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Edition 5

SOUTH AFRICAN NATIONAL STANDARD

Food safety management — Requirements for prerequisite programmes (PRPs)

WARNING

This document references other
documents normatively.

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Table of changes

Change No.	Date	Scope

Foreword

This South African standard was prepared by National Committee SABS/TC 034/SC 17, *Food products – Hygiene practices in the food industry*, in accordance with procedures of the South African Bureau of Standards, in compliance with annex 3 of the WTO/TBT agreement.

This document was approved for publication in July 2019.

This document supersedes SANS 10049:2012 (edition 4.1).

This document is referenced in the South African Qualifications Authority Act, 1995 (Act No. 58 of 1995).

Reference is made in the introduction to the "relevant national legislation". In South Africa this means the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972) and the Hazardous Substances Act, 1973 (Act No. 15 of 1973).

Reference is made in 6.1.2(b), 7.2.1.1, 8.1, 8.2.2, 8.3.2, 8.9.3, 8.10.4, 8.13.1, and 8.13.4 to the "relevant national legislation". In South Africa this means the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972).

Reference is made in 6.1.2(b), 7.4.5.5 to the "relevant national legislation". In South Africa this means the Hazardous Substances Act, 1973 (Act No. 15 of 1973).

Reference is made in 6.1.2(b), 7.4.6.3 to the "relevant national legislation". In South Africa this means the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947).

Reference is made in 7.3.2.3 to the relevant national legislation. In South Africa this means the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).

Annex A is for information only.

Compliance with this document cannot confer immunity from legal obligations.

Introduction

This standard plays an integral part in the food chain, from primary production to the final consumer, by setting out the necessary good practices for the handling of food in such a way that the safety of the consumer is ensured.

All food handled is expected to meet minimum safety requirements as required by customers and regulatory authorities. It is therefore essential that levels of undesirable substances are sufficiently low, and that their concentration in the food meant for human consumption is consistently below the level of concern. Undesirable substances are normally referred to as food safety hazards, which can be biological (for example, pathogenic microorganisms, insects, pests), chemical (for example, allergens, lubricants, cleaning chemicals, pesticide residue, antibiotics) and physical (for example, glass, wood splinters, metal pieces) substances that could harm the consumer immediately at consumption, as an injury, or over a longer period of time leading to long-term illness or even death. These food safety hazards can be introduced into food during inappropriate and uncontrolled food handling practices.

Introduction *(concluded)*

Food handling refers to the handling of food in its raw or unprocessed state, and during production, processing, packaging, transportation, delivery and display. Food handling areas could therefore include farms, pack houses, fresh produce markets, manufacturing facilities (for example, packaging material, food contact surfaces), factory shops, catering units and kitchens, restaurants, butcheries, retailers, distribution centres and transporting vehicles.

The practices described in this standard are aimed at assisting the food handling organizations (FHO) to manage its operations to prevent or control the contamination of food, either through direct contamination or as a result of cross-contamination. It further aims to assist the food handling organizations to initiate the operations of the business based on a basic level of hygiene. This is normally referred to as a prerequisite programme (PRP), which is the foundation for further development towards more extensive food safety management systems.

The food handling organization is expected to abide by the relevant national legislation (see foreword), and to consider the use of the relevant national or international standards (or both) to assist it in the development of a prerequisite programme (PRP) system that will cater for the handling of safe food.

This standard has been designed to assist the food handling organizations by

- a) defining management participation in establishing, implementing and reviewing programmes and documented procedures which are essential for establishing successful prerequisite programme(s) (PRP(s)),
- b) dealing with the hygienic design of buildings and equipment,
- c) outlining the requirements for the establishment and implementation of hygienic practices which include
 - 1) processes that ensure that the food handling environment is clean and suitable for food production,
 - 2) practices that maintain the building and equipment in efficient operation, and
 - 3) practices that relate to the prevention of contamination during manufacture usually related to people, surfaces, air and the segregation of the raw and the cooked food product (i.e. Good Manufacturing Practice (GMP)),
- d) describing the necessary requirements for the processing and production of safe food suitable for consumption from specified raw materials. (This involves the design of a suitable process to control relevant food safety hazards together with a suitable process control system and effective management of the process.),
- e) outlining programmes that address the processing area such as pest control, refuse and waste control, and personal hygiene, and
- f) outlining programmes that address the training of staff, record keeping, traceability, and control of suppliers.

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Food safety management – Requirements for prerequisite programmes (PRPs)

1 Scope

1.1 This standard contains the requirements for the development, establishment, implementation, maintenance and continual improvement of prerequisite programmes (PRPs) for food safety management.

1.2 This standard is applicable to all food handling activities of food and beverages for human consumption.

2 Normative references

The following referenced documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. Information on currently valid national and international standards can be obtained from the South African Bureau of Standards.

ISO 22000:2018, *Food safety management systems – Requirements for any organization in the food chain.*

SANS 241-1, *Drinking water – Part 1: Microbiological, physical, aesthetic and chemical determinands.*

SANS 1828, *Cleaning chemicals for use in the food industry.*

SANS 1853, *Disinfectants and detergent-disinfectants for use in the food industry.*

SANS 5763, *Efficacy of cleaning plant, equipment and utensils: swab technique.*

SANS 14159, *Safety of machinery – Hygiene requirements for the design of machinery.*

SANS 17025/ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories.*

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3 Definitions

For the purpose of this document, the following definitions apply.

3.1

acceptable

adequate

appropriate

suitable

acceptable to the authority administering this standard, or to the parties concluding the purchase contract, or to parties implementing this standard, as relevant, in such a way that the intended purpose of this standard is achieved

3.2

audit

systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled

NOTE 1 Internal audits, sometimes called first-party audits, are conducted by, or on behalf of, the organization itself for management review and other internal purposes, and may form the basis for an organization's declaration of conformity. In many cases, particularly in smaller organizations, independence can be demonstrated by the freedom from responsibility for the activity being audited.

NOTE 2 External audits include those generally termed second- and third-party audits. Second-party audits are conducted by parties having an interest in the organization, such as customers, or by other persons on their behalf. Third-party audits are conducted by external, independent auditing organizations, such as those providing certification and registration of conformity to SANS 9001 or SANS 14001.

3.3

cleaning

action(s) dealing with the removal of soil, food residue, dirt, grease or other objectionable matter

3.4

cleaning in place

CIP

cleaning of equipment by circulation of cleaning and rinse solutions without the dismantling of equipment

3.5

competent

ability to apply knowledge and skills to achieve intended results

3.6

contamination

occurrence of any undesirable matter in food or in the food environment from a contaminating source which can be physical, chemical, biological or allergenic

3.7

correction

action to eliminate a detected nonconformity (3.16)

NOTE 1 A correction includes the handling of potentially unsafe products and can therefore be made in conjunction with a corrective action (3.8).

NOTE 2 A correction may be, for example, reprocessing, further processing or elimination of the adverse consequences of the nonconformity (or both) (such as disposal for other use or specific labelling).

[ISO 22000:2018]

3.8

corrective action

action to eliminate the cause of a nonconformity (3.16) and to prevent recurrence

NOTE 1 There can be more than one cause for a nonconformity.

NOTE 2 Corrective action includes cause analysis.

[ISO 22000:2018]

3.9

cross-contamination

contamination produced when a food process, a food product or a raw material contaminates other processes, food products or raw materials indirectly from one source to another, either with food safety hazards or odour and flavour

3.10

disinfection

application of disinfectants or physical agents and processes that are suitable for use in the food industry in order to kill most vegetative forms of pathogenic and other microorganisms (but not necessarily all bacterial and fungal spores, mycobacterium, rickettsia or viruses)

3.11

documented procedure

written procedure, in any form or type of medium, of a specified way to carry out an activity or a process

3.12

food handling organization

FHO

business which, during its operations, produces, processes, prepares, manufactures, stores, transports, distributes or sells foodstuffs or is engaged in any activity which might impact on the safety of such foodstuffs

3.13

food safety hazard

biological, chemical or physical agent in food, or condition of food, with the potential to cause an adverse health effect

NOTE 1 The term "hazard" is not to be confused with the term "risk" which, in the context of food safety, means a function of the probability of an adverse health effect (for example, becoming diseased) and the severity of that effect (for example, death, hospitalization or absence from work) when exposed to a specified hazard. Risk is defined in ISO/IEC Guide 51 as the combination of the probability of occurrence of harm and the severity of that harm.

NOTE 2 Food safety hazards include allergens.

NOTE 3 In the context of feed and feed ingredients, relevant food safety hazards are those that might be present in or on feed or feed ingredients (or both) and that could subsequently be transferred to food through animal consumption of feed and thus have the potential to cause an adverse human health effect. In the context of operations other than those directly handling feed and food (for example, producers of packaging materials or cleaning agents), relevant food safety hazards are those hazards that can be directly or indirectly transferred to food because of the intended use of the provided products or services (or both) and thus have the potential to cause an adverse human health effect.

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3.14

hazardous substance

material that poses a threat to human health or to the environment (or both)

3.15

high-risk area

physically segregated area, designed to a high standard of hygiene, where practices relating to personnel, ingredients, equipment, packaging and environment aim to prevent product contamination by pathogenic microorganisms

NOTE There are facilities where the entire food handling organization (FHO) is a high risk area or where just parts of the FHO are high risk areas.

3.16

nonconformity

non-fulfilment of a requirement

[ISO 22000:2018]

3.17

prerequisite programme(s)

PRP(s)

basic conditions and activities that are necessary to maintain a hygienic environment throughout the food chain suitable for the production, handling and provision of safe end food products and safe food for human consumption

NOTE The prerequisite programmes needed depend on the segment of the food chain in which the organization operates and the type of organization. Examples of equivalent terms are: Good Agricultural Practice (GAP), Good Hygiene Practice (GHP), Good Laboratory Practice (GLP), Good Manufacturing Practice (GMP), Good Distribution Practice (GDP), Good Veterinary Practice (GVP), Good Production Practice (GPP), and Good Trading Practice (GTP).

