operations, qualifying learners can:

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

- Responding to emergencies in a processing environment.
- Evident in Exit Level Outcome 2.
- Investigating process improvement methods.
- Evident in Exit Level Outcome 2 and 3.
- Applying operating procedures.
- Evident in Exit Level Outcome 3.
- Controlling variables impacting on process operations.
- Evident in Exit Level Outcome 2 and 3.

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

- Working in a coordinated team during system start-up and shut down.
- Evident in Exit Level Outcome 3.
- Participating in a task team.
- Evident in Exit Level Outcome 3.
- Co-ordinating one's work with that of others in the direct surrounding area, internal and external operations.

Evident in Exit Level Outcome 2 and 3.

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

- Controlling the integrated process.
- Evident in Exit Level Outcome 1 and 3.
- Planning and implementing one's own routine operational functions.
- Evident in all Exit Level Outcomes.
- Planning and implementing corrective action to maintain product quality.
- Evident in Exit Level Outcome 2 and 3.

Collect, analyse, organise and critically evaluate information by:

- Applying scientific principles to complex separation processes.
- Evident in Exit Level Outcome 1.
- Investigating process improvement methods.

Source: National Learners' Records Database

Qualification 59077

- Evident in Exit Level Outcome 2.
- Monitoring the impact of all process and product variables.
- Evident in all Exit Level Outcomes.
- Managing records, reports and stock.

Evident in Exit Level Outcome 2 and 3.

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

- Recording and interpretation of instrument readings.
- Evident in Exit Level Outcome 2 and 3.
- Making recommendations to the task team.
- Evident in Exit Level Outcome 2.
- Issuing a permit to work in a process environment.
- Evident in Exit Level Outcome 2.
- Preparing and presenting reports.
- Evident in Exit Level Outcome 2 and 3.

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

- Issuing a permit to work in a process environment.
- Evident in Exit Level Outcome 1.

• Controlling technologically advanced production equipment according to operating procedures.

- Evident in Exit Level Outcome 3.
- · Working and interpreting technologically advanced instrumentation and computer systems
- Evident in Exit Level Outcome 1 and 3.

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

- Participating in quality assurance practices.
- Evident in Exit Level Outcome 2 and 3.
- Adjusting equipment and machinery while taking cognisance of the downstream impact.
- Evident in all Exit Level Outcomes.

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 in the processing environment.
- Evident in Exit Level Outcome 2 and 3.
- Maintaining and applying quality practices in the processing environment.
- Evident in Exit Level Outcome 2 and 3.
- Performing core operating functions.
- Evident in Exit Level Outcome 1 and 3.

#### ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

• Chemical principles are applied in a process environment in accordance with industry standards.

• The properties of fibrous materials used in pulp and paper manufacturing are explained in terms of their applicability to pulp and paper processing operations.

Source: National Learners' Records Database

• The scientific basis and operational principles underlying complex separation processes are explained in accordance with the applications in the pulp and paper processing industry.

Associated Assessment Criteria for Exit Level Outcome 2:

 Assistance is provided by participating in a task team to solve process problems, improve plant safety, quality and processing efficiency.

- Process improvement methods are investigated and recommendations are made.
- The management functions of an organisation are described and applied to own activities.
- A permit to work in a process environment is issued in accordance with workplace procedures.

Associated Assessment Criteria for Exit Level Outcome 3:

- The process is controlled using various automated methods.
- The overall process is controlled while integrating the impact of all process and material variables.
- · Corrective action is taken to maintain product and process integrity.

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 comparison was made including Australia, New Zealand, Britain, Scotland, Canada, the USA, Sweden, Finland, Germany and relevant African countries.

USA, Canada, Scandinavia and Germany:

Despite the fact that the pulp and paper industry is very well-developed in all the countries in the extreme northern areas of the world, most operators are still trained on the job with some short courses offered by equipment suppliers.

In the USA staff is mostly trained on the specific machines they operate at the time of establishing a new mill. TAPPI (a technical association for the pulp, paper and converting industry) offers a wide range of short, technical courses for operating staff. A number of pulp and paper related university degrees are also offered in the USA.

