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## GOVERNMENT NOTICES

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### SOUTH AFRICAN QUALIFICATIONS AUTHORITY

No. 927

25 September 2009



### 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

#### Manufacturing and Assembly Processes

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.saqqa.org.za](http://www.saqqa.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 26 October 2009**. All correspondence should be marked **Standards Setting – SGB for Manufacturing and Assembly Processes** and addressed to

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ACTING DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

### QUALIFICATION:

#### *National Certificate: Cereals, Snacks, Pasta and Condiments Manufacturing*

SAQA QUAL ID	QUALIFICATION TITLE		
74189	National Certificate: Cereals, Snacks, Pasta and Condiments Manufacturing		
ORIGINATOR	PROVIDER		
SGB Manufacturing and Assembly Processes			
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 3	Regular-Unit Stds Based

*This qualification replaces:*

Qual ID	Qualification Title	NQF Level	Min Credits	Replacement Status
20197	National Certificate: Food and Beverages Processing: Cereals, Snacks, Pasta, Spices, Condiments and Culinary Processing	Level 3	120	Will occur as soon as 74189 is registered

### PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose:

This Qualification is an outcome of the revision of the National Certificate in Food and Beverage Processing: Cereals, Snacks, Pasta, Spices, Condiments and Culinary Processing NQF Level 3 (NLRD 20197).

A person acquiring this Qualification will be able to work in cereals, snacks, pasta or condiments manufacturing environment by performing all the necessary manufacturing processes applicable to the work environment, from intake of the raw material to product manufacturing and presentation of the final product for packaging. The learner will also apply quality control practices throughout the process to enhance quality assurance and food safety requirements of the final product.

This Qualification provides the learner with the opportunity to access skills and career opportunities in the following learning streams within the food manufacturing industry:

- Cereals manufacturing.
- Pasta manufacturing.
- Snacks manufacturing.
- Condiments manufacturing.

The following range statements are applicable to cereals, snacks, pasta or condiments manufacturing:

- Cereals: All types of dry, ready-to-eat, cold breakfast cereals, as well as dry, instant and non-instant breakfast cereals that need cooking or addition of hot water prior to consumption.

- Pasta: All types of dry pasta intended for further processing into meals.
- Snacks: All types of dry savoury snacks, e.g. chips, pretzels and popcorn.
- Condiments: Any relish, sauce or seasoning (including herbs and spices) added to food to impart flavour, or to compliment the dish. A condiment can be dry or in the form of a thick liquid or paste.

A person acquiring this Qualification will also be able to operate equipment applicable to the relevant manufacturing processes of his/her choice. Portable competencies such as performing quality control practices and knowledge about introductory microbiology and heating and cooling media will also be obtained. The person will be able to apply all relevant personal safety and food safety practices when performing relevant tasks.

This Qualification ensures mobility and progression within the cereals, snacks, pasta and condiments food manufacturing industry.

Rationale:

This Qualification addresses the workplace-based needs of the cereals, snacks, pasta or condiments manufacturing industry that have been expressed by both employers and employees. Typical learners will be:

- Persons who are currently working in a cereals, snacks, pasta or condiments manufacturing environment who do not have any formal qualification as recognition for their skills and knowledge.
- Learners with a broad knowledge and skills base in food handling practices who want to specialise in the cereals, snacks, pasta or condiments manufacturing industry.
- New entrants who want to develop employable skills in the cereals, snacks, pasta or condiments manufacturing industry.

This Qualification aims at providing formal recognition for competencies already obtained and will continue to do so by providing recognition to current workers in the cereals, snacks, pasta or condiments manufacturing industry. In addition, this Qualification provides the new entrant with the opportunity to obtain competencies in cereals, snacks, pasta or condiments manufacturing within the workplace, as well as in quality control and food safety practices, which will ensure food products that are healthy and safe for human consumption. In this way, value is added to workers' employability and competence and the sustainability of the cereals, snacks, pasta or condiments manufacturing industry is improved.

This Qualification provides the learner with competencies to be employed in different disciplines within the cereals, snacks, pasta or condiments manufacturing industry, as well as the flexibility to pursue careers within other sectors of the food manufacturing industry as indicated in the Articulation Possibilities. Besides manufacturing of cereals, snacks, pasta or condiments, the range of Core and Elective Unit Standards will allow the individual the opportunity to pursue careers within quality control, as well as to be introduced to some principles of team management and generic management. Skilled workers are one of the key players in better manufacturing standards and productivity, which may increase business prosperity. This Qualification will assist in social and economic transformation.

#### **RECOGNIZE PREVIOUS LEARNING?**

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#### **LEARNING ASSUMED IN PLACE**

- Communication at NQF Level 2.
- Mathematical Literacy at NQF Level 2.

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. Evidence can be presented in a variety of forms, including previous international or local qualifications, reports, testimonials, mentoring functions performed, portfolios, work records and performance records. As such, evidence should be judged according to the general principles of assessment. Learners who have met the requirements of any Unit Standard that forms part of this Qualification may apply for recognition of prior learning to the relevant ETQA. The applicant must be assessed against the specific outcomes and assessment criteria for the relevant Unit Standards. A Qualification will be awarded should a learner demonstrate that all the exit level outcomes of the Qualification have been attained.

Access to the Qualification:

Open to any person.