3.18

processing

action whereby a foodstuff is subjected to a process that changes its original state

3.19

processing aid

any substance not consumed as a food by itself, intentionally used in the processing of raw materials, foods or their ingredients to fulfil a certain technological purpose during treatment or processing, and which may result in the unintentional but technically unavoidable presence of the residues of the substance or its derivatives in the final product, provided that these residues do not present any health risk and do not have any technological effect on the finished product

3.20

record

document that provides objective evidence of actions undertaken or results achieved

3.21

rework

clean, unadulterated food that has been removed from processing for reasons other than insanitary conditions or that has been successfully reconditioned by reprocessing and that is suitable for use as food

3.22

verification

confirmation, through the provision of objective evidence, that specified requirements have been fulfilled

3.23

waste

unwanted or undesired material, including hazardous substances and food product that is not fit for human consumption or that does not comply with food safety requirements

4 General requirements

Exclusions and alternative measures implemented are permitted. These need to be justified by documented evidence to ensure that food safety is not compromised. Any exclusions or alternative measures adopted should not affect the ability of the food handling organization to comply with the requirements of this standard.

5 Documentation requirements

5.1 General

5.1.1 The FHO shall establish a process for the identification and application of all relevant national legislation, standards and other requirements.

5.1.2 The FHO shall establish, document, implement and maintain the requirements of this standard to effectively manage food safety conforming to the requirements of this standard, regardless of the size and nature of the said FHO.

5.1.3 The scope of the PRP shall be clearly specified and shall cover the FHO's product(s), the process(es) involved, as well as the food handling area(s). It shall be communicated and reviewed to the extent needed by the organization to ensure its effective development, implementation and maintenance.

NOTE 1 Where the term "documented procedure" appears within this standard, this means that the procedure is established, documented, implemented and maintained. A single document may address the requirements for one or more procedures. A requirement for a documented procedure may be covered by more than one document.

NOTE 2 The extent of the PRP documentation can differ from one FHO to another due to

- a) the size of the organization and its type of activities,
- b) the complexity of processes and their interactions, and
- c) the competence of personnel.

NOTE 3 The documentation can be in any form or type of medium.

5.2 Control of documents and records

5.2.1 The FHO shall ensure the establishment and implementation of documented procedures for the control of documents and records.

5.2.2 Documents shall be controlled as follows:

- a) there shall be an approval of documents for adequacy before issue;
- b) there shall be a review and an update of documents, as necessary, as well as re-approval of these documents;
- c) changes to documents and their current revision status shall be identified;
- d) the current versions of applicable documents shall be made available at points of use;
- e) documents shall remain legible and readily identifiable;

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- f) relevant documents of external origin shall be identified and their distribution controlled; and
- g) the unintended use of obsolete documents shall be prevented and an application of a suitable method for their identification be established, if retained for any purpose.

5.2.3 Records shall be established and maintained to provide evidence of conformity to requirements and of the effective operation of the PRP. Records shall be

- a) clearly identified for traceability and easy access,
- b) suitably stored to prevent deterioration and easy access,
- c) protected to prevent damage,
- d) easily retrievable,
- e) kept for a retention period of a minimum of 1 year, or in accordance with other requirements, including customer requirements, and
- f) suitably disposed of.

5.2.4 Records of all processes required to ensure the safety of food shall be verified at suitable pre-determined intervals by a suitably qualified and experienced person, who shall sign the records to show that the verification has taken place, and to demonstrate that the process has been carried out under the required conditions.

6 Management requirements

6.1 The PRP policy

6.1.1 Top management shall define, implement, document, communicate and maintain its policy and objectives for the PRP.

6.1.2 The PRP policy shall be appropriate to the purpose of the FHO and shall include, but is not limited to

- a) the commitment to the implementation of a PRP,
- b) the commitment to conform to relevant national legislation (see foreword) and with mutually agreed requirements of customers,
- c) being supported by measurable objectives for the PRP, and
- d) being reviewed for continued suitability.

6.1.3 Top management shall ensure that this policy and objectives is communicated, implemented and maintained at all levels within the organization.

6.2 Responsibilities and authorities

6.2.1 Responsibilities and authorities shall be defined and communicated within the FHO to ensure the effective operation and maintenance of the PRP.

6.2.2 Top management shall appoint personnel with the responsibility and authority of ensuring supervision of all PRP practices, operations and requirements of this standard.

6.2.3 Top management shall ensure that relevant statutory, regulatory and customer food safety requirements are determined, recorded and are met, as well as the promotion of awareness thereof.

6.2.4 Top management shall ensure that all outsourced processes adhere to the relevant PRP requirements.

6.2.5 An organogram of the organizational structure, showing the relevant positions and responsibilities of employees who have an impact on PRPs, shall be maintained.

6.3 Management representatives

A management representative shall be appointed and shall, irrespective of other responsibilities and duties, act as the management representative of the PRP and shall have the responsibility and authority to

- a) ensure that the PRP is established, implemented, maintained and continually improved in accordance with the requirements of this standard, and
- b) report on the effectiveness and suitability of the PRP to management and whether any need exists for improving the system.

NOTE The management representative is a suitably qualified and experienced individual who reports to, or is part of, top management.

6.4 Resources

6.4.1 Top management shall assess which resources are needed for the PRP, and shall commit themselves in writing to provide appropriate resources for the establishment, implementation, maintenance and continued improvement of the PRP.

6.4.2 The resources shall include time, competent personnel, suitable and adequate infrastructure, work environment, equipment and funding in order to implement, maintain and continually improve the PRP.

6.4.3 Training needs shall be established for all personnel involved in the implementation and maintenance of the PRP. Effectiveness of training shall be evaluated.

6.5 Management review

6.5.1 Top management shall review activities associated with the PRP at least annually, or as frequently as is deemed necessary, to measure the effectiveness of the PRP(s) and to identify opportunities for continual improvement.

6.5.2 Records of management reviews shall be maintained.

6.5.3 The input management review shall include, but is not limited to, information on:

- a) follow-up actions from previous management reviews;
- b) a review of any emergency situations and recalls;
- c) a review of trend analysis on customer and consumer complaints;
- d) a review of nonconformities and corrective action, as well as product disposal;

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- e) analysis of results of the PRP verification activities;
- f) a review of results from audits and verification activity analyses;
- g) changing circumstances that could affect the PRP;
- h) changes in legislation; and
- i) the effectiveness of the measures taken to protect against potential contaminants.

6.5.4 The output from management review shall include decisions and actions related to

- a) recommendations for improvement,
- b) resource needs, and
- c) the suitability of the PRP policy and related objectives.

6.6 Outsourced activities

6.6.1 Outsourced activities may include

- a) processes (for example, packing of end products, labelling, partial manufacturing), and
- b) services (for example, transportation, maintenance, pest control, cleaning, and laundering).

6.6.2 Management shall ensure that outsourced activities are controlled through service level agreements or contracts (or both). These agreements or contracts (or both) shall include requirements for food safety.

6.6.3 The FHO shall control and monitor outsource activities in accordance with the appropriate requirements of this standard.

7 Non-operational requirements

7.1 General

When selecting or establishing PRP(s) (or both), the FHO shall consider and use appropriate information such as statutory and regulatory requirements, customer requirements, recognized guidelines, Codex Alimentarius Commission principles and codes of practices, and applicable national, international or regional standards.

7.2 Construction, layout and conditions of the food handling organization (FHO)

7.2.1 Location, size, hygienic design and conditions

7.2.1.1 The location and design of the FHO shall be such that the buildings can be kept acceptably free from objectionable odours, smoke, dust and any other sources of contamination, in order to comply with the relevant national legislation (see foreword) for hygiene.

7.2.1.2 The buildings of the FHO shall be of sound construction, in good repair, and large enough to prevent crowding of equipment and employees, and shall permit adequate cleaning and maintenance of product safety and hygiene. Process and personnel flow within the food handling areas shall be so designed that food contamination and cross-contamination are minimized.

7.2.1.3 The premises of the FHO shall be well drained. Access to site shall be controlled, clearly identified and adequately fenced to keep out larger animals, as well as unauthorized persons and vehicles.

7.2.1.4 Outdoor work areas, roads and pathways on the premises (see 7.2.1.3) and areas in the immediate vicinity of the FHO shall have a permanent surface of concrete, brick, bitumen or any other durable material.

7.2.1.5 Loading docks shall be designed in a manner to minimize cross contamination and flow of warm air into trailer to control the trailer temperature.

7.2.1.6 Where dust could have a significant impact on the safety of the product, adequate measures shall be in place to minimize the impact.

7.2.1.7 The grounds shall be kept free from uncut weeds and grass, litter, waste and miscellaneous materials stored for prolonged and extended periods of time without appropriate utilization as was originally designed for.

7.2.1.8 The premises of the FHO shall be so designed as to permit the processing of raw materials without undue delay. The buildings shall be so designed and constructed as to prevent the entry and harbouring of insects, birds, rodents and other vermin.

7.2.1.9 Buildings of the FHO shall be located away from areas subject to flooding, prone to infestations of pests and microorganisms, and where waste, either solid or liquid, cannot be removed effectively.

7.2.1.10 Sewage and effluent lines shall be so constructed as to avoid the contamination of potable water supplies, of food handling areas, of food ingredients and of the food product.

7.2.1.11 Based on risk, food products requiring housing in a high-risk area shall require specific buildings, equipment and clothing standards of special design and operational controls (see clause 9).

7.2.2 Roofs, overhead structures and ceilings

7.2.2.1 Roofs shall be weatherproof and made of non-absorbent material and shall be well maintained to prevent the contamination of the food product and of the ingredients, and to prevent other structures from becoming damp.

7.2.2.2 Roofs, overhead structures and, where applicable, ceilings, shall fit tightly to the walls and shall be at least 2,4 m above the floor. In the food handling areas, the roof and, where applicable, the ceiling, shall be at least 300 mm above any equipment and high enough to allow the free movement of mobile equipment and moving parts of other equipment.

7.2.2.3 In the food handling areas, and in storage areas for ingredients and for packaging materials for the food product, the ceiling (or, where no ceiling is provided, the roof) shall be dustproof and faced with a suitable corrosion-resistant, light-coloured and impermeable material that is so constructed and finished as to minimize condensation, mould development, flaking of paint and the lodgement and accumulation of dirt, and shall be capable of being cleaned without damage.