Canada has the largest pulp operations in the world, but has no formal national qualifications registered. As is the international trend, most operator training is done on the job: However, a number of colleges offer a Pulp and Paper Operations Certificate (post school) training course. The courses generally train the learners from 7 to 9 months in general pulp and paper mill operations for entry level machine and utility operators. As in the USA, pulp and paper related degrees are offered by local universities.

The Scandinavian pulp and paper industry (including Sweden, Norway and Finland) follows the same trend. Most training is done on the job, with no vocational training leading to a qualification. As in the USA there are a variety of pulp and paper degrees on offer at universities in all three these countries.

Three year Paper Technology Diplomas are offered by several German Universities. Although these diplomas have a strong workplace emphasis, they are comparable to South African diplomas rather than vocational training qualifications. Subject content is similar to that contained in the technical part of the South African qualification, namely: industry background, machine operations and components, maintenance functions, computer skills with a technical project to complete the diploma.

#### Africa:

African countries with manufacturing facilities (including SADC countries) were searched for applicable qualifications or training programmes, but no relevant qualifications are offered in any of these countries. Similar to international companies, the majority of training is provided by equipment suppliers with three to five day short training courses. The only pulp and paper facility in the SADC outside South Africa is in Swaziland, learners from this facility will be trained according to the South African qualification.

#### New Zealand:

A comparison with the NZQA was included, because it is an educational structure comparable to the NQF. An internet search of the NZQA revealed three registered qualifications (National Certificates) ranging from Levels 2 to 4 in Pulp and Paper Manufacturing.

The New Zealand "National Certificate in Pulp and Paper Manufacturing (Level 2)" is an introduction to pulp and paper operations containing a compulsory core component consisting of units standards in communication, teamwork, employment relations, health, safety, quality, environmental protection and manufacturing process knowledge. The learner has to choose 10 credits from Elective Group A which contains unit standards dealing with specific pulp and paper industry skills and 19 credits from Elective Group B which is made up of general unit standards such as workplace safety, distribution, business administration and computer skills.

The compulsory core sections of the National Certificates in Pulp and Paper Manufacturing Levels 3 and 4 are common so that people wishing to progress from the Level 3 qualification to the Level 4 qualification have a common grounding in the principles of pulp and paper manufacturing. This core component consist of unit standards with a technical focus such as pumps and valves, chemistry and physics and the fundamentals of process control systems make up.

For competence in the "National Certificate in Pulp and Paper Manufacturing (Level 3)" the learner needs to prove competence in the 28 credits core unit standards, 35 credits from pulp and paper specialisation areas and 27 general electives. The general elective sections of both Level 3 and 4 qualifications also provide recognition for a range of manufacturing and generic industry skills; and cover areas such as workplace safety, distribution, business administration, and communications.

Qualification 59077

Just as in the South African NQF Level 4 qualification, learners completing the "National Certificate in Pulp and Paper Manufacturing (Level 4)" specialise in either pulpmaking, papermaking or chemical recovery. The learner needs to prove competence in a total of 120 credits which consist of 28 credits core unit standards and 35 credits specialisation electives. If all 28 credits for the core were obtained in the Level 3 qualification these credits are reflected here again.

The South African qualifications compare very well with the New Zealand qualifications, but the fact that the South African qualifications have a fundamental component of communication and mathematical unit standards is advantageous for the South African learner.

#### Australia:

An internet search of the AQF revealed that the following four qualifications are registered on the AQF:

- "Certificate I in Pulp and Paper Manufacturing".
- "Certificate II in Pulp and Paper Manufacturing".
- "Certificate III in Pulp and Paper Manufacturing".
- "Certificate IV in Pulp and Paper Manufacturing".

A comparison with these qualifications was included because the AQF is an educational structure comparable to the NQF.

The new Australian "Certificate I in Pulp and Paper Manufacturing" contains only a compulsory core consisting of five units in communication, safety, quality and the use of hand held tools which all have to be achieved. This qualification is not compulsory for entry to the pulp and paper qualifications as the majority of trainees enter the industry at Certificate II Level.

The Level 2 to 4 qualifications all have a compulsory core consisting mainly of communication, safety and quality. The Level 3 and 4 qualifications also include a compulsory unit on problem solving.

From Level 2 onwards the learner has to choose specialisation units from the following range of specialisation areas: Primary resources, pulping operations, chemical recovery and waste paper handling, waste paper operations, stock preparation, wet end operations, dry end operations, paper coating and finishing and converting. The Level 2 and 3 qualifications are completed with a choice of two elective units. The Level 2 and 3 elective component consist of a range of safety, emergencies, first aid, training, cranage and specialist technical skills Unit Standards.

