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SANS 1657:2022

Edition 2.4

SOUTH AFRICAN NATIONAL STANDARD

Bottled water of subterranean origin

WARNING
This document references other documents normatively.

Published by the South African Bureau of Standards
1 Dr Lategan Road Groenkloof ✉ Private Bag X191 Pretoria 0001
Tel: +27 12 428 7911 Fax: +27 12 344 1568
www.sabs.co.za

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Table of changes

Change No.	Date	Scope
Amdt 1	2009	Amended to change the value of nitrite in table 1 and the values of copper and nitrate in table 2, and to include the words "on the label" in the declaration of the composition of the product (8.2.3.1).
Amdt 2	2011	Amended to state that this document is referenced in legislation, to move reference to national departments to the foreword, and to update referenced standards.
Amdt 3	2014	Amended to update referenced standards.
Amdt 4	2022	Amended to update referenced standards, and to delete the annex on notes to purchasers.

Foreword

This South African standard was prepared by National Committee SABS/TC 1037, *Non-alcoholic beverages*, 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 March 2022.

This document supersedes SANS 1657:2014 (edition 2.3).

A vertical line in the margin shows where the text has been technically modified by amendment No. 4.

This document is referenced in the Regulations of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972). **Amdt 2**

Reference is made in 3.16 to the "relevant national department". In South Africa this means the South African Council for Natural Scientific Professions (SACNASP). **Amdt 2**

Reference is made in 4.1.1 to "the current relevant national legislation". In South Africa this means the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the National Health Act, 2003 (Act No. 61 of 2003).

Reference is made in 4.4.6 to "the current 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 4.6.1.1 to the “relevant national department". In South Africa this means the Department of Water and Sanitation. **Amdt 2**

Reference is made in 6.5.2 and 8.1 to "the current relevant national legislation". In South Africa this means the Legal Metrology Act, 2014 (Act No. 9 of 2014).

Reference is made in 8.2.1 to "the current relevant national legislation". In South Africa this means the Legal Metrology Act, 2014 (Act No. 9 of 2014) and the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972).

Annex B forms an integral part of this document. Annex C is for information only. **Amdt 2; amdt 4**

Compliance with this document cannot confer immunity from legal obligations.

Contents

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Bottled water of subterranean origin

1 Scope

This standard specifies the description, treatment, testing, bottling, packaging and labelling of two types of water, namely bottled natural spring water (or bottled natural mineral water), and bottled spring water (or bottled mineral water) that are of subterranean origin and bottled at source. The two types of water may be offered as non-carbonated ("still") water or as carbonated ("sparkling") water.

2 Normative references

The following referenced documents are indispensable for the application of this document. 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.

2.1 Standards

AOAC official method 991.07, Nitrogen- and phosphorus-containing pesticides in finished drinking water – Gas chromatographic method. In AOAC INTERNATIONAL. *Official methods of analysis*. 17th ed., vol. 1. edited by William Horwits. Gaithersburg: AOAC International, 2000.

APHA method 2150 B[1)], *Threshold odor test*.

APHA method 2160 B[1)], *Flavor threshold test* (FTT).

APHA method 2320[1)], *Alkalinity.*

APHA method 3500-Ba B[1)], *Barium – Atomic absorption spectrometric method*.

APHA method 3500-K B[1)], *Potassium – Flame photometric method.* **Amdt 2**

APHA method 4500-CO_2 D[1)], *Carbon dioxide and forms of alkalinity by calculation.*

APHA method 4500-I B[1)], *Iodine – Leuco crystal violet method*. **Amdt 2**

APHA method 6630 B[1)], *Organochlorine pesticides – Liquid-liquid extraction gas chromatographic method I*.

1) In *Standard methods for the examination of water and wastewater*, prepared and published jointly by the American Public Health Association, the American Water Works Association and the Water Environment Federation. 21st ed. 2005.

ASTM D3697, *Standard test method for antimony in water.* **Amdt 3**

ASTM D3859, *Standard test methods for selenium in water.* **Amdt 3**

ISO 9390, *Water quality – Determination of borate – Spectrometric method using azomethine-H*.

ISO 10523, *Water quality – Determination of pH*. **Amdt 3**

ISO 15061, *Water quality – Determination of dissolved bromate – Method by liquid chromatography of ions*.

ISO 16266, *Water quality – Detection and enumeration of* Pseudomonas aeruginosa – *Method by membrane filtration.*

SANS 163-1/ISO 10304-1, *Water quality – Determination of dissolved anions by liquid chromatography of ions – Part 1: Determination of bromide, chloride, fluoride, nitrate, phosphate and sulfate*.

SANS 241-1, *Drinking water – Part 1: Microbiological, physical, aesthetic and chemical determinands.* **Amdt 2**

SANS 374, *Standard test methods for chloride ion in water.*

SANS 375, *Standard test method for turbidity of water.*

SANS 376, *Standard test methods for arsenic in water.*

~~SANS 377, *Standard test methods for selenium in water.*~~ **Amdt 3**

~~SANS 379, *Standard test method for antimony in water.*~~ **Amdt 3**

~~SANS 5011/ISO 10523, *Water quality – Determination of pH.*~~ **Amdt 3**

SANS 5197, *Water – Turbidity.*

SANS 5201, *Water – Cadmium content.*

SANS 5203, *Water – Copper content.*

SANS 5207, *Water – Iron content.*

SANS 5208, *Water – Lead content.*

SANS 5209, *Water – Manganese content.*

SANS 5210, *Water – Nitrate and nitrite content.*

SANS 5213, *Water – Dissolved solids content.*

SANS 5214, *Water – Zinc content.*

SANS 5220, *Water – Oxygen absorption.*

SANS 5221, *Microbiological analysis of water – General test methods.*

SANS 6050, *Water – Sodium content.*

SANS 6054, *Water – Chromium content.*

SANS 6056, *Water – Sulfide content*.