7.2.2.4 Where there is no access to the space above the ceiling, the ceiling shall be totally sealed. Openings in ceilings for conveyors, vents, piping, etc. shall be smooth and sealed.

7.2.3 Walls, windows and doors

7.2.3.1 Outer walls shall be weatherproof and impermeable to water.

7.2.3.2 All interior wall surfaces in the food handling areas shall be faced with a smooth, corrosion-resistant, light-coloured, washable, water-impermeable, and impact-resistant material to a height of at least 2 m above the floor. However, if soiling of the walls can occur above this height, then the facing shall be continued to a higher level.

7.2.3.3 Walls shall be constructed of material that shall not deteriorate, is impervious, smooth and free from flaking paint so as not to contaminate food.

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7.2.3.4 Openings in walls for conveyors, pipes and vents shall be smooth and sealed.

7.2.3.5 Walls shall be protected from damage by moving equipment.

7.2.3.6 Integrity of all interior walls, window frames, doors and door frames shall be maintained.

7.2.3.7 All ledges on the inside of walls and all windowsills shall be sloped towards the floor at an angle of at least 45°. The ledges shall be kept to a minimum size and windowsills shall be at least 1 m above floor level.

7.2.3.8 Windows and skylights shall ideally be non-opening. Any glass windows in food handling areas (including those used for the storage of components) shall be protected against breakage. In the event where windows have been previously designed to be opened for ventilation purposes, they shall be appropriately screened to prevent the ingress of pests. The screens shall be easily removable for cleaning and shall be made from suitable corrosion-resistant material and kept in good repair.

7.2.3.9 Doors and door frames shall be sheathed with, or made from, a suitable corrosion-resistant material and shall have a smooth seamless, light-coloured, water-impermeable, and readily cleanable surface. If wood is used, it shall be sheathed to render it impermeable to water. Wooden doors shall not be present in high-risk areas (see clause 9). Doors and their frames shall be of a material and construction which meets the same functional requirements as internal walls.

7.2.3.10 Doors that lead into exposed food handling areas shall be pest-proof, tight fitting, fitted with self-closing devices or an internal lobby with a self-closing door and, when necessary, with air curtains or plastic strips. Where strip curtains are used, they shall be maintained, so as not to become a food safety hazard.

7.2.3.11 All doors that open directly from the outside into the food handling areas shall be provided with effective air screens or shall, as far as is practicable, be self-closing and tight-fitting.

7.2.3.12 External doors shall be so constructed as to prevent the entry of rain water and pests into the food handling areas and shall be kept closed when not in use.

7.2.4 Separation of processes and facilities

Separate rooms or well defined areas of acceptable size shall be provided, to prevent cross-contamination of

- a) the receipt and storage of raw materials,
- b) preparatory operations of the food,
- c) food handling and processing operations,
- d) packaging, and
- e) the storage of the final food product.

7.2.5 Floors and drainage

7.2.5.1 Floors shall be constructed of material that is water-impermeable, corrosion-resistant and easy to clean, and shall be laid to an even surface that is smooth but not slippery, and is free from cracks, crevices and open joints. The entire floor shall be safe to walk on and transport food during the food handling processes.

7.2.5.2 Floors in the food handling areas shall be suitably sloped and shall drain into external gullies, sumps and sewers. Drainage direction shall not flow from a contaminated area to a clean area.

7.2.5.3 Each outlet shall have, immediately outside the walls of the food handling area, a trap that prevents the entry of rodents.

7.2.5.4 Drainage channels shall be, where necessary, of the open type with, where necessary, removable covers, and shall be designed to cope with the maximum expected flow of liquid without overflowing or causing flooding.

7.2.5.5 Drainage and sewer pipes shall not be installed direct over the preparation, processing or packaging areas, or the product or product contact surfaces or empty container storage areas or in any manner that accidental leakages could contaminate the product.

7.2.5.6 There shall be no installations in a drainage channel that could obstruct the flow of water or the activities of cleaning. Gully traps shall be fitted with easily removable strainers. Where necessary, duckboards of easily cleanable, impermeable material shall be provided. Wooden duckboards shall not be used in wet areas.

7.2.5.7 Floors and drains shall be maintained in good condition and repair. Floor drains or channels shall be of hygienic design suitable to the operations of the FHO and shall be discharged appropriately. Floor drains or channels shall be covered appropriately allowing easy removal for frequent cleaning and maintenance.

7.2.5.8 Drains shall be vented to atmosphere, outside the food handling areas, before entering the sewer or joining any sewer. A water trap shall be provided between the vent and the main sewer.

7.2.5.9 Manholes in the food handling areas are undesirable. If present, they shall be doubly sealed.

7.2.5.10 In food handling areas, joints between walls, ceilings and floors, shall be covered and appropriately sealed.

7.2.6 Lift cages, staircases and mezzanine floors

7.2.6.1 Lift cages shall have a corrosion-resistant inside surface that is smooth, easy to clean, and is water-impermeable, and the floor shall be properly drained. Lift shafts shall be properly drained and made accessible for cleaning. Mesh doors may be used, provided that they are not conducive to unhygienic conditions.

7.2.6.2 Staircases in rooms where the food product is handled, prepared, processed or packaged shall have solid risers, and shall be provided with closed balustrades of a height that will prevent the contamination of the food product underneath the stairs.

7.2.6.3 In food handling areas, mezzanine floors, bridges to mezzanine floors, stairways and bridges over food handling equipment shall be completely sealed, and shall include side walls and walls around openings in all instances where the absence of these could lead to the contamination of the area below. These floors shall be constructed of a durable material that can be cleaned and maintained.

7.2.7 Illumination

7.2.7.1 Appropriate natural or artificial lighting, of sufficient intensity, shall be provided to enable personnel to operate in such a way that food safety can be ensured. An illuminance of at least 220 lux is required for general operations, while at least 540 lux is required at points where close examination of the food product is carried out.

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7.2.7.2 Artificial illumination, if used, shall be such that the colour of the food product is not significantly altered.

7.2.7.3 Luminaires suspended over food in any stage of handling shall be of the safety type or otherwise so protected as to prevent the contamination of food in the event of breakage of a luminaire or lamp. Fixtures shall be so constructed and situated that the suspended fixtures are easy to clean and maintain.

7.2.8 Ventilation and extraction

7.2.8.1 The ventilation and extraction shall ensure adequate circulation of air, shall remove excess water vapour, and shall prevent the build-up of excessive heat, the formation of condensate and the growth of mould. Natural ventilation shall be augmented, where necessary, by mechanical means and shall be designed to allow easy cleaning and maintenance.

7.2.8.2 The air shall be free from noxious fumes, vapours, dust and contaminating aerosols. The airflow shall be from the more hygienic to the less hygienic areas of the premises of the FHO, and from high-risk to lower risk areas.

7.2.8.3 Air-intake points shall be located away from any exhaust vents to avoid drawing in air containing high humidity or odours, and so as to avoid the intake of contaminated air. Where appropriate, air shall be filtered to an appropriate class and filters shall be regularly cleaned. Non-food handling areas, laboratories, toilet facilities and associated external lobbies shall be separately ventilated to the exterior in such a way as not to contaminate the product and food handling areas.

7.2.8.4 In the event where windows have been previously designed to be opened for ventilation purposes, they shall be appropriately screened to prevent the ingress of pests. The screens shall be easily removable for cleaning and shall be made from a suitable corrosion-resistant material and kept in good repair.

7.2.8.5 All air intake points shall be appropriately screened to prevent the ingress of pests. The screens shall be easily removable for cleaning and shall be made from a suitable corrosion-resistant material and kept in good repair.

7.2.9 Hand-washing facilities

7.2.9.1 The following shall be provided at the entrances to the food handling areas that are used by employees, at other conveniently situated places within easy reach of the employees, and at the toilet exits:

- a) a sufficient number of hand-wash basins, troughs or washing fountains with an abundant supply of hot potable running water, of such design to prevent cross-contamination, that complies with the requirements of 7.4.1;
- b) a sufficient supply of unscented liquid soap or hand-cleaning detergent and, where appropriate, a hand disinfectant;
- c) a suitable means to hygienically dry hands; and
- d) refuse bins of hygienic construction.

7.2.9.2 Hand-washing facilities shall, at all times, be unobstructed by equipment and operating activities. Hand-wash basins shall be of a suitable corrosion-resistant water-impermeable material, shall have a smooth finish, be easy to clean, and shall drain directly into drainage channels.

7.2.9.3 Disinfectant hand dips are not recommended but where in use, they shall be of such design that they can be adequately cleaned.

7.2.9.4 Hand basins shall not be used for any other purpose.

7.2.10 Footwear washing facilities

7.2.10.1 Where required, separate facilities for the cleaning and disinfecting of footwear shall be installed at a suitable locality before the entrance to the food handling area and prior to hand washing.

7.2.10.2 These facilities shall be so constructed that they can be adequately drained and cleaned.

7.2.10.3 Plastics brushes on corrosion-resistant chains, disinfecting soap or powder and spray nozzles shall be provided near the hand-washing facilities for the cleaning of waterproof protective clothing and gloves.

7.2.11 Storage facilities

7.2.11.1 General

The food handling areas shall not be used for storage purposes.

7.2.11.2 Storage facilities for food ingredients

7.2.11.2.1 Suitable storage facilities for food ingredients shall be provided and shall be free from dust and any other source of contamination, and shall be vermin proof.

7.2.11.2.2 Storage facilities for food ingredients shall provide for suitable storage temperatures.

7.2.11.3 Storage facilities for packing and packaging materials

Clean, dustproof, vermin proof and dry store facilities shall be provided for the storage of packing and packaging materials.

7.2.11.4 Storage facilities for hazardous substances (poisonous and harmful)

7.2.11.4.1 Hazardous substances, for example, but not limited to, pesticides, cleaning chemicals, lubricants and laboratory chemicals, and the equipment for their application, shall be stored in a room or cupboard in which no foodstuff, food-handling equipment, packaging materials or food containers are stored, and shall be kept locked. All these substances shall be prominently and distinctly labelled with the warning about their toxicity and use, and shall at no time come into contact with food containers, packaging materials, raw materials or the food product.