#### **QUALIFICATION RULES**

- All the Unit Standards in the Fundamental component (36 Credits) are compulsory.
- All the Unit Standards in the Core component (60 Credits) are compulsory.
- In addition, from the Elective component, the learner must choose one of the following Elective specialisations and complete Unit Standards to the value of 24 Credits from those listed for the specialisation. Elective strands include the following:

Cereals manufacturing; Choose the relevant Unit Standard(s) from the following list:

NLRD Number; Unit Standard title; NQF Level; Credits:

- ID 8863: Mill or grind a food product; NQF Level 3; 8 Credits.
- ID9072: Cook food products using continuous processing equipment; NQF Level 3; 8 Credits.
- ID 9070: Toast a food product in an oven toaster; NQF Level 3; 8 Credits.
- ID 8882: Roast beans or nuts; NQF Level 3; 8 Credits.
- ID 9074: Puff a food product using a pressure chamber; NQF Level 3; 9 Credits.
- ID 8808: Extrude food products using a continuous extruder; NQF Level 3; 10 Credits.
- ID 336761: Dry a food product during the manufacturing of cereals, snacks, pasta or condiments; NQF Level 3; 4 Credits.
- ID 336780: Cool a food product during the manufacturing of cereals, snacks, pasta or condiments; NQF Level 3; 4 Credits.
- ID 123355: Manufacture a dry food product by means of a roller dryer; NQF Level 4; 30 Credits.
- ID 9054: Coat or dip a food product using automated equipment; NQF Level 2; 6 Credits.

Snacks manufacturing; Choose the relevant Unit Standard(s) from the following list:

NLRD Number; Unit Standard title; NQF Level; Credits:

- ID 336762: Steep maize for manufacturing of corn snacks or starch; NQF Level 3; 4 Credits.
- ID 8783 : Peel fruit and vegetables for further processing; NQF Level 2; 4 Credits.
- ID 8784 :Shape fruit and vegetables for further processing; NQF Level 3; 10 Credits.
- ID 9054 : Coat or dip a food product using automated equipment; NQF Level 2; 6 Credits.
- ID 9072 : Cook food products using continuous processing equipment; NQF Level 3; 8 Credits.
- ID 8806 : Fry food products using vacuum or atmospheric frying equipment; NQF Level 3; 20 Credits.
- ID 8808: Extrude food products using a continuous extruder; NQF Level 3; 10 Credits.
- ID 9074: Puff a food product using a pressure chamber; NQF Level 3; 9 Credits.
- ID 9070: Toast a food product in an oven toaster; NQF Level 3; 8 Credits.

- ID 8882: Roast beans or nuts; NQF Level 3; 8 Credits.
- ID 336761: Dry a food product during the manufacturing of cereals, snacks, pasta or condiments; NQF Level 3; 4 Credits.
- ID 336780: Cool a food product during the manufacturing of cereals, snacks, pasta or condiments; NQF Level 3; 4 Credits.
- ID 336760: Pop maize kernels for manufacturing of popcorn; NQF Level 2; 3 Credits.

Pasta manufacturing; Choose the relevant Unit Standard(s) from the following list:

NLRD Number; Unit Standard title; NQF Level; Credits:

- ID 336759: Demonstrate an understanding of the origin, purpose and function of raw materials used in the manufacture of pasta products; NQF Level 3; 5 Credits.
- ID 8766: Mix or blend food raw materials for processing using automated equipment; NQF Level 2; 4 Credits.
- ID 8808: Extrude food products using a continuous extruder; NQF Level 3; 10 Credits.
- ID 336761: Dry a food product during the manufacturing of cereals, snacks, pasta or condiments; NQF Level 3; 4 Credits.
- ID 336780: Cool a food product during the manufacturing of cereals, snacks, pasta or condiments; NQF Level 3; 4 Credits.

Condiments manufacturing; Choose the relevant Unit Standard(s) from the following list:

NLRD Number; Unit Standard title; NQF Level; Credits:

- ID 336762: Steep maize for manufacturing of corn snacks or starch; NQF Level 3; 4 Credits.
- ID 120234: Pasteurise, thermise or vaccreate a liquid food product by means of a plate or tubular heat exchanger; NQF Level 3; 12 Credits.
- ID 8823: Pasteurise a food product by means of a batch pasteuriser; NQF Level 3; 6 Credits.
- ID 120259: Separate liquids using a centrifugal separator; NQF Level 3; 8 Credits.
- ID 8764: Fumigate food raw materials before further processing; NQF Level 3; 8 Credits.
- ID 8863: Mill or grind a food product; NQF Level 3; 8 Credits.
- ID 9072: Cook food products using continuous processing equipment; NQF Level 3; 8 Credits.
- ID 8882: Roast beans or nuts; NQF Level 3; 8 Credits.
- ID 336761: Dry a food product during the manufacturing of cereals, snacks, pasta or condiments; NQF Level 3; 4 Credits.
- ID 336780: Cool a food product during the manufacturing of cereals, snacks, pasta or condiments; NQF Level 3; 4 Credits.
- ID 9068: Prepare and process an aqueous and oil emulsion; NQF Level 4; 15 Credits.

### **EXIT LEVEL OUTCOMES**

1. Maintain and apply personal safety, food safety and quality control practices in a cereals, snacks, pasta or condiments manufacturing environment.
2. Carry out activities prior to manufacturing of cereals, snacks, pasta or condiments.
3. Manufacture cereals, snacks, pasta or condiments.
4. Communicate with clients in a variety of ways in a cereals, snacks, pasta and condiments manufacturing environment.

Critical Cross-Field Outcomes:

Critical Cross-Field Outcomes have been addressed by the exit level outcomes as follows:

Critical Cross-Field Outcomes:

Qualifying learners can:

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

- Maintaining and applying food safety, personal safety and quality control practices in a cereals, snacks, pasta or condiments manufacturing environment.
- Problem solving during processing and manufacturing tasks.