SANS 6059, *Water – Mercury content.*

SANS 6169, *Water – Aluminium content.*

SANS 6171, *Water – Nickel content.*

SANS 6265, *Water – Calcium and magnesium content – Atomic absorption spectrometric method.*

SANS 6310, *Sulfate content of water (turbidimetric method).*

SANS 6439/ISO 6439, *Water quality – Determination of phenol index – 4-Aminoantipyrine spectrometric methods after distillation.*

SANS 6461-1/ISO 6461-1, *Water quality – Detection and enumeration of the spores of sulfite-reducing anaerobes (clostridia) – Part 1: Method by enrichment in a liquid medium.*

SANS 6461-2/ISO 6461-2, *Water quality – Detection and enumeration of the spores of sulfite-reducing anaerobes (clostridia) – Part 2: Method by membrane filtration*.

SANS 6703-1/ISO 6703-1, *Water quality – Determination of cyanide – Part 1: Determination of total cyanide.*

SANS 6777/ISO 6777, *Water quality – Determination of nitrite – Molecular absorption spectrometric method*.

SANS 7875-1/ISO 7875-1, *Water quality – Determination of surfactants – Part 1: Determination of anionic surfactants by measurement of the methylene blue index (MBAS).*

SANS 7887/ISO 7887, *Water quality – Examination and determination of colour.*

SANS 7888/ISO 7888, *Water quality – Determination of electrical conductivity.*

SANS 9308-3/ISO 9308-3, *Water quality – Detection and enumeration of* Escherichia coli *and coliform bacteria – Part 3: Miniaturized method (Most Probable Number) for the detection and enumeration of* E. coli *in surface and waste water.*

SANS 10359-1/ISO 10359-1, *Water quality – Determination of fluoride – Part 1: Electrochemical probe method for potable and lightly polluted water.*

SANS 11885/ISO 11885, *Water quality – Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES)*.

2.2 Other publications

Borish, I.N. & Benjamin, W.J. 1998. *Clinical refraction.* 4th ed. Philadelphia: Saunders. **Amdt 4**

3 Definitions

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

3.1
acceptable
acceptable to the authority administering this standard, or to the parties concluding the purchase contract, as relevant

3.2
batch
quantity of bottled product that is processed during a specified period of production in a single bottling plant

3.3
bottle
container that is made of glass, a plastics material, or tin plate or other suitable material, and that (in each case) is capable of being sealed with a closure

3.4
bottling cycle
period that produces a batch (see 3.2)

3.5
carbonated water
sparkling water
water that has been made effervescent by the addition of carbon dioxide (see 6.5.4)

3.6
"clean worker"
worker who operates in an area that is required to be maintained in a completely hygienic condition

3.7
defective
bottle or its contents that does not comply in one or more respects with the relevant requirements of this standard

3.8
"dirty worker"
worker who operates in an area that cannot be maintained in a completely hygienic condition

3.9
hydrological year
period from the beginning of a wet season up to the beginning of the next wet season

3.10
lot
product of the same description and from the same batch, in bottles of the same size and type, from the same manufacturer, and submitted at any one time for inspection and testing

3.11
mineral content
concentration of mineral salts, trace elements and other inorganic constituents present, normally expressed in milligrams per litre

3.12
mineral water
drinking water of substantially constant composition and temperature (due account being taken of the cycles of natural fluctuations) and obtained direct from subterranean water-bearing strata that are protected against pollutants

NOTE Mineral water can be characterized by its mineral content (see 3.11) and the relative proportions of the constituents.

3.13
natural
pertaining to the product covered by this standard, descriptive of water that has not undergone any treatment not permitted by this standard

3.14
non-carbonated water
still water
water that, by nature, does not contain free carbon dioxide in excess of the amount necessary to keep dissolved the hydrogen carbonate salts that are present in the water

3.15
product
water of subterranean origin during processing or in its final processed state, as indicated by the context

3.16
professional hydrogeologist
person registered as a Professional Natural Scientist (Pri.Sci.Nat.) with the relevant national department (see foreword) **Amdt 2**

3.17
source
point at which the product (see 3.15) is extracted from subterranean water-bearing strata

3.18
spring water
water of subterranean origin that is either pumped via a borehole or collected from surface water that has flowed naturally to the surface

4 Requirements for the factory, for employees, and for the abstraction area

4.1 Requirements for the factory and for employees

4.1.1 General

All the statutory requirements of the current relevant national legislation (see foreword) shall be complied with.

The factory, the equipment and the water used in the preparation of the product shall comply with the requirements given in 4.1.2 to 4.3 (inclusive).

4.1.2 Factory construction, layout and conditions

4.1.2.1 Location, size, hygienic design and conditions

The location of the premises and the construction of the factory buildings shall be such that the premises and the buildings can be kept acceptably free from objectionable odours, smoke, dust and other contamination in order to comply with the relevant requirements for hygiene and sanitation. Adequate working space shall be provided to allow for satisfactory performance of all operations. The buildings and facilities shall be designed to provide:

a) separation by effective means between operations that could cause cross-contamination; and

b) a regular flow in the processing, from the arrival of the product at the premises to the finished product.

Provision shall be made for appropriate temperature conditions for the process and for the product.

The factory buildings shall be of sound construction, in good repair and large enough to prevent crowding of equipment and employees, to permit adequate cleaning and the maintenance of hygiene and product quality, and to allow proper supervision of operations. The factory grounds shall be graded to ensure proper drainage. The factory and grounds shall be maintained in a clean and hygienic state and shall be effectively fenced. Roadways and areas that serve the factory and that are within its boundaries or in its immediate vicinity, shall have hard, paved surfaces suitable for wheeled traffic.