7.2.11.4.2 Provisions shall be made to store allergens under controlled conditions (see 8.9).

7.2.11.5 Storage facilities for substances used for cleaning and disinfection

Substances used for cleaning and disinfection, and the equipment for their application, shall be stored in a room in which no foodstuff, food-handling equipment, packaging materials or food containers are stored, and shall at no time come into contact with food containers, packaging materials, raw materials or the food product. All substances used for cleaning and disinfection shall be prominently and distinctly labelled.

7.2.11.6 Storage facilities for equipment, equipment parts and spare parts

7.2.11.6.1 Equipment and equipment parts that come into contact with the food product shall, when not in use, be kept in a disinfectant solution or be stored in a hygienic manner in a dry area that is free from dust and any other source of contamination, and is vermin proof.

7.2.11.6.2 Spare parts for machinery that are capable of contaminating the food product shall be kept in a separate storage area away from the food handling areas.

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7.2.12 Comfort facilities

7.2.12.1 The comfort facilities shall be kept clean and tidy, and shall be adequately ventilated. An acceptable number of suitable change rooms, shower baths, hand wash facilities as described in 7.2.9, toilet facilities (separate for each sex) and, where appropriate, urinals, shall be provided within practical distance from the food handling areas.

7.2.12.2 Showers shall connect directly to the change rooms. Comfort facilities shall be separated and shall not open directly into the preparation, processing, packaging or storage areas.

7.2.12.3 Toilets shall be completely separate from the change rooms, with the only permissible access being through close-fitting, self-closing doors. Toilet blocks shall have their own hand-washing facilities, separated from those provided in the change rooms.

7.2.12.4 Lockers or controlled clothes baskets shall be provided in the change rooms, and the layout shall be such as to permit proper cleaning and maintenance.

7.2.12.5 The comfort facilities shall not be used as living or sleeping quarters or for the preparation of meals.

7.2.12.6 Staff dining-rooms shall be separate from the change rooms. Eating facilities shall be provided which shall also provide storage for personnel's food (see 7.6.3). These facilities shall not lead directly into the food handling areas or toilet facilities.

7.2.13 Facilities for the washing and laundering of protective clothing

7.2.13.1 Construction and design of an area provided for washing and disinfection of waterproof protective clothing shall make provision for

- a) drainage, maintenance and cleaning of the area,
- b) corrosion resistant washing equipment,
- c) soap and disinfectant,
- d) running potable hot and cold water, and
- e) hanging of washed protective clothing.

7.2.13.2 When laundering and drying is to be performed on the premises, an area away from the handling and storage of food product materials shall be provided. The area shall also provide for the hygienic storage of the laundered protective clothing.

7.2.14 Facilities for cleaning and disinfection

7.2.14.1 Facilities with proper drainage shall be provided for the cleaning and disinfection of the premises of the FHO and its portable equipment and utensils, and shall be made available at convenient and acceptable points.

7.2.14.2 Equipment for the cleaning and disinfecting facilities shall be constructed of corrosion-resistant materials and shall be of a design that is easily cleanable.

7.2.14.3 Such facilities shall be located in a separate room or in a designated area in the preparation, processing and packaging areas where there is an ample supply of cold potable water and hot water, where required, or saturated steam.

7.2.14.4 Provision shall be made for materials used for cleaning and disinfection, hot and cold running potable water or saturated steam, hose pipes, spray nozzles, brushes, scrapers and any other equipment needed for the cleaning of the FHO, and its equipment and utensils.

7.2.14.5 Cleaning equipment and materials (see 7.2.14.4) shall not be stored in a room where food handling equipment is stored and shall at no time come into contact with raw materials, the food or their containers or packaging.

7.2.14.6 Where used, cleaning in place (CIP) systems shall be designed with sufficient flow rates, contact time and temperature control to allow proper cleaning of the equipment. Where sections of the food contact areas are cleaned during food handling, there shall be a suitable break to atmosphere designed into the piping to prevent the contamination of the food by CIP liquids. Separation by only a valve is not suitable.

7.2.14.7 Suitable drying stands or shelves shall be provided to keep equipment and utensils off the floor. An ample supply of cold potable water, and hot water if required, or saturated steam, at adequate pressure, that complies with the requirements of 7.4.1 shall be provided. High pressure or high frequency oscillating water or detergent equipment shall be available where possible. The floor of the room or area shall be clean, smooth-surfaced and graded, to facilitate proper disposal of waste liquids from the cleaning process. The drainage shall be in a direction away from the food handling areas.

7.2.15 Waste facilities

7.2.15.1 Separate, suitable waste facilities shall be provided on the premises.

7.2.15.2 Facilities for the storage of waste shall be designed to preclude the entry and harbourage of pests and to avoid the contamination of food, potable water, equipment, buildings and roadways on the premises and the environment in general.

7.3 Machinery and equipment for food handling

7.3.1 General

7.3.1.1 Machinery and equipment shall be so placed as to allow free movement of workers to facilitate cleaning and the maintenance of both hygiene and food safety, as well as prevent cross contamination.

7.3.1.2 All food-handling machinery, equipment and utensils that come into contact with the food shall be smooth-surfaced, light-coloured and of a suitable corrosion-resistant, non-absorbent material (not wood or any other absorbent or porous material) but preferably stainless steel of a suitable grade, and not painted, to prevent contamination and cross contamination.

7.3.1.3 The materials, design and construction of machinery and equipment, including hoses, shall be suitable for food handling processes and shall prevent the contamination and cross contamination of the food product during operations. The materials, design and construction of machinery and equipment shall also be suitable for their intended use.

7.3.1.4 The machinery, equipment and utensils for food handling shall be of hygienic design with no open joints or crevices, and shall be so constructed as to facilitate their cleaning and disinfection. The FHO and its machinery and equipment shall be so designed as to facilitate the cleaning and disinfection of the areas under such equipment. Open ends and curled edges shall be satisfactorily sealed to prevent the accumulation of organic material and dirt. Where necessary, as in the case of equipment that cannot be cleaned *in situ*, it shall be dismantled to clean and disinfect.

7.3.1.5 The design and materials of food contact surfaces shall be hygienic and shall comply with SANS 14159.

NOTE Hygienic requirements for the design of machines and associated equipment used in applications where hygiene risks to the consumer of the product can occur are also given in SANS 14159.

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7.3.1.6 The design and construction of food contact surfaces and non-food contact surfaces shall be appropriate to the requirements of the food handling process and shall be cleanable. These surfaces shall prevent ingress of moisture and, where necessary, shall be capable of being disinfected. Permanent metal-to-metal or non-metal joints shall be continuously welded or bonded to prevent ingress of unwanted material.

7.3.1.7 Equipment shall be so designed, fabricated and installed as to prevent the ingress of unwanted fluids (for example, lubricating and hydraulic fluids, as well as signal transfer liquids) into the food product. Where equipment failure can result in these fluids coming into contact with the food product, these fluids shall be non-toxic and compatible with the food product.

7.3.1.8 All parts of stationary equipment or equipment that is not readily movable shall be installed away from the walls and ceilings at distances sufficient to allow access for cleaning and inspection. All permanently mounted equipment shall be either installed high enough above the floor to allow access for cleaning and inspection, or shall be completely sealed to the floor.

7.3.1.9 Equipment shall preferably not be sunk into the floor but, if this is unavoidable, the installation of the equipment shall be such as to be acceptable. Sunken areas shall be well drained.

7.3.1.10 Copper, lead and their alloys (other than solder), and other metals or materials detrimental to health, shall not be used in the construction of equipment that comes into contact with the raw materials or with the unprotected food at any stage of its handling.

7.3.1.11 Where applicable, equipment shall be exhausted to the outside to prevent excessive condensation.

7.3.1.12 The use of solder in equipment shall be minimized.

7.3.2 Maintenance of equipment

7.3.2.1 An effective preventative maintenance programme shall be implemented to ensure the hygienic integrity and proper functioning. With the establishment of this preventative maintenance programme, reference shall be made to the relevant manuals of machinery and equipment, as well as schematic drawings of machinery, equipment and pipework.

7.3.2.2 Equipment that is critical to food safety shall be identified and an appropriate maintenance programme implemented.

7.3.2.3 Maintenance shall be carried out by suitably trained personnel that are equipped with the correct tools maintained in an appropriate hygienic state. Specialized maintenance for equipment such as boilers and retorts shall be conducted by suitably qualified personnel to ensure compliance with the relevant national legislation (see foreword).

7.3.2.4 Maintenance activities shall be carried out in accordance with documented procedures of disassembly, servicing and assembly of equipment and shall not cause any form of contamination to the food handling materials or to the food. Records of maintenance shall be kept by the FHO.

7.3.3 Monitoring of machinery and equipment

7.3.3.1 The FHO shall determine the monitoring procedures required to ensure effective operation of machinery and equipment. These documented procedures shall include reference to appropriate monitoring devices, including the required precision and accuracy of the monitoring.

7.3.3.2 Monitoring devices shall be calibrated or verified (or both), as appropriate.

7.4 Operational support requirements

7.4.1 Water, steam and ice

7.4.1.1 Water used as a food product ingredient, including as ice and steam, or in contact with food contact surfaces, shall comply with the requirements of SANS 241-1 (regardless of the source of the water). Appropriate facilities for the storage, distribution and, where needed, temperature control of the water, ice and steam shall be provided.

7.4.1.2 Every food handling area shall have an adequate supply of clean potable water that is free from suspended matter and substances that could be deleterious to the food product or harmful to health, under adequate pressure and capable of coping with peak demand. Non-potable water shall have a separate, identified system that is not connected to and is prevented from reflux into the potable water system.

7.4.1.3 Installations for the treatment and storage of water in the FHO shall be monitored and thoroughly cleaned as often as is deemed necessary. All records shall be maintained.

7.4.1.4 Flexible water hoses shall be made of a suitable material for food safety and reels for their storage shall be provided.

7.4.1.5 Where water piping is connected to piping carrying the food product, provision shall be made to prevent food materials from entering the water piping.