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

- Applying team-work during maintenance, personal and product safety practices and manufacturing procedures.
- Co-ordinating one's work with that of others in the direct surrounding area.

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

- Planning one's activities.
- Keeping organised, legible, coherent and focused records.

Collect, analyse, organise and critically evaluate information by:

- Performing quality control practices and evaluating the results.
- Keeping organised, legible, coherent and focused records.

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

- Reading and interpreting quality control documentation.
- Gathering and applying information regarding knowledge, processes and procedures in a cereals, snacks, pasta or condiments manufacturing environment.
- Keeping organised, legible, coherent and focused records.

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

- Working according to health and safety regulations.
- Performing quality control practices and evaluating the results.

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

- Problem solving during processing and manufacturing tasks.
- Reporting poor food safety, personal safety and hygiene conditions.
- Identifying poor quality products and reporting it.

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

- Maintaining and applying food safety, personal safety and quality control practices in a cereals, snacks, pasta or condiments manufacturing environment.
- Carrying out activities prior to manufacturing of cereals, snacks, pasta or condiments.
- Manufacturing cereals, snacks, pasta or condiments.

- Communicating in variety of ways in a cereals, snacks, pasta or condiments manufacturing environment.

**ASSOCIATED ASSESSMENT CRITERIA**

Associated Assessment Criteria for Exit Level Outcome 1:

- Knowledge and comprehension of microbiology and the effect of micro-organisms on personal health, hygiene and food product safety are applied according to standard food microbiological principles.
- Quality control practices are carried out in the cereals, snacks, pasta or condiments manufacturing environment according to the quality assurance policy and standard operating procedures.
- Knowledge and comprehension regarding personal safety practices in a cereals, snacks, pasta or condiments manufacturing environment are applied according to standard operating procedures, safety requirements and current legislation.
- Critical Control Points (CCPs) in a cereals, snacks, pasta or condiments manufacturing environment are monitored as an integral part of the applicable Hazard Analysis Critical Control Point (HACCP) system.

Associated Assessment Criteria for Exit Level Outcome 2:

- The ability to receive raw materials for manufacturing purposes is demonstrated according to standard operating procedures.
- Raw materials are graded and sorted prior to manufacturing and according to standard operating procedures.
- Raw materials and products are stored and routed according to standard operating procedures.
- Knowledge and comprehension of heating and cooling media is applied according to standard operating procedures.

Associated Assessment Criteria for Exit Level Outcome 3:

- Planning for manufacturing, as well as personal, equipment and product preparations are done according to standard operating procedures.
- Quality control practices are carried out in the specific context of the learner's work environment and according to the quality assurance policy and standard operating procedures by measuring, interpreting and controlling analytical and quality control parameters.
- Knowledge and comprehension of heating and cooling media is applied according to standard operating procedures.
- Prepared raw materials are processed further into final cereals, snacks, pasta or condiment products according to standard operating procedures.
  - Range: Processing refers to any combination of the following, relating to the specific elective strand:
    - Pre-batching of raw materials.
    - Mixing or blending of raw materials.
    - Milling or grinding.
    - Peeling of fruit or vegetables.
    - Shaping of fruit or vegetables.
    - Maize steeping.
    - Cooking.
    - Centrifugal separation.
    - Toasting.
    - Roasting beans or nuts.
    - Puffing.
    - Extrusion.
    - Popping of maize kernels.

- Drying.
- Cooling.
- Coating or dipping.
- Frying.
- Pasteurisation.
- Fumigation.
- Preparing and processing an aqueous and oil emulsion, e.g. mayonnaise.
- Processing parameters are set, monitored and controlled according to standard operating procedures.
- First line maintenance on manufacturing equipment is performed according to standard operating procedures.

Associated Assessment Criteria for Exit Level Outcome 4:

- Effective verbal communication is demonstrated during working with peers, colleagues and members of management.
- Quality control documentation is read and interpreted for application in further processing.
- Processing reports, records and documentation are identified, understood, organised, interpreted and presented in a legible, focused and coherent manner.
- Information is gathered and applied regarding knowledge, processes and procedures within a cereals, snacks, pasta and condiments manufacturing environment.

Integrated Assessment:

The applied competence (practical, foundational and reflexive competencies) of this Qualification will be achieved if a learner is able to perform all the necessary processes applicable to his/her work environment, from intake of the raw material to the final product ready for packaging.

The identification and solving of problems, team work, organising one-self, the using of applied science, 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 demonstrated. Assessment methods and tools must be designed to determine the whole person development and integration of applied knowledge and skills.

Applicable assessment tool(s) must be used to establish the foundational, reflexive and embedded knowledge applied to solve problems.

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

Assessors should develop and conduct their own integrated assessment by making use of a range of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflexive competencies. 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.

The Exit Level Outcomes of this Qualification can be assessed in one application.

Unit Standards in the Qualification must be used to assess specific and Critical Cross-Field Outcomes.

**INTERNATIONAL COMPARABILITY**

The following countries all support and implement vocational training and education, but not on a structured Qualifications framework as found in South Africa:



- Germany.
- France.
- Italy.
- Switzerland.
- United States of America.
- Canada.
- India.

With regards to vocational training and education, most of these countries implement decentralised and market-orientated programmes, both in technical and commercial training. Vocational education and training has been an essential part of European Union policy since the very establishment of the European Community.