A system of control that does not contaminate the product shall be maintained to keep the factory free from birds, rodents, insects and other vermin.

4.1.2.2 Roofs, ceilings and overhead fittings

The roof shall be weatherproof. The roof and ceilings shall be at least 300 mm above any overhead equipment and in no case less than 3 m from the floor. Ceilings and, where no ceilings are fitted, roofs shall be faced with a smooth impervious material that is light in colour and capable of being easily cleaned without damage, and shall be so designed, constructed and finished as to be dustproof and to minimize condensation, mould development, flaking paint and the lodgement of dirt. A ceiling shall be provided where the unprotected product and packaging materials are handled. A ceiling is not required where a canopy covers the entire open product. In processing areas, all overhead structures and fittings shall be installed in such a way as to avoid direct or indirect contamination of product or raw materials by falling dust, dirt, condensation and drip, and in such a way as not to hamper cleaning operations. They should be insulated where appropriate.

4.1.2.3 Walls and doors

Outer walls shall be weatherproof and impermeable to water. Interior wall surfaces shall be faced with a smooth, crevice-free, impact-resistant, impervious, light-coloured, non-toxic material to a height of not less than 2 m from the floor. Where splashing might occur above this height, the facing shall be continued to this higher level. Above 2 m, the walls shall have a smooth, crevice-free, impervious, washable, light-coloured surface. All ledges that occur in the wall construction shall be sloped at an angle of at least 45°. The walls shall be free from unnecessary projections.

Wall-to-wall and wall-to-floor junctions in bottling areas shall be coved. The minimum radius of the coving shall be 25 mm and 40 mm respectively.

Doors shall be of adequate width and tight-fitting. Doors and door frames shall be sheathed with, or made from, corrosion-resistant material that has high-impact resistance and, unless provided with effective air-screens, shall, as far as is practicable, be of a self-closing type. Doors and door frames shall have a smooth, seamless, impervious, light-coloured, readily cleanable surface.

4.1.2.4 Windows

Window-sills (sloped at an angle of at least 45°) shall be at least 1 m above floor level.

Windows and other openings shall be so constructed as to avoid accumulation of dirt.

Windows that open shall be fitted with screens that are easily removable for cleaning, and shall be kept in good repair.

4.1.2.5 Floors of processing areas

Floors shall be constructed of concrete or other suitable smooth, impervious, non-slip and non-toxic material that is resistant to wear and corrosion, easy to clean and laid to an even surface that is free from cracks, crevices and open joints. Floors and drainage channels shall be graded to have a fall of at least 1 in 60 and shall be drained to internal drainage channels that are connected to external sewers via a suitable drain trap.

Floors and drainage channels shall be in good condition and repair and shall have strainers in place. Internal drainage channels shall be of the open type with, where necessary, removable covers.

Where necessary, duckboards of easily cleaned impervious material shall be provided for workers.

Installations that obstruct flow and cleaning shall not be present in drainage channels. The capacity of drainage channels shall be sufficient to cope with peak loads. The factory shall have an efficient effluent and waste disposal system, so designed and constructed that it cannot contaminate or be detrimental to the product or the source of product.

4.1.2.6 Lift cages and staircases

Lift cages shall have a smooth, impervious, corrosion-resistant inside surface and lift shafts shall be properly drained and shall be accessible for cleaning. Staircases in rooms where the product is processed or handled shall have solid risers, and shall be provided with solid balustrades to a height that prevents contamination of the product underneath. Stairs, lift cages and auxiliary structures such as platforms, ladders, chutes and catwalks shall be so constructed and situated as not to cause contamination of the product. Where necessary, chutes shall be constructed with inspection and cleaning hatches.

4.1.2.7 Pipes, cables, reservoirs and storage tanks

Piping for product lines shall be independent of piping for water used for other purposes and of piping for non-potable water. Product water and water for steam production or for refrigeration or for any other use shall be carried in completely separate lines with no cross-connection between them and without back-siphonage. Piping for the product shall be distinguished by colour from other water pipelines. In the pipeline for the product, there shall be no opening between the point of collection and the filling point. Cables and pipes shall be fixed in one of the following ways:

a) fixed above ceilings;

b) chased into walls;

c) fixed to walls in such a way that the walls, cables and pipes can be easily cleaned and maintained in a hygienic condition; or

d) carried under floors.

Overhead pipes and cable connections to machines that cannot be fixed above the ceiling shall be carried a minimum of 40 mm apart on tubular brackets suspended at least 40 mm away from the ceiling.

Waste and other pipes that cannot be chased into walls shall be fixed a minimum of 40 mm from the wall surfaces and 150 mm above the floor and spaced a minimum of 40 mm apart.

Pipes in which the product is conveyed shall have no dead ends.

Reservoirs and storage tanks shall be constructed from materials suitable for the product. Reservoirs and storage tanks shall be fitted with tight-fitting covers, manholes or hatches. Only water pipelines that carry the product may be connected to the reservoirs and storage tanks used for the product. Such reservoirs and storage tanks shall be distinctively marked.

4.1.2.8 Illumination

General illumination shall be such as to permit efficient operations during the manufacture, production, processing or treatment of the product. Artificial illumination, if used, shall be such that the colour of the product is not significantly altered. Light bulbs and fixtures suspended over the product at any stage of preparation, processing or packaging shall be of the safety type or shall be otherwise protected to prevent contamination of the product in the event of breakage.