7.4.1.6 Where water is re-circulated and steam reused, it shall be treated and maintained in such a way that no contamination of food results from its use.

7.4.1.7 Where filters are used, they shall be effectively maintained in a hygienic manner.

7.4.2 Air quality and ventilation

Systems used to provide air used shall comply with the design requirements for the filtration, temperature, humidity and microbiology specifications that are appropriate to the operations of the FHO. Air flow shall not be from a contaminated area to the clean area in the FHO. Systems shall be adequately maintained and cleaned.

7.4.3 Compressed air and gases

7.4.3.1 Compressed air and gases that come into contact with food or food contact surfaces shall be fitted with appropriate filters to remove moisture, oil, particles and any other foreign substances that could contaminate the food.

7.4.3.2 Compressed air that comes into contact with food or food contact surfaces shall be dry to prevent the build-up of microorganisms in the air lines. Such air shall be free from microorganisms, chemicals, dust and soil that could contaminate the food or that could be hazardous to health.

7.4.3.3 Compressed air, gas application equipment and filters shall be cleaned and maintained.

7.4.3.4 Where appropriate, non-return valves shall be fitted in the air lines to preclude the entry of food into the lines.

7.4.3.5 Compressed air shall not be used for cleaning purposes in processing areas, since this will cause soil to spread around the factory.

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7.4.4 Cleaning and disinfection

7.4.4.1 The food handling areas shall be maintained in an appropriate and suitable state of cleanliness at all times. These areas shall include food storage areas and waste areas.

7.4.4.2 A documented cleaning and disinfection programme for the premises, equipment, containers, and vehicles, shall be established and implemented.

7.4.4.3 Special precautions shall be taken when cleaning machinery or equipment used for moist and semi-moist food in order to avoid fungal and bacterial growth.

7.4.4.4 Machinery or equipment that comes into contact with dry food shall be dried before use.

7.4.4.5 Cleaning and disinfection programmes shall include the following as a minimum:

- a) areas and equipment to be cleaned and disinfected;
- b) frequency of cleaning and disinfection. For example, cleaning and disinfection could be carried out daily, weekly, monthly, quarterly, hourly or during shut down periods. The frequency of cleaning and disinfection shall be sufficient to ensure the maintenance of the required standard of hygiene;

NOTE Clean-as-you-go practices may be applied.

c) methods of cleaning and disinfection as follows:

- 1) a predetermined sequence of cleaning shall be established. Cleaning methods shall include removal or disassembly requirements, dry cleaning, wet cleaning, and disinfection at the recommended contact time, temperature and concentration of the disinfectant as stipulated by the disinfectant manufacturer;
- 2) when cleaning and disinfection take place during food handling, those areas being cleaned and disinfected shall be physically separated from the food handling areas in order to prevent the contamination of the product with cleaning and disinfecting agents;
- 3) where appropriate, recommended cleaning materials (especially related to the fabric and chemical resistance) shall be specified. Where dismantling is required, specific instructions shall be provided;
- 4) in food handling areas, compressed air shall not be used for cleaning purposes. When cleaning with water under force, care shall be taken not to contaminate the food being handled. Vacuum cleaners shall be emptied outside the food handling areas;

d) cleaning and disinfecting agents as follows:

- 1) all cleaning and disinfecting agents used shall be appropriate for their intended purpose and shall be suitable for use in food handling areas;
- 2) household cleaning chemicals shall not be used. Cleaning chemicals used shall comply with SANS 1828, or shall be supported by documented valid validation data indicating suitability and safety for use in the food industry (or both). Disinfectant agents used shall comply with SANS 1853, or shall be supported by documented valid validation data indicating suitability and safety for use in the food industry (or both).
- 3) the current Material Safety Data Sheets (MSDSs) of cleaning chemicals and disinfectants shall be made available on the premises of the FHO, and acids and alkalis shall be stored and handled in accordance with these documents.

NOTE SANS 1828 and SANS 1853 give details on the requirements and safety of cleaning chemicals, disinfectants and detergent-disinfectants used in the food industry.

e) cleaning tools and equipment as follows:

- 1) cleaning tools and equipment shall be clearly distinguishable for different areas, shall be of hygienic design, and shall be made of suitable impervious material that will not present a potential source of contamination. All cleaning equipment shall be cleaned and stored properly when not in use.
- 2) sufficient tanks for the complete immersion of loose pieces of equipment and hoses shall be made available.

f) monitoring and verification procedures as follows:

- 1) the FHO shall be responsible for establishing a documented procedure for the monitoring of all cleaning and disinfection at defined frequencies;
- 2) the effectiveness of the cleaning and disinfection procedures shall be verified by appropriate methods;
- 3) the efficacy of the cleaning and disinfection process shall be tested in accordance with SANS 5763 (see annex A);
- 4) effective measures shall be taken to inhibit mould growth and to remove dust, flaking paint and other loose or detachable material likely to fall onto the food product from walls, ceilings or overhead structures in the preparation, processing, packaging and storage areas;

g) cleaning programme records: Records of effective cleaning and implementation of the cleaning programme shall be maintained.

7.4.5 Management and control of hazardous substances

7.4.5.1 Hazardous substances shall be dispensed and handled by authorized and properly trained personnel or by persons under strict supervision of trained personnel. Extreme care shall be taken to avoid the contamination of food and of the environment during handling.

7.4.5.2 Hazardous substances shall be clearly labelled and identified.

7.4.5.3 The FHO shall establish emergency documented procedures for dealing with the accidental contamination of food, of personnel and of the environment as a result of spillage of hazardous substances during handling.

7.4.5.4 Appropriate personal protective equipment (PPE) for personnel handling hazardous substances shall be provided where the absence of such PPE could be detrimental to their health.

7.4.5.5 Hazardous substances shall be disposed of in an environmentally appropriate manner and shall be disposed of after consultation with the relevant health authorities, and in accordance with the relevant requirements of the relevant national legislation (see foreword).

7.4.6 Management and control of pests

7.4.6.1 All buildings in which raw materials, ingredients and the product are stored, or in which the product is handled, prepared, processed or packaged, shall be kept free from insects, rodents, birds and other vermin. The factory and its premises shall be regularly inspected by trained personnel for the evidence of infestation by insects or rodents, and for the presence of birds and wild or domestic animals. All rooms in which raw materials and ingredients are stored shall, in addition, be rodent proof. Potential breeding sites shall be eliminated.

An effective and continuous programme for pest control shall be established, implemented and maintained (see 7.4.6.7).

A site drawing and register of all bait stations shall be kept up to date and open baits shall not be present in processing areas or ingredient, product and empty container and lid stores.

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7.4.6.2 Pesticides shall not be used in food handling areas while preparation, processing and packaging are in progress, and precautionary measures shall be taken to ensure that equipment and work surfaces are kept free from pesticide residues.

7.4.6.3 Only pesticides registered in accordance with the relevant national legislation (see foreword) shall be used. These pesticides shall be used in accordance with the manufacturer's instructions.

7.4.6.4 Pesticides shall only be applied by a pest control operator that is suitably qualified and trained. The current certified copy of the pest control operator's qualification shall be provided and held by the FHO.

7.4.6.5 The room in which pesticides are stored shall be kept locked and the materials contained in it shall only be handled by employees trained in their use.

7.4.6.6 Bait stations shall be of a lockable type, and shall not be placed in food handling areas where food could be contaminated.

7.4.6.7 The pest control programme shall include the following:

- a) the FHO shall maintain a record of pest activity or pest sighting log to assist the pest control operator in providing an effective service;
- b) written records of action taken by the pest contractor to control pests shall be maintained;
- c) there shall be a site plan that indicates pest traps and related pest control equipment. Pest traps shall be numbered and site plans updated accordingly;
- d) sample labels or product specifications (or both) and MSDSs shall be made available;
- e) accurate and complete service records that at least address the following:
 - 1) the materials used;
 - 2) targeted pests;
 - 3) quantity of the pesticide or insecticide applied;
 - 4) specific area(s) where the pesticide or insecticide was applied;
 - 5) method of application of the pesticide or insecticide, and the device used;
 - 6) date and time of pest treatment;
 - 7) applier's signature; and
 - 8) a copy of the liability insurance of the external service provider;
- f) the food handling areas shall be inspected at pre-determined intervals (minimum monthly), based on pest activity. If evidence of infestation is found, then action shall be taken and results recorded.

7.4.6.8 The FHO shall, on a regular basis, verify the effectiveness of pest control activities and devices used. Records of such verifications shall be kept and made available.

7.4.6.9 Pets and animals shall not be permitted in the food handling and food storage areas.

7.5 Waste management

7.5.1 Skips or containers that contain food waste, offal and other waste material shall be covered and emptied at least once a week, or more frequently, as is consistent with minimizing the risk of infestation.

7.5.2 Skips or containers for waste shall be located as far as practical or adequately segregated from the food handling, distribution and receiving areas.

7.5.3 Combustible waste, if incinerated, shall be burned in an incinerator of approved design, and that is located at an adequate distance from the factory, so as to avoid a fire hazard and contamination of the factory air supply.

7.5.4 Waste containers shall be provided in appropriate locations in the factory. Only *bona fide* waste containers shall be used for the disposal of waste. The containers shall be such that they cannot be mistaken for food containers and shall be emptied daily. Packaging material, whether damaged or not, shall not be used as a receptacle for waste.

7.5.5 The FHO shall have an efficient effluent sewage system that shall, at all times, be maintained in good order and repair. All effluent lines (including sewer systems) shall be large enough to carry peak loads and shall be so constructed as to avoid contamination of potable water supplies or the environment and not constitute a source of contamination to the product, product contact surfaces, ingredients or food packaging, or create unsanitary conditions.

7.5.6 Effluent sewage and waste water lines shall be identified as such and the disposal shall be made into a public sewerage system or in the absence thereof, into an adequate private sewerage system in a manner which will not cause a health hazard.

7.6 Requirements for personnel

7.6.1 Training

7.6.1.1 Personnel shall possess sufficient training, knowledge and expertise to carry out assigned tasks. All personnel shall be competent in the handling and production of safe food.