In Germany, for instance, although no information could be found about specific vocational training towards cereal, snacks, pasta or condiments manufacturing, this country does implement a very pertinent vocational training system. When leaving schools, 70% of German students take a course of vocational training, mostly within their so-called "dual system". This system combines practical, on-the-job training with theoretical instruction at a part-time vocational school. Through their close cooperation, private business, industry and the public sector are sharing responsibility: Training regulations are drawn at federal level, while the states oversee the vocational schools. There are three types of vocational schools in Germany:

- Part-time vocational schools (Berufsschulen):

In the dual system, the vocational schools complement the training received in a company. Trainees attend a part-time vocational school one or two days a week for three years. The schools teach general subjects and theories that are easier understood in the classroom than at work. Usually about 40% of the school work is in basic academic subjects such as languages, mathematics and sciences and about 60% in subjects directly related to the chosen profession. Performance is assessed in an exam and documented by a certificate issued mostly by the chamber of industry and commerce.

- The full-time vocational school (Berufsfachschule):

This school offers courses lasting one to three years. These can be part of an apprenticeship or even replace an apprenticeship entirely.

- The vocationally oriented upper secondary school (Fachoberschule):

This school admits students with an intermediate school certificate. Courses cover theoretical instruction as well as training workshops and on-the-job training. They generally last two years and qualify participants for the specialised college (Fachhochschule).

On-the-job training (apprenticeships), last between two and three and a half years, depending on the complexity of the occupation. During this period, the apprentice earns a training allowance. The professional requirements that have to be learned during the vocational training are spelled out in training regulations. Based on proposals from the business associations and trade unions, these regulations are regularly revised and updated. The training concludes with an examination conducted by a board of examiners, generally organised by the local chamber of industry and commerce. On the board of examiners are representatives of employers as well as vocational school teachers.

Although no company is obliged to provide training, over 500 000 firms in all branches of the economy, including the independent professions and the public service, provide vocational training. Larger enterprises have their own training workshops, but smaller firms train their apprentices right on the job. Very specialised firms pool their resources and send their apprentice's to inter-company training centres in order to broaden their vocational skills.

The above system therefore compares well with the NQF based education and training system of our country.

In France, there are three ways in which young people can obtain vocational training:

- Initial vocational training in the school system after the age of 15.
- Apprenticeships for the 16-25 age groups.
- Jobseekers in the 16-25 age groups who have left school without a vocational Qualification, with the aim of obtaining initial skills to enter the working world.

In addition, France also offers continuing vocational training for people who have already embarked on their working life or are just entering it, very similar to the NQF based education and training system of South Africa.

The vocational training system of Switzerland is similar to the dual system of Germany, i.e. training is divided between two bodies: the employer and the technical college. The employer's task is to teach the learner practical skills, while the college teaches him/her the necessary theory relating to the chosen field, as well as general subjects.

Vocational education in India aims to develop skilled manpower through diversified courses to meet the requirements of mainly the unorganised sector and to instil self-employment skills in people through a large number of self-employment oriented courses. Vocational education is imparted through Industrial Training Institutes (ITIs) and polytechnics.

One of the weaknesses of the Indian education system is that it does not give due importance to vocational education. As a result there is a mismatch between the skilled manpower required and skilled manpower available. This will hurt the economic growth of India in the long run. The mindset in India is to put higher value on university degrees than on attaining a vocational Qualification. This has resulted in a situation where on the one hand there are scores of unemployed graduates and on the other hand there is a huge shortage of skilled workers such as plumbers and electricians. This is a situation which seems very similar to our South African terrain of skills shortages.

Training programmes and best practices in manufacturing of cereals, snacks, pasta and condiments were compared for the following countries, which all implement a Qualifications framework system:

- England, Wales and Northern Ireland.
- Scotland.
- Australia.
- New Zealand.

On the National Qualifications Framework (NQF) of England, Wales and Northern Ireland, a wide range of Vocational Qualifications (VQs) are accredited. These Qualifications range from broad-based VQs to specialist qualifications designed for a particular sector. In partnership with the Learning and Skill Council (LSC) and the Sector Skills Development Agency (SSDA), the Qualifications and Curriculum Authority (QCA) in England has a remit to extend the take-up of VQs. In line with the more flexible school curriculum, this included their use by more 14-19-year olds.

National Vocational Qualifications (NVQs) are work-related, competence-based Qualifications. They reflect the skills and knowledge needed to do a job effectively, and show that a candidate is competent in the area of work the NVQ represents. NVQs are based on national occupational standards, similar to the unit standards applied in South Africa.

In terms of NVQs, food processing and manufacturing technology forms part of the City and Guilds Food Manufacturing Qualifications (generic processing is one of the specialised routes),

which replace the former NVQ in Food and Drink Manufacturing Operations on Levels 1-3. The structure of the Qualifications is in the form of an award (1 unit), certificate (2 units) and diploma (3 units) for both Levels 2 and 3. This will mean that employers who may not want their working candidates in college for too long will be able to offer a VQ possibly as a short course (e.g. the certificate route) which underpins the NVQ.

On Level 2 the units for the Qualifications are as follows:

Mandatory:

- Principles of working in food manufacturing and workplace safety.

Optional (applicable to cereals, snacks, pasta and condiments manufacturing):

- Food processing in manufacture.
- Nutrition and food science.
- Retail operations in food manufacture.

On Level 3 the units for the Qualifications are as follows:

Mandatory:

- Principles of working in food manufacture and monitoring food safety

Optional (applicable to cereals, snacks, pasta and condiments manufacturing):

- Control of resources in food manufacture.
- Food science and technology in manufacture.
- Product design and technology in food manufacture.
- Quality assurance in food manufacture.