The new Australian "Certificate IV in Pulp and Paper Manufacturing" has a compulsory core consisting of communication, productivity calculations, OHS policy and procedures, quality and advanced problem solving. This learner already specialises in one specific area and has to make a choice of one specialisation unit from the following range of specialisation areas: resources, pulping operations, chemical recovery and paper manufacture. The qualification is completed with a choice of three elective units ranging from leadership, workplace relationships, customer care, training and assessment, to cranage and sampling units.

The South African qualification includes similar core qualification structures and progressions from NQF Level 2 to NQF Level 4 and also uses separate qualifications to address pulp and paper production and pulp and paper hygiene products manufacturing. The main difference is that the Australian qualification requires of the learner to choose a specialisation area in Level 2, whereas the South African qualification offers the learner the opportunity to gain an overview of all the pulp and paper processes on Level 2 before choosing a specialisation area in Level 3.

#### Britain:

Source: National Learners' Records Database

Qualification 59077

A comparison with the British qualification was included, because the British pulp and paper industry is very well developed and the NVQ is an educational structure comparable to the NQF.

An internet search of the British NVQ and the Scottish SVQ revealed the following Level 2 and 3 qualifications:

- The PAA\VQSET Level 2 Certificate in Paper Technology.
- The PAA\VQSET Level 3 Certificate in Paper Technology.

The South African NQF Level 2 qualification compares very well with the British Level 2 qualification which is made up of six compulsory units in Health and Safety, quality, raw materials, papermaking processes, plant services and process control. The main difference is that the British qualifications contain no fundamental communication and mathematical units.

The PAA\VQSET Level 3 Certificate in Paper Technology has a compulsory core containing units on Health and Safety, quality, teamwork and problem solving. The learner has to choose between Group B units and Group C units to complete the qualification. Group B contains only papermaking units, whereas Group C contains general pulp and paper operations units such as chemical recovery, coating and finishing operations.

Being the highest pulp and paper qualification registered on the QCA, this Level 3 qualification compares with the content of the South African NQF Level 3 and 4 qualifications, but it is clear that the South African qualification provides the learner with more theoretical knowledge and practical competence. The South African NQF Level 4 qualification also provides the learner with the opportunity to progress to tertiary education.

#### Summary:

In conclusion, a comparison with similar international qualifications indicates that the focus is the same as those of the benchmark qualifications. Both local and international qualifications place considerable emphasis on safety, quality and problem solving skills and allow the learner to choose from a range of specialisation areas in the paper industry.

The Pulp and Paper Operations qualifications compare well with the best international qualifications and training programmes offered. The compulsory fundamental 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 most international learners and will increase transportability of the qualification considerably.

### ARTICULATION OPTIONS

This qualification follows a vertical progression from the introductory NQF Level 1, Chemical Operations Qualification and will enable the qualifying learner to progress to a technologist role through the National Certificate in Pulp and Paper Technology, NQF Level 5. In addition, each of these qualifications have elective specialisation areas associated with the different operational areas of a pulp and paper production facility.

This qualification follows a direct vertical progression from the NQF Level 3, Pulp and Paper Operations qualification and will enable the qualifying learner to progress to the National Diploma in Pulp and Paper Technology at NQF Level 5 and any other higher pulp and paper qualification still to be developed for the pulp and paper industry.

This qualification is suitable for a wide range of technically oriented supervisory careers.

The generic knowledge and expertise enables the learner to progress horizontally into a career where knowledge of processing operations is necessary. These include manufacturing

Qualification 59077

qualifications within, amongst others, the engineering, construction, chemical and pulp and paper industries.

Horizontal articulation within the processing industry can occur with the following registered NQF Level 4 qualifications:

 ID 48915: Further Education and Training Certificate: Manufacturing and Assembly Operations Supervision.

• ID 48919: Further Education and Training Certificate: Measurement, Control and Instrumentation.

ID 58538: Further Education and Training Certificate: Chemical Operations.

 New draft; Further Education and Training Certificate: Pulp and paper hygiene products manufacturing.