7.6.1.2 In order to provide personnel with the necessary competencies, training shall be provided, taking into account

- a) the technical competencies required for the position or operation,
- b) current skill levels and experience of trainees, and
- c) the nature of the food product and food handling activities.

7.6.1.3 Appropriate training regarding the safe handling of food, in accordance with food safety requirements, shall be conducted at the beginning of employment and this training shall be documented. Refresher training shall be provided.

7.6.1.4 Periodic assessments of the effectiveness of training programmes shall be carried out in addition to routine supervision and checks that procedures are being followed. Records thereof shall be maintained.

7.6.1.5 Records of experience, expertise, educational qualifications and training of the employees concerned shall be maintained.

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7.6.1.6 Managers and supervisors shall have the necessary knowledge of food hygiene principles and practices, as well as of the relevant food safety requirements, to enable them to judge potential food safety hazards and to take the necessary action(s) to remedy nonconformities.

7.6.2 Protective clothing

7.6.2.1 When protective clothing is not laundered on site, the laundering shall be subcontracted to a laundry service. A service level agreement shall be in place to ensure hygienic laundering practices (see SANS 10146).

7.6.2.2 Protective clothing shall provide appropriate coverage to prevent exposure of skin, other than the hands, personal clothing, hair and perspiration from causing the contamination of the food product. Ears and hair shall be completely covered and where practically possible, beards and moustaches shall be covered. Protective clothing shall be chosen based on identified risk impact on food safety.

7.6.2.3 Consideration shall be given to the design of the protective clothing to enable efficient removal and replacement, where required. These garments shall not have any external pockets, buttons or zips, above the waist, and shall be able to fasten securely.

7.6.2.4 Protective clothing shall be changed as often as is deemed necessary and shall be hygienically laundered such as through thermal or chemical disinfection. Laundry chemicals used shall be fragrance-free. Laundered protective clothing shall be appropriately stored before use.

7.6.2.5 Gloves, if used, shall be made from impermeable material of a bright colour and shall be of the disposable type. The use of gloves worn during food handling shall be limited to areas where the use thereof is in prevention of food contamination, or where the protection of the worker is justified. When in use, gloves shall be cleaned frequently and shall remain in good condition. Gloves shall be removed when leaving the food handling areas, and where their use is unavoidable, a documented glove usage procedure shall be established, enforced and implemented by the FHO to prevent the misuse of gloves or gloved hands turning into a source of contamination.

7.6.2.6 Wearing hand protection gear shall not prevent personnel from washing their hands or applying normal hygiene practices.

7.6.2.7 Protective clothing, other than waterproof aprons, sleevelets and gloves, shall not be stored in food handling areas. When not in use, protective clothing shall be kept in the change rooms and shall not be removed from the premises except for laundering under hygienic conditions. The homes of employees shall not be regarded as acceptable for laundry purposes.

7.6.2.8 Waterproof protective clothing shall be made of plastics, rubber or other similar acceptable material. All waterproof protective clothing shall be of hygienic design, shall have no external pockets, shall be in good repair and shall not constitute a source of contamination to the food product.

7.6.2.9 Waterproof aprons, sleevelets and gloves shall be cleaned and disinfected at each time of removal and as frequently as is necessary, and shall be hung on hooks or pegs at exits from food handling areas, during intervals between food handling, and during visits to the toilet. Waterproof aprons, sleevelets and gloves, as well as all equipment used in the preparation, processing and packaging of the food product shall not be removed from the food handling areas, except for repairs and for cleaning under hygienic conditions.

7.6.2.10 Footwear used in food handling and processing areas shall be fully enclosed and shall be of non-absorbent material.

7.6.2.11 Unless their absence in particular circumstances is acceptable, or unless alternative acceptable cleaning and disinfecting facilities are provided, footwear washing facilities that contain a suitable active disinfectant solution shall be provided.

7.6.2.12 These facilities shall be provided at each entrance to the preparation, processing and packaging areas that is used by employees and be so located that employees cannot obtain access to those areas without disinfecting their footwear.

7.6.2.13 Protective clothing shall be kept in a clean condition, consistent with the nature of the work, and shall be cleanable unless designed to be disposed of. Protective clothing shall not be used outside the factory or the factory grounds or worn to or from work.

7.6.2.14 Microbiology laboratory personnel shall not wear their laboratory protective clothing outside the laboratory. Protective clothing shall be removed when leaving the food handling areas.

7.6.2.15 Management shall provide sufficient and suitable protective clothing for all staff and shall be responsible for the cleaning, maintenance and issuing of protective clothing and shall ensure that protective clothing is not removed by personnel from the premises for cleaning, repair or for any other purposes without authorization, and that such clothing, when not in use, is kept in the change rooms, or in the central storage room or locker.

7.6.2.16 All protective clothing items that have been disposed of shall be replaced as frequently as is necessary.

7.6.3 Personnel hygiene and personal effects

7.6.3.1 Food handling personnel shall, at all times, maintain a high degree of personal cleanliness and conform to hygienic practices while on duty. They shall be trained and educated in personal cleanliness and hygienic practices. Adequate control shall be exercised to ensure that employees are in compliance with the hygienic requirements (such as supervision at the hand-washing facilities) before commencing work at the beginning of a work shift and after breaks.

7.6.3.2 Before starting work, after each absence from the food handling areas, at regular intervals during food handling, or at any time when necessary, food handling personnel shall wash their hands with warm water and an acceptable unscented liquid soap or hand-cleaning detergent (see 7.2.9), and rinse them in clean, running water. Disinfection of hands shall be implemented where necessary.

7.6.3.3 Hygiene facilities shall be suitably maintained in a functional state and supplied with soap, soap dispensers, disinfectors, drying equipment and waste receptacles at all times.

7.6.3.4 Containers used in the preparation, processing or packaging of the food product shall be used for that purpose only, and not for personal use or any other use.

7.6.3.5 Neither the personnel's personal effects nor their food shall be present in any area where the food product and its ingredients and packaging materials are handled and stored. Their personal effects, including their personal clothes, shall be kept in lockers or hangers provided for this purpose in the change rooms (see 7.2.12.1).

7.6.3.6 The use of chewing gum and of tobacco (in any form) shall not be permitted within areas where the food product and its ingredients and packaging materials are handled or stored. Spitting shall not be allowed anywhere within the premises of the FHO. Notices to that effect shall be posted strategically (see 7.6.5). Smoking shall be permitted only in designated areas.

7.6.3.7 Nail polish and any nail art shall not be used on fingernails, and fingernails shall be kept short and clean. Artificial fingernails shall not be worn.

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7.6.3.8 Artificial eyelashes shall not be worn.

7.6.3.9 When hair extensions, dreadlocks or any artificial hair is worn, it shall be adequately covered to prevent any contamination to the food handling areas.

7.6.3.10 Jewellery shall not be worn by employees in food handling areas. Religious, ethnic, medical and cultural imperatives that pose a risk to food safety shall be controlled by measures to minimize contamination.

7.6.3.11 Sanitary bins shall be provided and shall be managed and maintained to ensure safe and hygienic conditions.

7.6.4 Notice boards

7.6.4.1 Notices shall be strategically displayed in the food handling areas and storage areas, in the change rooms and in the toilet facilities.

7.6.4.2 Notices that prohibit eating, spitting and the use of chewing gum and tobacco (in any form) shall be posted in each food handling area and in each area designated for the storage of ingredients. Notices that request employees or, where applicable, visitors to wash their hands on entering the food handling areas shall be posted at each entrance used by employees or visitors to gain access to those areas. Notices that direct employees to wash their hands with liquid soap or hand-cleaning detergent after using the toilet shall be posted at the toilet facilities.

7.6.5 Visitors and contractors

7.6.5.1 Any person, who visits or enters the food handling areas shall, when in those areas, comply with all the relevant hygiene requirements and shall wear clean protective clothing that shall be provided by the FHO.

7.6.5.2 Visitors and contractors handling food, or providing a service such as maintenance, shall be made aware of all the hygiene requirements of the relevant food handling areas and shall comply with these requirements.

7.7 Medical conditions

7.7.1 A documented procedure shall be established for the proactive identification, monitoring, communication and management of controls required for the administration of health conditions of personnel that can have an influence on food safety.

7.7.2 The documented procedure shall as a minimum include the following:

- a) appointing of a nominated person or persons to manage this documented procedure. This person(s) shall have the responsibility and authority to make decisions and to take the most appropriate action;
- b) supplying information and knowledge to personnel on health conditions;
- c) reporting health conditions prior to starting work and then after returning from leave or sick leave (or both); and
- d) maintaining of records of the procedure.

7.7.3 Management shall ensure that no person with the following conditions shall be allowed to enter an area where exposed food or food contact materials is handled until free of the following symptoms:

- a) infection of the eyes or eyelids;
- b) discharge of the ears, mouth, nose;
- c) vomiting;
- d) diarrhoea;
- e) skin disorders such as boils, infected wounds on the face, neck, forearms and hands;
- f) flu and its related symptoms such as coughing, sneezing, runny nose or sweating (or both); and
- g) sufferers or carriers of a disease likely to be transmitted through food.

7.7.4 Clean cuts, scratches or spots not infected shall be covered with a water-proof dressing in a colour different from the food being handled and the wound and its dressing shall be covered so as to ensure that the infection or the contamination of the food product is no longer possible.

7.7.5 Appropriate and sufficient first aid equipment shall be provided. First-aid personnel shall be made available and shall be appropriately trained.

7.7.6 Personnel health conditions shall also be applicable to visitors and contractors.

8 Operational requirements

8.1 General

All materials, purchased, received, handled and dispatched, shall fall within the scope of and shall comply with the relevant national legislation (see foreword). All materials used in the preparation of the food product shall be clean, sound, safe and in every way fit for human consumption. In addition, the food product shall not contain any substances in amounts that might present a hazard to human health.

8.2 Processing aids, raw material and packaging material specifications

8.2.1 The FHO shall establish and document specifications for all processing aids, raw materials and packaging materials.

8.2.2 The specification, as a minimum, shall include information prescribed by the relevant national legislation (see foreword).