4.1.2.9 Ventilation

The ventilation shall keep the air fresh, prevent excessive heat, remove excess steam or vapour, and prevent the formation of condensate and growth of mould. Natural ventilation shall be augmented, if necessary, by mechanical means. Air flow shall be from the more hygienic to the less hygienic areas of the factory. The air shall be free of noxious fumes, vapour, dust and contaminating aerosols.

4.1.2.10 Hand-washing facilities

The following shall be provided at the entrances to the preparation and processing areas of the factory used by the employees and at other convenient places in the preparation and processing areas of the factory within easy reach of the employees, and near the water closets in such a position that employees have to pass them when returning to the processing area:

a) an adequate number of wash-hand basins, with an abundant supply of hot and cold running water (from taps operated by means other than hands or elbows) or warm water in the temperature range 40 °C to 50 °C; and

b) abundant unscented antibacterial liquid soap or suitable detergent, and disposable towels or hot-air driers.

Access to hand-washing facilities shall at all times be unobstructed by equipment and operating activities.

4.1.2.11 Processing areas

Processing areas shall be so designed and equipped as to allow adequate working space, and so staffed as to allow free movement of workers and to facilitate the free movement and cleaning of movable equipment.

Walls and floors shall have a smooth finish and shall be impervious to moisture, and measures shall be taken to prevent the flaking off of surface material from ceilings and walls. Brick walls shall be plastered. Processing areas shall be kept reasonably free from surplus water.

The filling (bottling) area shall be separate from the storage areas.

The cleaning and washing area for reused bottles shall be separate from the filling (bottling) area.

4.1.2.12 Storage facilities for packaging materials

Containers, closures, cartons and labels for the packing and packaging of the product shall be stored in clean, dustproof, dry storerooms that are reserved for this purpose and are separate from production areas and other storage areas.

4.1.2.13 Storage facilities for pesticides, poisons and other hazardous materials

Pesticides, poisons and other hazardous materials and the equipment for their application, shall be stored in a room separate from the processing area and the storage areas for ingredients or containers. The room shall be kept locked.

4.1.2.14 Storage facilities for cleaning and disinfecting materials

Cleaning and disinfecting materials and equipment shall be stored in a room separate from the processing area and shall at no time come into contact with containers, raw materials or the product.

4.1.2.15 Storage facilities for the product

Product awaiting dispatch shall be stacked, but not direct upon the floor, in well-ventilated, clean and dry rooms. The finished product shall be stored under conditions that will prevent contamination, microbiological spoilage and deterioration. Adequate measures shall be taken to protect the product against rough handling and damage. The product shall not be exposed to direct sunlight or to temperatures above 30 °C.

Product found not to comply with the in-house or other quality management systems or with the requirements of this standard shall be stacked apart from that which complies with the said requirements.

4.1.2.16 Refuse

A separate refuse room or other equally adequate refuse facility shall be provided on the premises and shall be cleaned daily (see 4.4.4). The design and construction of the refuse facility shall be such as to prevent the harbouring of pests and the contamination of the product, equipment or building.

4.1.2.17 Comfort facilities

Adequate dining-rooms, rest rooms, change-rooms, shower baths, wash-hand basins, and water closets (separate for each sex) shall be provided. Comfort facilities shall be separated from, and shall not open directly onto, the processing areas.

Toilets shall be provided at an acceptable distance from the processing areas and shall be completely separate from change-rooms, the only permissible access being close-fitting self-closing doors. The toilets shall be so designed and constructed as to ensure hygienic removal of wastes. An abundant supply of toilet paper shall be provided at the toilet facilities. Hot and cold running water (from taps operated by means other than hands or elbows), unscented liquid soap, nail brushes and paper towels (**not** hot-air driers) shall be available to employees at the facilities. Receptacles shall be provided for used disposable towels at each hand-washing facility. These receptacles shall be regularly emptied and cleaned. The comfort facilities shall be kept neat and clean. Lockers shall be provided and the layout and equipment shall be such as to permit proper cleaning and maintenance. Alternatively, a system of controlled clothes baskets may be used instead of lockers.

There shall be adequate ventilation and illumination. Separate facilities shall be available for "clean" and "dirty" workers. When food is consumed on the premises by employees during rest periods, a room or rooms that has or have adequate dining facilities shall be provided. The change-rooms shall not be used for the preparation or consumption of food or as living quarters. Comfort facilities shall not be used as storage areas.

4.1.2.18 Facilities for cleaning and disinfecting portable equipment

A separate room or a partitioned-off area shall be equipped for the washing and disinfecting of work implements and of loose items of equipment such as trays and trolleys. Hot and cold water under adequate pressure shall be provided. If a separate room is not provided, the area to be used shall be such that there will be no possibility of contamination of the product. The floor of the room or area shall be smooth-surfaced and graded to facilitate the disposal of waste liquids from the cleaning process.

4.1.2.19 Notices

Notices prohibiting eating, spitting and the use of chewing gum and tobacco in any form shall be posted in each processing area and in each area for the storage of ingredients (see 4.5.3). Notices requesting employees to wash their hands on entering the processing areas and after using the toilets shall be posted at each entrance used by employees to gain access to the processing areas, and at exits from the toilet complex.

4.2 Equipment

4.2.1 General

Equipment, implements and utensils shall be suitable for their intended use. All plant (including pipework, vessels, valves, taps, monitoring devices or probes), equipment, implements and utensils that come into contact with the product shall be made of a smooth-surfaced, corrosion-resistant and non-absorbent material that is free from pits or crevices, that does not transmit toxic substances, foreign odours or flavours to the product, does not stain or soil the product or change the original qualities of the product, and that is preferably stainless steel. Acceptable alternatives to stainless steel are polyethylene and unplasticized polyvinyl chloride (uPVC). The use of different materials in such a way that contact corrosion can occur shall be avoided. The equipment, implements and utensils shall be capable of withstanding repeated cleaning and disinfection. They shall be of hygienic design and shall be so installed as to prevent hygiene hazards and to permit easy and effective cleaning and disinfection. Where necessary, as in the case of equipment that cannot be cleaned *in situ*, it shall be possible to dismantle equipment for cleaning and disinfection. Equipment, implements or utensils shall not be removed from the processing areas, except for repairs or for cleaning.