Although there are no specific units that cover the specific manufacturing of cereals, snacks, pasta or condiments, there are strong overlaps between the City and Guilds Qualifications and this South African Qualification, namely:

- Workplace safety.
- Monitoring food safety.
- Food science and technology in manufacture.
- Quality assurance in food manufacture.
- Product design and technology in food manufacture.

The City and Guilds Qualifications on both Levels 2 and 3 focus more or less on the same areas, although the Qualifications on Level 3 provides an extra focus on monitoring and control procedures, as well as on quality assurance. Although some overlap exists between the UK and South African Qualifications with regard to quality control and food product manufacturing, none of the mentioned NVQs provide access to training in the specific streams of cereals, snacks, pasta or condiments manufacturing.

The Scottish Vocational Qualifications (SVQs) provide two qualifications in Food and Drink Manufacture, namely one in Production Control Skills on Level 2 and one in Specialist Technical Skills on Level 3. It consists of mandatory and optional units.

Mandatory units include maintaining of workplace food safety standards, as well as health and safety in food manufacturing for the Level 2 Qualification and communication for the Level 3 Qualification.

**Level 2:**

Optional units related to food manufacturing include the following:

- Developing production specifications.
- Record keeping and reporting.
- Task hand-over and changeovers.
- Centralised product control.
- Planning production schedules.
- Size-reduction.
- Weighing, mixing and batching.
- Ingredient preparation.
- Heat treatment.
- Separation.
- Temperature control.
- Conversion control.
- Forming.
- Enrobing.
- Milling.
- Slicing.
- Packaging.
- Planning your activities.
- Team work.
- Quality control and quality assurance.
- Environmental safety.
- Maintenance.
- Materials handling (receiving, transfer, storing, stock control and supply, despatch).
- Manual cleaning and cleaning-in-place (CIP).
- Continuous improvement.
- Problem solving.
- Start-up and shut-down procedures.

**Level 3:**

Optional units related to food manufacturing include the following:

- Self-management.
- Monitoring food safety at critical control points.
- Monitoring health, safety and environmental systems.
- Monitoring product quality.
- Sampling for quality control.
- Testing for quality control.
- Monitor and control quality of work activities.
- Monitor and control throughput.
- Continuous improvement in food production and food safety.
- Quality audits.
- Evaluate and improve production.
- Raise health and food safety awareness.
- Environmental good practice.
- Maintenance of plant and equipment.
- Develop test samples.
- Develop product specifications.
- Develop and implement operational plans.
- Project management.
- Risk assessment.

The Level 2 Scottish qualification has definite overlap with this South African Qualification in terms of materials handling, certain production processes and quality assurance, but still does not focus on definite streams within the cereals, snacks, pasta or condiments manufacturing environment. Clearly the Level 3 Scottish Qualification with its focus on developmental and management disciplines has a total different aim than this South African Qualification.

The latter focuses in the Scottish Qualifications are reflected in the Level 5 South African National Certificate in Manufacturing Management (NLRD 49743).

The Australian Qualifications Framework (AQF) contains three qualifications (Certificate II, III and IV) in Food Processing, which consists of core, specialist and optional units. The core component focuses on mathematics, communication, food safety, occupational health and safety and quality assurance.

Food-related optional units include the following:

- Routine maintenance.
- Maintaining environmental standards.
- Implementing environmental policies and procedures.
- Implementing and maintaining sampling procedures and food safety programmes.
- Auditing.
- Continuous improvement.
- Reporting on workplace performance.
- Sensory analyses.
- Statistical process control.
- Team/group management.
- Supporting and mentoring individuals.

Food-related specialist units include the following:

- Cleaning and sanitising of equipment.
- Materials handling.
- Packaging.
- Preparation and mixing of raw materials.
- Inspection of raw materials and products.
- Raw materials/ingredient and process knowledge.
- Production skills:
  - Operation of processing equipment.
  - Monitoring process operation.
  - Coating.
  - Depositing.
  - Enrobing extrusion.
  - Filtration.
  - Frying.
  - Heat treatment.
  - Mixing/blending and cooking.
  - Drying.
  - Pumping.
  - Reduction.
  - Separation.
  - Spreads production.
- Planning.
- Process improvement.

Although the core and specialist components of the above-mentioned Qualifications compare well with the fundamental, core and elective components of the South African Qualification, it does not focus specifically on manufacturing of cereals, snacks, pasts or condiments.

Optional and specialist units around quality, management, food safety practices, planning, process improvement and problem solving pitches at a level slightly higher than this South African Qualification. This type of management skills are found in the Level 4 Further Education and Training Certificate in Generic Management (NLRD 57712) and the Level 5 National Certificate in Manufacturing Management (NLRD 49743) of South Africa.

On the New Zealand Qualification Authority (NZQA), three Qualifications exist for food processing, namely:

- National Certificate in Food and Related Products Processing (Level 2).

This Qualification serves as an introductory Qualification for people employed in the processing of food, beverages and related products. As an introductory qualification, it covers entry-level skills and knowledge, preparing people to play productive operational, services and storage roles in the food and related products processing industry. It would typically be completed in the first year of employment. The Qualification contains compulsory, elective and optional sections.

The compulsory section covers:

- Food safety and hygiene.
- Food processing skills.
- Health and safety.
- Numeracy and communication skills relevant to food processing.
- Quality in food processing.

The elective section allows candidates to choose from a range of additional standards to suit the nature of their particular work and includes competitive manufacturing, core health, core skills, food and related products processing, food safety, manufacturing processes, materials management, numbers, occupational health and safety, and powered industrial lift trucks.