8.2.3 Specifications shall be approved by the FHO and the supplier.

8.2.4 Specifications shall be kept up to date and shall be made available at points of use.

8.3 Final product specification

8.3.1 The FHO shall establish and document specifications for all final products.

8.3.2 The specification, as a minimum, shall include information prescribed by the relevant national legislation (see foreword).

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8.3.3 Specifications shall be approved by the FHO.

8.3.4 Specifications shall be kept up to date and shall be made available at points of use.

8.4 Supplier approval and monitoring

8.4.1 Supplier selection, approval and monitoring criteria shall be established and documented for processing aids, raw and packaging materials, products, transport service providers and other services that will have an impact on food safety.

8.4.2 Suppliers shall be evaluated against product specifications and the set criteria.

8.5 Purchasing

A documented procedure shall be established for the purchasing of processing aids, raw and packaging materials, products and services.

8.6 Customer property

8.6.1 Materials or (or both) products supplied by the customer that require adjustment shall be managed in accordance with the requirements of this standard and the documented procedures of the FHO.

8.6.2 Records of communication shall be kept to ensure that the customer is informed of the status of his materials or products (or both), i.e. deterioration, damages, rejections etc.

8.7 Receiving

8.7.1 The FHO shall establish a documented procedure for receiving.

8.7.2 Materials received shall be inspected against the material specification, certificate of analysis (COA) or certificate of compliance (COC) and the ordering requirements.

8.7.3 The delivery vehicle shall be protected, hygienic and pest free, and shall not be able to alter the state of the material for example, temperature controlled vehicle is capable of maintaining the integrity and safety of the product.

8.7.4 Receiving records shall as a minimum contain the following:

- a) supplier details;
- b) material or products (or both) description;
- c) traceability coding (for example, date code, batch code, receiving number);
- d) condition of the material or (or both) product received (for example, compliance with specifications, temperature, quality, contamination);
- e) date and time of receipt;
- f) quantity; and
- g) conformity and nonconformity.

8.7.5 Nonconforming materials and products shall be moved into the designated storage area.

8.7.6 Nonconforming materials and products shall be handled in accordance with requirements for the control of nonconformities.

8.8 Storage

8.8.1 Storage shall be conducted in such a way so as to prevent the risk of deterioration, contamination and cross-contamination, i.e. off the floor, suitable space for cleaning and controlling of pests, not being in direct contact with overhead structures, acceptable temperature and humidity and within the shelf life of the material.

8.8.2 Received materials, in-process materials, final products and non-conforming materials or products (or both) shall be stored in their designated areas.

8.8.3 All materials shall be clearly identified by its name, batch number and where appropriate shelf life period in order to facilitate effective storage practices, i.e. first-in-first-out (FIFO) or first-expired-first-out (FEFO).

8.8.4 Hazardous substances, pesticides and other materials not intended for use in food shall be stored separately and secured, with access control, from food to avoid the potential for handling errors and contamination.

8.8.5 Waste shall be so stored as to avoid the contamination of food or of the environment. This waste shall be safely removed from the food handling areas as soon as possible.

8.8.6 Records of storage conditions of materials shall be maintained where it is required to preserve the material.

8.9 Food handling, processing and monitoring

8.9.1 Food handling, processing, monitoring and measurement methods shall be established, documented and recorded to ensure conformity with product specifications.

8.9.2 The FHO shall monitor and record all critical parameters in the process to ensure that the finished product is safe.

8.9.3 The FHO shall provide methods and means of handling that will prevent damage or deterioration of the food product. Food shall be handled and processed in such a way that contamination and cross-contamination between the food being handled, other foodstuffs in the food handling areas and the environment is prevented.

8.9.4 Characteristics of the food product shall be monitored and measured to verify that safe food products are produced.

8.10 Food safety hazards

8.10.1 Measures shall be put in place to prevent the introduction of food safety hazards, whether intended or unintended. Where their presence is unavoidable due to their inherent presence, controls shall be put in place to detect and control, to ensure that their levels do not pose a risk to the consumer.

8.10.2 Food safety hazards shall be categorized into the following:

a) biological food safety hazards:

- 1) microbiological (for example, animals, rodents, birds, and insects); and
- 2) microbiological (for example, pathogenic bacteria and fungi, viruses, protozoa and parasites including their toxins).

b) chemical food safety hazards (for example, cleaning chemicals, pesticides used, pesticide residue levels and drug residues);

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c) physical food safety hazards (for example, glass, metal, stones, and bones); and

d) allergenic food safety hazards:

- 1) allergens (for example, tree nuts, milk, soy, shell fish and eggs); and
- 2) food intolerance substances (for example, colourants, preservatives).

8.10.3 Biological, chemical and physical food safety hazards control programmes shall be in accordance with this standard.

8.10.4 An allergenic control programme shall be in accordance with the relevant national legislation (see foreword).

8.10.5 The effectiveness of the measures implemented to prevent, control and detect food safety hazards shall be reviewed at least annually.

8.11 Traceability

8.11.1 The FHO shall establish, document and record a traceability system which enables the identification of final product batches and their relation to batches of raw materials, ingredients, processing aids, processing and rework, food contact packaging materials and dispatch.

8.11.2 The traceability system shall be tested annually to demonstrate its effectiveness.

8.11.3 Records of the annual testing shall be kept.

8.12 Emergency preparedness

The FHO shall establish, implement and maintain documented procedures to manage emergency situations that can impact food safety, for example,

- a) water shortages,
- b) power outages,
- c) natural disasters, and
- d) industrial action.

8.13 Packaging and labelling of the final product

8.13.1 The labelling of the food product shall comply with the relevant national legislation (see foreword) for labelling.

8.13.2 Labels shall be placed onto product in such a way that its identify and relevant product information is visible and will not deteriorate during its handling.

8.13.3 The preservation of final product may be supported by means of application of preservation gasses, i.e. nitrogen gas. Such gasses shall be of an acceptable purity in order not to cause harm to the consumer.

8.13.4 Subject to the relevant national legislation (see foreword), packaging materials for the unprotected food product shall be unused (new), clean, non-toxic and inert, of low moisture-vapour permeability, and shall not contain substances deleterious to the food product or harmful to health and be strong enough to protect the product adequately.

8.14 Shelf life and retention samples

8.14.1 Shelf life shall be scientifically validated before the commercialization of the food product, where applicable.

8.14.2 The final food product shall be sampled and stored for retention purposes.

8.14.3 The samples shall be retained under controlled conditions in accordance with the intended use.

8.14.4 Critical parameters shall include any heat processing required to pasteurize or sterilize the product, hygiene and cleaning procedures, the strength of the cleaning and disinfecting active ingredients and the temperature for each washing cycle, and the temperature for post-heat-treatment.

8.14.5 Records shall be kept.

8.15 Dispatch

8.15.1 Only final product complying with its food safety specifications (or both) customer requirements shall be released for dispatch.

8.15.2 When dispatching, the FHO shall ensure that transportation used to dispatch their product is secure, hygienic and pest free. The dispatching transportation shall not be able to alter the state of the final product, i.e. temperature control management is capable of maintaining the integrity and safety of the product.

8.15.3 Dispatching record(s) shall, as a minimum, contain the following:

- a) the customer details;
- b) the products;
- c) the traceability coding (for example, date code, and batch code);
- d) the condition of the product dispatched (for example, compliance with specifications, temperature abuse, quality, and contamination);
- e) the condition of dispatch transportation (for example, pest free, clean, and secure);
- f) the date and time of dispatch and;
- g) the quantity.

8.16 Transportation

8.16.1 The transportation of food products shall take place under hygienic conditions to prevent contamination and deterioration of the product. Records of transportation conditions shall be kept.

8.16.2 Transportation personnel shall comply with the appropriate requirements for personnel stated by this standard.

8.16.3 Hazardous substances shall not be transported with food.

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8.16.4 When unpacked food products are transported with other products the risk of contamination or cross-contamination (or both) shall be prevented by appropriate means.

8.16.5 Prior to off-loading, the load shall be checked for signs of temperature abuse (thawing and re-freezing).

8.16.6 Transportation vehicles, containers and conveyances shall be constructed, handled and stored in such a way that they can be effectively cleaned and maintained.

8.16.7 Transportation of food products shall be such that tampering with and damage to the food products is prevented.

8.17 Calibration, verification and control of monitoring and measuring devices

8.17.1 The FHO shall provide evidence that the specified monitoring and measuring methods and devices are adequate to ensure the performance of monitoring and measuring procedures.

8.17.2 Where necessary to ensure valid results, the measuring and monitoring devices and methods used

- a) shall be calibrated or verified (or both) at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; where no such standards exist, the basis used for calibration or verification shall be recorded,
- b) shall be adjusted or re-adjusted, as necessary, and that appropriate measures are taken to prevent any adjustments that would make measurements invalid,
- c) shall be identified to enable the calibration or verification status (or both) to be determined, and
- d) shall be protected from damage and deterioration.

8.17.3 Records shall be maintained of each item of equipment significant to the tests or calibrations performed (or both). The records shall include at least the following:

- a) the identity of the item of equipment;
- b) the manufacturer's name, type identification, and serial number or other unique identification;
- c) checks that equipment complies with the specification;
- d) the current location, where appropriate;
- e) the manufacturer's instructions, if available, or reference to their location;
- f) dates, results and copies of reports and certificates of all calibrations, adjustments, acceptance criteria, and the due date of next calibration;
- g) the maintenance plan, where appropriate, and maintenance carried out to date; and
- h) any damage, malfunction, modification or repair to the equipment.

8.17.4 In addition, the FHO shall assess the validity of the previous measurement results when the equipment or process is found not to conform to requirements. If the measuring and monitoring devices are nonconforming, the FHO shall take action appropriate for the equipment and any product affected. Records of such assessment and resulting actions shall be maintained.

9 Requirements for high-risk areas

9.1 High risk areas require the highest levels of hygiene, food handling practices, design of facilities and equipment to prevent product contamination.