Equipment shall not be sunk into the floor unless provision is made for adequate drainage. All parts of stationary or not readily movable equipment shall be installed at such distances away from the walls and ceilings as are sufficient to provide access for cleaning and inspection. All permanently mounted equipment shall either be installed sufficiently above the floor to provide access for cleaning and inspection, or be completely sealed to the floor.

Lead and lead alloys, other than solder, and other metals that could alter the character of the product, shall not be used in the construction of equipment that comes into contact with the unprotected product at any stage of processing.

4.2.2 Tables

Table frames shall be made of smooth, corrosion-resistant metal, free from pits or crevices, or shall be treated against corrosion, and the tops shall be made of stainless steel or other corrosion-resistant, smooth, impervious material that has similar surface characteristics.

The table tops shall be constructed in such a way as to be accessible for effective cleaning. Where metal tops are folded at the edge, the fold shall be effectively soldered or welded or sealed with an acceptable mastic sealant in such a way as to prevent the product from entering the folded section. The tops of tables shall allow rapid and effective drainage and shall be free from cracks and crevices. All joints shall be made watertight.

4.2.3 Cleaning and disinfection facilities

Cleaning materials and disinfectants, hot and cold running water that complies with 4.3, hosepipes, brushes and other materials necessary for the cleaning of the plant and utensils shall be available.

4.3 Water (other than the product)

Facilities for the storage, treatment and distribution of water shall be adequately protected against contamination. The factory shall use a supply of clean potable water under adequate pressure and free from suspended matter and substances that are deleterious to the product or injurious to health.

Potable water shall comply with the requirements of SANS 241-1. **Amdt 2**

4.4 Hygienic operating requirements

4.4.1 General

In the factory and on its grounds, no operation that is detrimental to the manufacture, processing or treatment of the product shall be permitted.

Effective measures shall be taken to inhibit mould growth and to prevent dust, dirt, flaking paint and other loose or extraneous material from being present in the processing areas or in the storage rooms.

The factory and grounds shall be maintained in a clean and hygienic state.

All plant, equipment and utensils shall be maintained in a state of good repair and shall be cleaned as frequently as is necessary, and disinfected whenever required by circumstances. Provision shall be made for the cleaning-in-place of pipes and tanks used for the product. The entire processing or treatment system, including utensils, shall be cleaned at each change of operations. At the end of operations, filling nozzles and other parts exposed to bacterial contamination shall be thoroughly cleaned, rinsed and disinfected, and the rest of the system shall be cleaned and rinsed. Whenever necessary, but at least weekly, the entire system shall be cleaned, rinsed and disinfected. Immediately before the start of processing operations, plant and utensils shall be rinsed with potable water that complies with 4.3. Steam used in the cleaning of surfaces that come into contact with the product shall not contain substances that could contaminate the product.

4.4.2 Floors and drainage channels

During processing periods, the floor and the drainage channels shall be kept clean. Thorough cleaning of floors and drainage channels shall take place at the end of each day's operations and as often as is necessary during the working day to maintain hygienic conditions.

4.4.3 Walls

The inside surfaces of walls shall be thoroughly washed immediately after each day's operations and as often as is necessary during the working day to maintain hygienic conditions.

4.4.4 Removal of refuse

Litter, waste and overflow shall not be allowed to accumulate or give rise to unhygienic conditions and shall be disposed of in an efficient and hygienic way (see 4.1.2.16).

4.4.5 Vermin and pest control

All refuse facilities (see 4.1.2.16) and all buildings in which packaging materials are stored or in which the product is processed or stored shall be rodentproof and kept free of pests.

4.4.6 The use of pesticides

Pesticides shall not be used while processing is in operation. Equipment, utensils and work surfaces shall be kept free from pesticidal residues.

Pesticides shall at no time come into contact with containers or the product.

Pesticides shall only be dispensed and handled by authorized and properly trained personnel, or by persons under strict supervision of trained personnel.

Pesticides shall comply with the requirements of the current relevant national legislation (see foreword).

4.4.7 Animals

Animals, including birds, shall not be allowed in any part of the factory.

4.5 Requirements for employees engaged in the processing of the product

4.5.1 Health

4.5.1.1 Before being engaged, employees shall pass a medical examination and shall thereafter undergo an annual medical examination.

4.5.1.2 Employees shall receive training in hygiene practices and records shall be kept of such training, and of the duties of a person in charge of food premises since these duties relate to the training of employees.

4.5.1.3 The management shall ensure that no person who is suffering from, or who is a carrier of, any communicable disease (especially a carrier of *Salmonella* or *Shigella* organisms), or who shows symptoms of, or is suffering from, gastroenteritis or an enterobacterial infection or is suffering from any condition causing discharge of pus or serum or loose skin from any part of the body shall be allowed to engage in the preparation, processing, handling or transportation of the product, or to work in any part of the factory where the product is prepared, processed, handled or transported.

4.5.1.4 The management shall ensure that no person who is known or suspected to be affected with a disease that can be transmitted through food, or who is known or suspected to be a carrier of such disease, or who is known or suspected to be afflicted with infected wounds, sores or any illness, is permitted to work in any part of the factory in a capacity in which there is a likelihood of that person's contaminating the product with pathogenic organisms.