The fundamental and generic core learning components will equip the learner with credits which will be useful in other fields of learning that the learner might wish to change to at any future stage.

#### **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 ETQA's 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 pulp and paper 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

This gualification replaces gualification 48643, "Further Education and Training Certificate: Chemical Pulp Manufacturing", Level 4, 168 credits.

This gualification replaces gualification 48644, "Paper, Board or Tissue Manufacturing", Level 4, 176 credits.

This qualification replaces qualification 48645, "Pulp and Paper Chemical Recovery", Level 4, 158 credits.

Source: National Learners' Records Database

27/09/2007

#### No. 30348 83

### Rage:

• This qualification addresses the knowledge and competencies required by learners in the pulp and paper industries.

• Knowledge relating to the pulp and paper processing industries includes process specific technology, communication, mathematics, applied science, and SHEQ.

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

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	119472	Accommodate audience and context needs in oral/signed communication	Level 3	5
Fundamental	119457	Interpret and use information from texts	Level 3	5
Fundamental	119467	Use language and communication in occupational learning programmes	Level 3	5
Fundamental	119465	Write/present/sign texts for a range of communicative contexts	Level 3	5
Fundamental	9015	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Levei 4	6
Fundamental	119462	Engage in sustained oral/signed communication and evaluate spoken/signed texts	Level 4	5
Fundamental	119469	Read/view, analyse and respond to a variety of texts	Level 4	5
Fundamental	9016	Represent analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts	Level 4	4
Fundamental	119471	Use language and communication in occupational learning programmes	Level 4	5 –
Fundamental	7468	Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues	Level 4	6
Fundamental	119459	Write/present/sign for a wide range of contexts	Level 4	5
Core	14667	Describe and apply the management functions of an organization	Level 4	10
Core	244104	Issue a permit to work in a process environment	Level 4	4
Core	244105	Participate in a task team in a process environment	Level 4	· 4
Core	244089	Understand applications of Physical Chemistry in a processing environment	Level 4	6
Core	114246	Understand the properties of fibrous materials used in pulp and paper manufacturing	Level 4	10
Core	244101	Use a panel or a computer interface to control a process	Level 4	4
Core	244106	Use standard operating procedures to control a process from a panel or computer interface	Level 4	15
Elective	113909	Coach a team member in order to enhance individual performance in work environment	Level 3	5
Elective	117132	Explain basic economics	Level 3	3
Elective	117877	Perform one-to-one training on the job	Level 3	4
Elective	244100	Apply integrated process control methods	Level 4	15
Elective	246716	De-ink recycled fibres for use in pulp and paper manufacturing	Level 4	15
Elective	244097	Demonstrate an understanding of the principles of work, energy and power in physics	Level 4	6
Elective	12544	Facilitate the preparation and presentation of evidence for assessment	Level 4	4
Elective	246713	Form and press paper, board or tissue	Level 4	15
Elective	246718	Produce chemical compounds by converting spent organic and inorganic pulping by-products using a fluidised bed reactor	Level 4	12
Elective	246717	Produce chemical pulp	Level 4	15
Elective	246715	Produce recyclable chemical compounds and steam by converting Kraft organic and inorganic pulping by- products	Level 4	15

#### UNIT STANDARDS

Source: National Learners' Records Database

27/09/2007

84 No. 30348

# GOVERNMENT GAZETTE, 5 OCTOBER 2007

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	246714	Produce recyclable chemical compounds and steam by converting magnesium sulphite organic and inorganic pulping by-products	Level 4	15
Elective	244103	Use automated control techniques to control a process	Level 4	8
Elective	115753	Conduct outcomes-based assessment	Level 5	15

Page 12

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# UNIT STANDARD:

#### Form and press paper, board or tissue

SAQA US ID	UNIT STANDARD TITLE		
246713	Form and press paper, board o	Form and press paper, board or tissue	
ORIGINATOR	PROVIDER		
SGB Pulp and Paper			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	15

### **SPECIFIC OUTCOME 1**

Explain the fundamental principles applicable to the forming and pressing process.

# **SPECIFIC OUTCOME 2**

Explain the quality requirements of raw materials received.

# **SPECIFIC OUTCOME 3**

Assess raw materials quality in accordance with workplace specifications.

#### **SPECIFIC OUTCOME 4**

Monitor and control the forming and pressing process.