9.2 In addition to all requirements of this standard, the following shall be complied with for high risk areas:

- a) where high-risk areas are part of the FHO, there shall be physical segregation by means of a full height wall separating the high risk area from other areas. Physical segregation is to provide a self-contained area where high risk materials or products are handled after a microbiological reduction or elimination step, until fully protected, usually by means of food contact packaging;
- b) the physical segregation shall be capable of preventing the risk of cross contamination from
 - 1) all personnel moving between the high-risk area and other areas except through designated changing areas,
 - 2) the movement of all equipment, utensils or materials into the high risk area except through designated ports with sanitizing controls in place,
 - 3) water or other liquids on the floor washing into the high risk area, and
 - 4) airborne contaminants for example, dust particles or water droplets;
- c) the air supply to high-risk areas shall be filtered and the area shall be kept under positive pressure. The air filtration system shall be maintained to ensure continued control of air borne contamination;
- d) dedicated equipment, utensils, and protective clothing shall be used in high risk areas;
- e) where an operation includes a high risk area, personnel shall enter via a specially designated changing facility at the entrance to the high risk. The changing facility shall meet the following requirements:
 - 1) clear instructions shall be provided for the order of changing into and out of dedicated protective clothing to prevent contamination of clean clothing;
 - 2) protective clothing shall be visibly distinctive from that worn in other areas and shall not be worn outside of high risk areas;
 - 3) hand washing during the changing procedure shall be incorporated to prevent contamination of the clean protective clothing i.e. hand washing after hair covering and footwear has been put on but before handling clean protective clothing;
 - 4) prior to entering high risk areas, hand washing and disinfection shall be provided and used; and
 - 5) dedicated footwear shall be provided to be worn in the high risk area with an effective system to segregate areas for wearing high risk footwear and other footwear. By exception, the use of boot wash facilities is accepted, where these show that they provide an effective control of footwear to prevent the introduction of pathogenic bacteria into high risk areas.

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10 Verification

10.1 General

10.1.1 Documented verification procedures shall specify any planned sequence of observations, tests and other evaluations, in addition to monitoring, to determine whether:

- a) monitoring and deviation procedures are conducted according to the documented procedures;
- b) the records meet the requirement specified in documented procedures (see 6.2); and
- c) the controls in place are effective.

10.1.2 The documented verification procedures shall at least include

- a) personnel responsible for the verification,
- b) verification frequency,
- c) a description of the activities to be conducted, and
- d) documented deviation procedures.

10.1.3 Verification shall, wherever possible, be carried out by someone other than the person who is responsible for performing the monitoring activity.

10.2 Testing

10.2.1 The FHO shall undertake or outsource the testing and analyses which are critical to confirm product safety. The analyses shall be performed by a laboratory to standards equivalent to those described in SANS 17025.

10.2.2 Customer and relevant legislative requirements shall be taken into consideration for testing and the results analysed.

10.2.3 There shall be a scheduled program of testing covering raw materials, in-process materials and finished products, at a frequency commensurate with the risk to the safety of the finished product.

10.2.4 There shall be a scheduled program of testing covering hygiene and environment, at a frequency commensurate with the risk to the safety of the finished product.

10.2.5 Testing may include microbiological, chemical, physical, allergenic or organoleptic testing. The methods, frequency and specified limits shall be documented and corrective actions shall be taken.

10.3 Internal audits

10.3.1 Documented procedures for planning and carrying out internal audits shall be established. The documented procedures shall describe the methodology, frequency, responsibility and management of the audit programme. These audits shall determine whether the PRPs function adequately to meet food safety requirements.

10.3.2 Internal audits shall be planned at least once a year and shall be carried out by personnel who are independent from the activity being audited. The selection of auditors and the conduct of audits shall be such that objectivity and impartiality are ensured during the audit process. Auditors shall not audit their own work.

10.3.3 The results of the audits shall be recorded and discussed with the personnel responsible for the activity being audited. Records of internal audits shall be maintained and shall be brought to the attention of personnel that are responsible for its corrective action.

10.3.4 Internal audit results shall identify conformities and non-conformities, as well as opportunities for improvement. The results shall be reported to the personnel responsible for the activity audited. Corrective actions and timescales for the implementation shall be agreed and completion of actions verified. Records shall be kept.

11 Food defence

11.1 The food handling organization shall conduct a threat assessment to identify potential threats to the security of the product and intentional tampering to the product held on the premises in storage or on vehicles.

11.2 The threat assessment shall, as a minimum, consider the following:

- a) threat of intentional contamination, sabotage, vandalism;
- b) assuring personnel security;
- c) controlling access to premises;
- d) controlling access to services;
- e) securing storage of transport vehicles;
- f) controlling access to materials; and
- g) controlling access to processes.

11.3 Measures shall be put in place for the prevention, detection and control of threats. The methodology of the threat assessment applied shall be documented and the results obtained shall be recorded. Evidence of communication on the control of the threats based on the outcome of the threat assessment shall be kept.

NOTE For additional information, see PAS 96.

12 Control of nonconformities

12.1 General

12.1.1 A documented procedure shall be established for the identification and handling of nonconformity. Nonconformity shall include material, product, procedural deviations, legislative or customer requirements and consumer complaints (or both).

12.1.2 All nonconformity shall be handled in accordance with the requirements for corrective action.

12.1.3 Timeous communication to the relevant parties shall be carried out to inform them of the status of nonconforming materials or products (or both) including the recommended action to control the non-conformance.

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12.2 Control of nonconforming materials and products (or both)

12.2.1 Nonconforming materials and products (or both) are to be assessed against their relevant specifications. The results shall be used as means of identifying their control, i.e. disposal, rework or change in application. Records of the decision and its actions shall be maintained.

12.2.2 Rejected material or products (or both) shall be disposed of in a safe manner and shall not pose a risk to the consumer. Records of safe disposal shall be maintained.

12.3 Rework

12.3.1 General

Rework shall be stored, handled and used in such a way that product safety, quality, traceability and regulatory compliance are maintained.

12.3.2 Storage, identification and traceability

12.3.2.1 Stored rework shall be protected from exposure to microbiological, chemical or extraneous matter contamination.

12.3.2.2 Segregation requirements for rework (for example, allergen) shall be documented and met.

12.3.2.3 Rework shall be clearly identified or labelled (or both) to allow traceability. Traceability records for rework shall be maintained.

12.3.2.4 The rework classification or the reason for rework designation shall be recorded (for example, product name, production date, shift, line of origin, shelf-life etc.).

12.3.3 Rework usage

12.3.3.1 Where rework is incorporated into a product as an "in-process" step, the acceptable quantity, type and conditions of rework used shall be specified. The process step and method of addition, including any necessary pre-processing stages, shall be defined.

12.3.3.2 Where rework activities involve removing a product from filled or wrapped packages, controls shall be put in place to ensure the removal and segregation of packaging materials and to avoid contamination of the product with extraneous matter.

12.4 Withdrawal or recall

12.4.1 A documented procedure shall be established for the withdrawal or recall of product.

12.4.2 The documented procedure shall include, as a minimum, the following information on:

- a) withdrawal or recall team;
- b) specific nominated responsibilities of team members;
- c) sequence of activities;
- d) communication to the relevant parties;
- e) handling of the non-conforming product at the organization, product in transit, product at the customer or consumer and product returned to the organization's premises; and
- f) method of product disposal.

12.4.3 The documented procedure for withdrawal or recall shall be tested as a minimum once a year through a mock withdrawal or recall. Records shall be maintained.

12.5 Corrective action

12.5.1 Corrective action shall be applied to all identified nonconformities.

12.5.2 A documented procedure shall be established for corrective action. The documented procedure shall include the following:

- a) immediate correction when required;
- b) reviewing of the nonconformity (for example, materials, products, documented procedures, customer or consumer complaints);
- c) determination of the cause of the nonconformity;
- d) evaluation of the need for action to ensure the nonconformity does not recur;
- e) determination and implementation of the action needed;
- f) recording of the action taken, including correction; and
- g) review of the effectiveness of the action taken.

12.5.3 Correction may need to be applied prior to corrective action in order to maintain process or handling activities (or both). Corrections shall be reviewed to determine their effectiveness and shall form part of the corrective action records.

12.5.4 Details for the handling of customer or consumer complaints shall be specified in a documented procedure.

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Annex A

(informative)

Verification on effectiveness of cleaning and disinfection documented procedures

A.1 The effectiveness of cleaning and disinfection procedures should be verified by microbiological monitoring of the product and food contact surfaces. SANS 5763 should be used for monitoring the efficacy of the cleaning of plant, equipment and utensils, use. Similar regular microbiological monitoring of the product at all stages of production will also give information on the effectiveness of cleaning and disinfection procedures as well as the hygienic handling of the product.

A.2 When sampling for microbiological monitoring of equipment and food contact surfaces, the use of a quenching (neutralizing) agent is required to eliminate any residual disinfectant (see SANS 5763).

A.3 The following symbols and surface counts can be used as guidelines to indicate satisfactory cleaning operations when using the swab technique (see SANS 5763):

- a) S = satisfactory: 0 to 15 organisms per 1 000 mm²;
- b) FS = fairly satisfactory: 16 to 75 organisms per 1 000 mm²;
- c) UNS = unsatisfactory: more than 75 organisms per 60 mm², or the presence of the undesirable organism indicated;
- d) TNTC = too numerous to count;
- e) X = the presence of the undesirable organism indicated; and
- f) – = not detected.

NOTE 1 These counts are for guidance only and could vary in different areas.

NOTE 2 An undesirable organism can be any organism that the management of the establishment regards as detrimental to the facility. In most cases, however, *Escherichia coli* is regarded as the undesirable organism and is used as an indicator of faecal contamination.

A.4 Table A.1 is an example of a cleaning efficacy schedule.

Table A.1 — Example of a cleaning efficacy schedule for microbiological testing

1	2	3	4
Area swabbed	Microbiological test	Limit	Frequency
Food contact equipment swabs	Total bacterial count	< 75	To be placed on a testing schedule based on risk.
Drain, cooling unit swabs	<i>Listeria monocytogenes</i>	Absent	To be placed on a testing schedule based on risk.
Hand swabs	<i>Escherichia coli</i>	Absent	To be placed on a testing schedule based on risk.
	<i>Staphylococcus aureus</i>	Absent	To be placed on a testing schedule based on risk.

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