4.5.1.5 All medical certificates submitted by an employee of a factory shall be available for inspection by the authority administering this standard.

4.5.1.6 The management shall ensure that no person who is suffering from any cut or injury is engaged in the factory in the preparation, processing, handling or transportation of the product unless and until the cut or injury has been so treated or dressed that the discharge of body fluids onto the product has been prevented, and the wound and its dressing have been so covered as to ensure that infection or contamination of the product is no longer possible. The dressing and its covering shall be conspicuous in colour.

4.5.2 Protective clothing

All employees engaged in the preparation and processing of the product, and also other factory workers and visitors who might enter the preparation and processing areas, shall wear clean protective clothing and clean, washable caps or acceptable alternative headgear to cover their hair. Employees engaged in the processing of the product shall wear light-coloured protective clothing. Waterproof protective

clothing shall be made of a plastics material or rubber, or a similar acceptable material. Overalls shall cover the personal clothing of the employees. Sleeves shall not extend below the elbows except when acceptably covered by plastics sleevelets. All protective clothing shall be of acceptable hygienic design, shall have no top pockets, shall be in good repair, and shall not constitute a source of contamination of the product.

Waterproof protective clothing shall be cleaned at each time of removal and hung on hooks or pegs at exits from preparation and processing areas during intervals between work and during visits to toilets. Overalls shall be left in the cloakrooms when their wearers leave the factory building during breaks. Protective footwear shall be worn in the preparation and processing areas.

4.5.3 Personal hygiene

Employees shall keep their fingernails short and clean, and shall wash their hands with unscented liquid soap and water before commencing work, after each absence from the factory processing area, at regular intervals during the day and when they have been contaminated. Varnish or lacquer shall not be used on fingernails. Jewellery and wristwatches shall not be worn by employees who handle the unprotected product. Workers' personal effects or their food shall not be present in the preparation, processing, packing and storage areas of the factory.

Eating, spitting and the use of chewing gum or tobacco in any form shall be prohibited within the preparation, processing, packing and storage areas of the factory. (See also 4.1.2.19.)

4.6 Requirements for the abstraction area and for abstraction of the product

4.6.1 Requirements for the abstraction area

4.6.1.1 Protection of the abstraction area from contamination

In the immediate surroundings of springs, wells or boreholes, precautionary measures shall be taken to ensure that no pollutants can enter the abstraction area. An area of a 50 m radius should be reserved around each abstraction area as a protective measure against anthropogenic impacts. The abstraction area shall be completely enclosed and rendered inaccessible to animals and unauthorized persons that could damage the abstraction equipment or contaminate the source. Any activities other than the collection of the product or servicing of the installation shall be prohibited in this area.

The installations for collection, such as the pipes, pumps, equipment and reservoirs that come into contact with the product, shall be made from materials suited to the product (see 4.2.1), shall be constructed in such a way as to prevent the introduction of foreign substances into the product, and shall not change the original qualities of the product. In the case where groundwater is abstracted from a borehole, that borehole shall be constructed according to minimum requirements specified by the relevant national department (see foreword). All boreholes shall have a proper sanitary seal construction and well head protection system (see figure 1). **Amdt 2**

Canalization, drainage, used-water lines and also any possible waste storage area within the protected perimeter shall be built and maintained in such a way as not to present any risk whatsoever of polluting springs, boreholes, wells or aquifers.

Any storage area or tank for the storage of fuels such as coal or hydrocarbons shall be designed, protected, controlled and maintained in such a way as to prevent springs, boreholes, wells or aquifers from being polluted during the storage and manipulation of these fuels.

4.6.1.2 Maintenance of abstraction and storage facilities

Methods and procedures for maintaining the abstraction and storage facilities shall be hygienic and not conducive to contamination or pollution of the product.

The equipment and reservoirs used for abstraction of the product shall be so constructed and maintained as to minimize all hazards to human health and to avoid contamination of the product and alteration of the original quality of the product. In the case where a borehole is used for supply, inspection of the well head system shall be performed weekly. In the case of leaky well head works, all operations shall be stopped immediately, and may only proceed once the leaky well head works have been repaired. Inspection of the borehole casing with a down-hole camera system shall be performed initially and after five years of operation to confirm the condition of the borehole casing and perforated zones. This requirement shall also apply to "old" boreholes being considered as abstraction sources for bottled water of subterranean origin.

The quantity of product stored shall not exceed the demand for one day's production, and shall not be stored for longer than 48 h. However, a pH neutral product shall not be stored for longer than 24 h.

If, during production, it is found that the product is contaminated (polluted), all operations shall be stopped until the cause of the contamination is determined and eliminated.

4.6.2 Requirements for abstraction of the product

Product shall be abstracted in conformity with the hydrogeological conditions in such a way as to prevent any extraneous water or pollutants from entering the abstraction system. In a borehole construction, a proper sanitary seal down to the solid rock formation shall be in place to prevent any leakage between the surface and the aquifer.