#### UNIT STANDARD:

# Produce recyclable chemical compounds and steam by converting magnesium sulphite organic and inorganic pulping by-products

SAQA US ID	UNIT STANDARD TITLE			
246714	Produce recyclable chemical compounds and steam by converting magnesium			
	sulphite organic and inorganic p	sulphite organic and inorganic pulping by-products		
ORIGINATOR PROVIDER			_	
SGB Pulp and Paper				
FIELD		SUBFIELD		
6 - Manufacturing, Engineering and Technology		Engineering and Related Design		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 4	15	

#### **SPECIFIC OUTCOME 1**

Explain the fundamental principles applicable to the process of converting magnesium sulphite organic and inorganic pulping by-products to chemical compounds.

# SPECIFIC OUTCOME 2

Explain the quality requirements of raw materials received.

#### SPECIFIC OUTCOME 3

Assess raw materials quality in accordance with workplace specifications.

# **SPECIFIC OUTCOME 4**

Monitor and control the converting process.



### UNIT STANDARD:

#### Produce recyclable chemical compounds and steam by converting Kraft organic and inorganic pulping by-products

SAQA US ID	UNIT STANDARD TITLE			
246715	Produce recyclable chemical co	Produce recyclable chemical compounds and steam by converting Kraft		
	organic and inorganic pulping by	/-products		
ORIGINATOR PROVIDER				
SGB Pulp and Paper				
FIELD		SUBFIELD		
6 - Manufacturing, Engineering and Technology		Engineering and Related Design		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 4	15	

#### SPECIFIC OUTCOME 1

Explain the fundamental principles applicable to the process of converting Kraft organic and inorganic pulping by-products to chemical compounds.

#### SPECIFIC OUTCOME 2

Explain the quality requirements of raw materials received.

#### SPECIFIC OUTCOME 3

Assess raw materials quality in accordance with workplace specifications.

#### **SPECIFIC OUTCOME 4**

Monitor and control the converting process.



# UNIT STANDARD:

# De-ink recycled fibres for use in pulp and paper manufacturing

SAQA US ID	UNIT STANDARD TITLE		
246716	De-ink recycled fibres for use in pulp and paper manufacturing		
ORIGINATOR		PROVIDER	
SGB Pulp and Paper			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	15

# **SPECIFIC OUTCOME 1**

Explain the fundamental principles applicable to the de-inking process.

### SPECIFIC OUTCOME 2

Explain the quality requirements of raw materials received.

# SPECIFIC OUTCOME 3

Assess raw materials quality in accordance with workplace specifications.

#### SPECIFIC OUTCOME 4

Monitor and control the de-inking process.



UNIT STANDARD:

Produce chemical pulp

SAQA US ID	UNIT STANDARD TITLE			
246717	Produce chemical pulp			
ORIGINATOR	TOR PROVIDER			
SGB Pulp and Paper				
FIELD		SUBFIELD	SUBFIELD	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 4	15	

# **SPECIFIC OUTCOME** 1

Explain the fundamental principles applicable to the chemical pulping process.

# SPECIFIC OUTCOME 2

Explain the quality requirements of raw materials received.

# SPECIFIC OUTCOME 3

Assess raw materials quality in accordance with workplace specifications.

# **SPECIFIC OUTCOME 4**

Monitor and control the chemical pulping process.



UNIT STANDARD:

### Produce chemical compounds by converting spent organic and inorganic pulping by-products using a fluidised bed reactor

SAQA US ID	UNIT STANDARD TITLE			
246718	Produce chemical compounds b	y converting spent organic	and inorganic	
	pulping by-products using a fluid	pulping by-products using a fluidised bed reactor		
ORIGINATOR	ORIGINATOR PROVIDER			
SGB Pulp and Paper				
FIELD		SUBFIELD		
6 - Manufacturing, Engineering and Technology		Engineering and Related Design		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 4	12	

#### **SPECIFIC OUTCOME 1**

Explain the fundamental principles applicable to the process of converting spent organic and inorganic pulping by-products to chemical compounds.

# SPECIFIC OUTCOME 2

Explain the quality requirements of raw materials received.

### **SPECIFIC OUTCOME 3**

Assess raw materials quality in accordance with workplace specifications.

# **SPECIFIC OUTCOME 4**

Monitor and control the converting process.