The optional standards allow additional communication skills to be included in the trainee's programme where this is needed in the context of their employment situation or to assist the achievement of the compulsory and elective standards.

- National Certificate in Food and Related Products Processing (Level 3).

This Qualification is the second in the series of Qualifications designed for people employed in the processing of food, beverages and related products. As an intermediate Qualification, it builds on the National Certificate in Food and Related Products Processing (Level 2), and is intended for experienced process workers. This Qualification would typically be achieved in the second or third year of employment.

The Qualification contains a compulsory section, and elective A and B section.

The compulsory section covers:

- Food safety programme.
- Food processing skills.
- Health and safety.
- Quality in food processing.
- Team communications skills relevant to food processing.

Elective A section caters for either machine operators or quality control personnel. Elective B section allows candidates to select from a range of additional standards to suit their particular work and enterprise.

- National Certificate in Food and Related Products Processing (Level 4).

This Qualification is the third in the series of Qualifications designed for people employed in the processing of food, beverages and related products. It builds on the National Certificate in Food and Related Products Processing (Level 2), and the National Certificate in Food and Related Products Processing (Level 3), and is intended for team leaders or supervisors. The Qualification would typically be achieved in the third or fourth year of employment.

The Qualification contains a compulsory section, and an elective section.

The compulsory section covers:

- Compliance and regulatory control.
- Food line production skills.
- Health and safety.
- Communication skills.
- Management skills.
- Quality management skills.

The elective section allows candidates to select from:

- Training and assessing in the workplace.
- Occupational health and safety.
- Additional standards to suit the work environment.

Although there are elements of the South African fundamental, core and elective components in all of the above-mentioned New Zealand Qualifications, there is still no single Qualification that focuses specifically on the manufacturing of cereals, snacks, pasta or condiments. Also, the level of managerial skills required is somewhat higher than those required in the South African Qualification.

Conclusion:

There are definite overlaps between the Qualifications that were studied from abroad and the fundamental, core and elective components of this South African Qualification. Also, the principles of outcomes based training and assessment overseas are very similar to the South African NQF-based training and assessment system. There was, however, no single Qualification found abroad with a specific focus on the manufacturing of cereals, snacks, pasta or condiments, which makes this South African Qualification rather unique and specialised in its nature.

### **ARTICULATION OPTIONS**

This Qualification provides horizontal articulation (through Exit Level Outcome 1) with all other NQF Level 3 National Certificates in Food and Beverage Processing. Processing-specific horizontal articulation exists with the following Qualifications on NQF Level 3:

- ID 20658: National Certificate: Food and Beverage Processing: Plant Baking Processing, NQF Level 3.
- ID 20504: National Certificate: Food and Beverage Processing: Fruit and Vegetables Processing, NQF Level 3.
- ID 20198: National Certificate: Food and Beverage Processing: Oil and Fat Based Product Processing, NQF Level 3.

- ID 20200: National Certificate: Food and Beverage Processing: Oil Milling, NQF Level 3.

This Qualification articulates vertically with the Further Education and Training Certificate in Generic Management NQF Level 4 (ID 57712).

#### **MODERATION OPTIONS**

- Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor and moderator respectively with the relevant ETQA, or with another ETQA that has a Memorandum of Understanding 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, or with another ETQA that has a Memorandum of Understanding with the relevant ETQA.
- Assessment and moderation of assessment will be overseen by the relevant ETQA, or by another ETQA that has a Memorandum of Understanding with the relevant ETQA, according to the ETQA's policies and guidelines for assessment and moderation.
- 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 and 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**

For an applicant to register as an assessor, the following are essential:

- Anyone assessing a learner against this qualification must be registered as an assessor with the relevant ETQA, or with another ETQA that has a Memorandum of Understanding with the relevant ETQA.
- The applicant needs well-developed interpersonal skills, as well as subject matter and assessment experience.
- The applicant should have completed this Qualification or a similar Qualification than this one at NQF Level 3 or higher, with a minimum of 12 months field experience after.

#### **NOTES**

This Qualification replaces Qualification 20197, "National Certificate: Food and Beverages Processing: Cereals, Snacks, Pasta, Spices, Condiments and Culinary Processing", Level 3, 120 credits.

#### **UNIT STANDARDS**

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	119472	Accommodate audience and context needs in oral/signed communication	Level 3	5
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
Fundamental	9013	Describe, apply, analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts	Level 3	4
Fundamental	119457	Interpret and use information from texts	Level 3	5
Fundamental	9012	Investigate life and work related problems using data and probabilities	Level 3	5
Fundamental	119467	Use language and communication in occupational learning programmes	Level 3	5