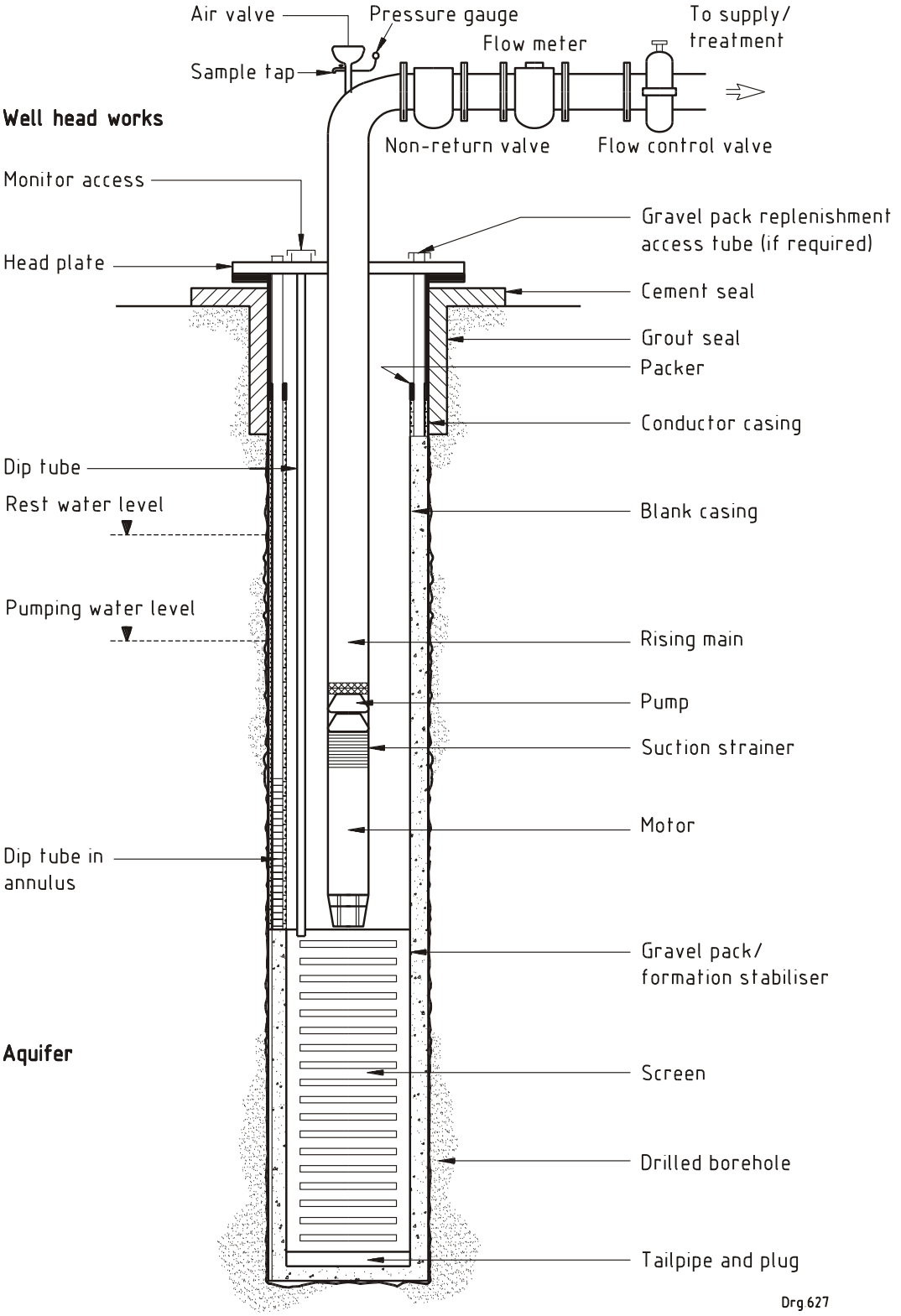

Figure 1 — An example of a groundwater abstraction system

5 Requirements for the source and for the untreated product

5.1 Requirements for the source

5.1.1 Hydrogeological certification

The producer shall provide the authority administering this standard with a certificate from a professional hydrogeologist (see 3.16). The certificate shall:

a) certify that the source is not in danger of pollution by any agency such as (but not limited to) sewerage, farming operations, waste disposal or industrial activities or any combination of these;

b) give the exact location of the source, showing its altitude, on a map with a scale no larger than 1:1 000 and no smaller than 1:25 000;

c) provide a basic hydrogeological assay of the source, including a detailed geological description of the surrounding terrain;

d) give a description of the equipment for water abstraction, a detailed description of the borehole construction and of pollution prevention measures taken; and

e) give the rate of natural flow of the spring, and its seasonal variations, or the maximum discharge rate of the source.

5.1.2 Additional requirements

5.1.2.1 Groundwater resource protection and management

5.1.2.1.1 Monitoring programme

A professional hydrogeologist (see 3.16) shall design a specific monitoring programme and this shall be implemented for a minimum period of one hydrological year (see 3.9). The bottler or his groundwater consultant shall then monitor special parameters at the prescribed interval (weekly or monthly) for a given period (one hydrological year) after which the monitoring interval may be changed accordingly by the hydrogeologist (monthly, quarterly or bi-annually). Typical parameters shall include:

- monitoring intervals;
- electrical conductivity values (milliSiemens per metre);
- pH value measurements;
- temperature; and
- water level trends (preferably rest water level values, which indicate sustainable yields, taken after a specified pump-off period).

A professional hydrogeologist shall specify which macro hydrochemistry constituent(s) (see also table 3) require more frequent analysis (marginal cases shall be treated as priority).

5.1.2.1.2 Risk assessment

The parameters (see 5.1.2.1.1) shall form the base line of a risk assessment in terms of the resource assessed.

A report by a professional hydrogeologist (see 3.16) shall be submitted to the bottler after one hydrological year to be evaluated and used for future risk assessments and planning of management protocols. Impact on the natural resource shall be addressed and preferably displayed on a Geographical Information System Map format (obtainable at www.earth.google.com). In addition to GoogleEarth, the software provided by Esri, viz. ARCInfo/ARC GI, and MapInfo may be used.

Should the evaluation of abstraction from the source reveal a negative impact (deterioration of the quality of the water due to contamination or pollution, or over-abstraction of water) on the natural resource of the area, a professional hydrogeologist shall be commissioned to investigate the cause of the impact, and production shall cease until such cause is eliminated.