	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	7456	Use mathematics to investigate and monitor the financial aspects of personal, business and national issues	Level 3	5
Fundamental	119465	Write/present/sign texts for a range of communicative contexts	Level 3	5
Core	120403	Apply good manufacturing practices as part of a food safety system	Level 2	4
Core	120416	Apply personal safety practices in a food or sensitive consumer product environment	Level 2	5
Core	120242	Demonstrate an understanding of heating and cooling media in a food-manufacturing environment	Level 2	4
Core	120235	Demonstrate an understanding of the concept of microbiology in a food handling environment	Level 3	6
Core	8782	Grade and sort food raw materials	Level 3	6
Core	120239	Monitor critical control points (CCPs) as an integral part of a hazard analysis critical control point (HACCP) system	Level 3	6
Core	12316	Perform first line maintenance on manufacturing or packing equipment	Level 3	7
Core	119802	Perform quality control practices in a food or sensitive consumer product operation	Level 3	6
Core	9047	Receive food raw materials	Level 3	8
Core	8804	Store and route food raw materials and products	Level 3	8
Elective	120405	Clean and sanitise a fast moving consumer goods (FMCG) processing system using an automated cleaning-in-place (CIP) system	Level 2	5
Elective	9054	Coat or dip a food product using automated equipment	Level 2	6
Elective	12258	Identify computerised systems in a manufacturing or processing system	Level 2	7
Elective	336763	Mix or blend food raw materials for processing using automated equipment	Level 2	4
Elective	8783	Peel fruit and vegetables for further processing	Level 2	4
Elective	8765	Pre-batch food raw materials	Level 2	4
Elective	252435	Apply basic invoicing and accounting principles	Level 3	6
Elective	244574	Apply knowledge of HIV/AIDS to a specific business sector and a workplace	Level 3	4
Elective	244611	Apply problem-solving techniques to make a decision or solve a problem in a real life context	Level 3	2
Elective	9072	Cook food products using continuous processing equipment	Level 3	8
Elective	336780	Cool a food product during the manufacturing of cereals, snacks, pasta or condiments	Level 3	4
Elective	12315	Demonstrate an understanding of basic machine operations in a manufacturing and or packaging environment	Level 3	7
Elective	336759	Demonstrate an understanding of the origin, purpose and function of raw materials used in the manufacturing of pasta	Level 3	5
Elective	336761	Dry a food product during the manufacturing of cereals, snacks, pasta or condiments	Level 3	4
Elective	8808	Extrude food products using a continuous extruder	Level 3	10
Elective	8806	Fry food products using vacuum or atmospheric frying equipment	Level 3	20
Elective	8764	Fumigate food raw materials before further processing	Level 3	8
Elective	242814	Identify and explain the core and support functions of an organisation	Level 3	6
Elective	242812	Induct a member into a team	Level 3	4
Elective	14665	Interpret current affairs related to a specific business sector	Level 3	10
Elective	336779	Mill or grind a food product	Level 3	8
Elective	8823	Pasteurise a food product by means of a batch pasteuriser	Level 3	6
Elective	120234	Pasteurise, thermise or vaccreate a liquid food product by means of a plate or tubular heat exchanger	Level 3	12
Elective	336760	Pop maize kernels for manufacturing of popcorn	Level 3	3
Elective	9074	Puff a food product using a pressure chamber	Level 3	9
Elective	8882	Roast beans or nuts	Level 3	8
Elective	120259	Separate liquids using a centrifugal separator	Level 3	8
Elective	8784	Shape fruit and vegetables for further processing	Level 3	10

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	336762	Steep maize for manufacturing of corn snacks or starch	Level 3	4
Elective	9070	Toast a food product in an oven toaster	Level 3	8
Elective	116942	Use a GUI-based word processor to create merged documents	Level 3	3
Elective	116940	Use a Graphical User Interface (GUI)-based spreadsheet application to solve a given problem	Level 3	6
Elective	9046	Determine the quality of food products using sensory evaluation	Level 4	10
Elective	242821	Identify responsibilities of a team leader in ensuring that organisational standards are met	Level 4	6
Elective	123355	Manufacture a dry food product by means of a roller dryer	Level 4	30
Elective	9068	Prepare and process an aqueous and oil emulsion	Level 4	15

**LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION**

**None**



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**UNIT STANDARD:**

***Demonstrate an understanding of the origin, purpose and function of raw materials used in the manufacturing of pasta***

<b>SAQA US ID</b>	<b>UNIT STANDARD TITLE</b>		
336759	Demonstrate an understanding of the origin, purpose and function of raw materials used in the manufacturing of pasta		
<b>ORIGINATOR</b>		<b>PROVIDER</b>	
SGB Manufacturing and Assembly Processes			
<b>FIELD</b>		<b>SUBFIELD</b>	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
<b>ABET BAND</b>	<b>UNIT STANDARD TYPE</b>	<b>NQF LEVEL</b>	<b>CREDITS</b>
Undefined	Regular	Level 3	5

***This unit standard does not replace any other unit standard and is not replaced by another unit standard.***

**SPECIFIC OUTCOME 1**

Demonstrate knowledge and understanding of the origin and manufacturing processes.

**SPECIFIC OUTCOME 2**

Demonstrate knowledge and understanding of the purpose, function, storage and use of raw materials.

**SPECIFIC OUTCOME 3**

Demonstrate knowledge and understanding of food safety practices and procedures.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

	<b>ID</b>	<b>QUALIFICATION TITLE</b>	<b>LEVEL</b>
Elective	74189	National Certificate: Cereals, Snacks, Pasta and Condiments manufacturing	Level 3



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

### UNIT STANDARD:

#### *Pop maize kernels for manufacturing of popcorn*

SAQA US ID		UNIT STANDARD TITLE	
336760		Pop maize kernels for manufacturing of popcorn	
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	3

*This unit standard does not replace any other unit standard and is not replaced by another unit standard.*

#### SPECIFIC OUTCOME 1

Demonstrate an understanding of popping maize kernels.

#### SPECIFIC OUTCOME 2

Prepare to pop maize kernels.

#### SPECIFIC OUTCOME 3

Pop maize kernels prior to further processing.

#### SPECIFIC OUTCOME 4

Perform activities after popping of maize kernels.

#### QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	74189	National Certificate: Cereals, Snacks, Pasta and Condiments manufacturing	Level 3



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**UNIT STANDARD:**

***Dry a food product during the manufacturing of cereals, snacks, pasta or condiments***

<b>SAQA US ID</b>	<b>UNIT STANDARD TITLE</b>		
336761	Dry a food product during the manufacturing of cereals, snacks, pasta or condiments		
<b>ORIGINATOR</b>		<b>PROVIDER</b>	
SGB Manufacturing and Assembly Processes			
<b>FIELD</b>		<b>SUBFIELD</b>	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
<b>ABET BAND</b>	<b>UNIT STANDARD TYPE</b>	<b>NQF LEVEL</b>	<b>CREDITS</b>
Undefined	Regular	Level 3	4

***This unit standard does not replace any other unit standard and is not replaced by another unit standard.***

**SPECIFIC OUTCOME 1**

Demonstrate an understanding of drying of food products.

**SPECIFIC OUTCOME 2**

Prepare to dry a food product.

**SPECIFIC OUTCOME 3**

Dry a food product.

**SPECIFIC OUTCOME 4**

Perform activities after drying.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

	<b>ID</b>	<b>QUALIFICATION TITLE</b>	<b>LEVEL</b>
Elective	74189	National Certificate: Cereals, Snacks, Pasta and Condiments manufacturing	Level 3



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

## UNIT STANDARD:

*Steep maize for manufacturing of corn snacks or starch*

SAQA US ID		UNIT STANDARD TITLE	
336762		Steep maize for manufacturing of corn snacks or starch	
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	4

*This unit standard does not replace any other unit standard and is not replaced by another unit standard.*

**SPECIFIC OUTCOME 1**

Demonstrate an understanding of maize steeping.

**SPECIFIC OUTCOME 2**

Prepare to steep maize.

**SPECIFIC OUTCOME 3**

Steep maize prior to further processing.

**SPECIFIC OUTCOME 4**

Perform activities after maize steeping.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

ID	QUALIFICATION TITLE	LEVEL
Elective 74189	National Certificate: Cereals, Snacks, Pasta and Condiments manufacturing	Level 3



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**UNIT STANDARD:*****Mix or blend food raw materials for processing using automated equipment***

<b>SAQA US ID</b>	<b>UNIT STANDARD TITLE</b>		
336763	Mix or blend food raw materials for processing using automated equipment		
<b>ORIGINATOR</b>	<b>PROVIDER</b>		
SGB Manufacturing and Assembly Processes			
<b>FIELD</b>	<b>SUBFIELD</b>		
6 - Manufacturing, Engineering and Technology	Fabrication and Extraction		
<b>ABET BAND</b>	<b>UNIT STANDARD TYPE</b>	<b>NQF LEVEL</b>	<b>CREDITS</b>
Undefined	Regular	Level 2	4

***This unit standard does not replace any other unit standard and is not replaced by another unit standard.***

**SPECIFIC OUTCOME 1**

Demonstrate an understanding of the role of mixing or blending in product formulation.

**SPECIFIC OUTCOME 2**

Prepare for mixing or blending of food raw materials.

**SPECIFIC OUTCOME 3**

Mix or blend food raw materials.

**SPECIFIC OUTCOME 4**

Perform end-of-mixing or blending procedures.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

	<b>ID</b>	<b>QUALIFICATION TITLE</b>	<b>LEVEL</b>
Elective	74189	National Certificate: Cereals, Snacks, Pasta and Condiments manufacturing	Level 3



## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**UNIT STANDARD:*****Mill or grind a food product***

SAQA US ID	UNIT STANDARD TITLE		
336779	Mill or grind a food product		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	8

***This unit standard does not replace any other unit standard and is not replaced by another unit standard.***

**SPECIFIC OUTCOME 1**

Demonstrate an understanding of on the milling or grinding of food products.

**SPECIFIC OUTCOME 2**

Prepare for milling or grinding of a food product.

**SPECIFIC OUTCOME 3**

Mill or grind a food product.

**SPECIFIC OUTCOME 4**

Perform end of milling or grinding procedures.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

	<b>ID</b>	<b>QUALIFICATION TITLE</b>	<b>LEVEL</b>
Elective	74189	National Certificate: Cereals, Snacks, Pasta and Condiments manufacturing	Level 3





## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**UNIT STANDARD:**

***Cool a food product during the manufacturing of cereals, snacks, pasta or condiments***

<b>SAQA US ID</b>	<b>UNIT STANDARD TITLE</b>		
336780	Cool a food product during the manufacturing of cereals, snacks, pasta or condiments		
<b>ORIGINATOR</b>	<b>PROVIDER</b>		
SGB Manufacturing and Assembly Processes			
<b>FIELD</b>	<b>SUBFIELD</b>		
6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly		
<b>ABET BAND</b>	<b>UNIT STANDARD TYPE</b>	<b>NQF LEVEL</b>	<b>CREDITS</b>
Undefined	Regular	Level 3	4

***This unit standard does not replace any other unit standard and is not replaced by another unit standard.***

**SPECIFIC OUTCOME 1**

Demonstrate an understanding of cooling of food products.

**SPECIFIC OUTCOME 2**

Prepare to cool a food product.

**SPECIFIC OUTCOME 3**

Cool a food product.

**SPECIFIC OUTCOME 4**

Perform activities after cooling.

**QUALIFICATIONS UTILISING THIS UNIT STANDARD**

	<b>ID</b>	<b>QUALIFICATION TITLE</b>	<b>LEVEL</b>
Elective	74189	National Certificate: Cereals, Snacks, Pasta and Condiments manufacturing	Level 3