5.2 Requirements for the untreated product

5.2.1 The untreated product shall be tested for the constituents listed in tables 2 and 3, at the frequency stated.

5.2.2 When tested daily in accordance with SANS 5221, the untreated product shall comply with the following:

a) coliform bacteria shall be absent in 100 mL;

b) faecal coliform bacteria shall be absent in 100 mL; and

c) there shall be fewer than 100 colonies per total plate count per 1 mL.

5.2.3 When the product is tested daily in accordance with SANS 6461 (all parts), viable *Clostridium* spores shall be absent in 100 mL.

5.2.4 Microbiological tests shall be carried out within 24 h of sampling, the samples having been kept at 4 °C ± 3 °C for the period before testing. When the product is tested using the following method, parasites shall be absent in 10 L of the untreated product.

Filter 10 L of the water sample through a 1,2 µm filter membrane. Remove the filter and place it in 100 mL sterile water for 10 min. Resuspend the filtered material or residue, then concentrate by centrifuging at 2 100 r/min for 6 min. Examine the pellet collected at 400 times magnification under phase contrast microscopy for the presence of parasites.

NOTE As algae can be confused with certain protozoan cysts such as *Cryptosporidium* and *Giardia*, it is advisable to use an immunofluorescent stain and a fluorescing microscope to distinguish between these organisms.

5.2.5 If the initial or subsequent surveys (see 5.1), or both, indicate the possibility of contamination of the source, the untreated product shall be tested for the contaminants given in column 1 of table 1, using the corresponding test methods given in column 3.

Table 1 — Contaminants

1	2	3
Contaminant	**Amount permissible**	**Test method**
Phenolic compounds	< 5 µg/L	SANS 6439
Organochlorine pesticides and PCBs	Not detectable[a]	APHA method 6630 B
Organophosphate pesticides	Not detectable[a]	AOAC method 991.07
Cyanide	Not more than 0,07 mg/L, calculated as CN	SANS 6703-1
Nitrite	Not more than 0,1 mg/L, calculated as NO_2[b]	SANS 6777/SANS 163-1
NOTE Test methods that deliver equal or better results may be substituted for those listed in column 3.		
[a] Not detectable by the method specified. [b] 0,1 mg/L as NO_2 converts to 0,03 mg/L as N.		

Amdt 1

6 Requirements for the product

6.1 Types

The bottled water shall be presented in two types, namely

a) **type 1**: bottled natural spring water (or bottled natural mineral water); and

b) **type 2**: bottled spring water (or bottled mineral water).

6.2 Permissible treatment, composition and quality factors

6.2.1 Permissible treatments for type 1 bottled water include:

a) separation from unstable constituents by decantation or by filtration (or by both), accelerated, if necessary, by previous aeration; and

b) the removal of carbon dioxide from the water, and the addition of carbon dioxide to the water, either direct or after an initial removal stage.

The treatments provided for in 6.2.1(a) and (b) may only be carried out on condition that the mineral content of the product is not modified in the essential constituents that give the product its properties and that the original bacteriological purity is retained.

6.2.2 Permissible treatments for type 2 bottled water include:

a) separation from unstable constituents by decantation or by filtration (or by both), accelerated, if necessary, by previous aeration;

b) the removal of carbon dioxide from the water, and the addition of carbon dioxide to the water, either direct or after an initial removal stage;

c) filtration, using a filter of 0,45 µm or less;

d) ultraviolet light treatment;

NOTE Care should be taken in the selection of an ultraviolet light source, to ensure that the light source is effective in killing the bacteria. If the bacteria are only damaged, the water might initially test sterile, but the damaged bacteria might, after a period, repair their cell structure.

e) ozonation;

f) pasteurization; or

g) any combination of a, b, c, d, e and f.

The treatments provided for in 6.2.2(a) to (g) may only be carried out on condition that the mineral content of the product is not modified in the essential constituents that give the product its properties.

6.3 Handling of the product

6.3.1 The product shall not be transported in bulk containers for bottling or for any other process before bottling.

6.3.2 The source shall be connected direct to the bottling plant by means of a suitable pipeline (see 4.2.1) that will not contaminate the product or change the composition of the product. The distance from the source to the bottling plant should not exceed 1 km. Should the distance exceed 1 km, the authority administering this standard shall be satisfied that the product will not be adversely affected.

6.4 Chemical and physical tests

6.4.1 Permissible concentration of specific substances and test methods to determine the concentration

When tested in accordance with the methods given in column 3 of table 2, the product, in its bottled state, shall not contain more of the substances given in column 1, than the limits given in column 2.

Table 2 — Limits for specific substances

1	2	3	4
Substance	**Limits**	**Test method**	**Frequency of testing**
Aluminium	0,15 mg/L	SANS 6169/SANS 11885	Initially and quarterly
Antimony	0,005 mg/L	ASTM D3697	Initially and quarterly
Arsenic (as total arsenic)	0,01 mg/L	SANS 376	Initially and annually
Barium	0,7 mg/L	APHA method 3500-Ba B/SANS 11885	Initially and annually
Borate (as total Boron)	5 mg/L	ISO 9390	Initially and annually
Bromate	0,01 mg/L	ISO 15061	Initially and annually
Cadmium	0,003 mg/L	SANS 5201/SANS 11885	Initially and annually
Copper	1 mg/L	SANS 5203/SANS 11885	Initially and annually
Chromium	0,05 mg/L	SANS 6054/SANS 11885	Initially and annually
Fluoride	[a]	SANS 163-1/SANS 10359-1	Initially and quarterly
Iron	0,2 mg/L	SANS 5207/SANS 11885	Initially and quarterly
Lead	0,01 mg/L	SANS 5208/SANS 11885	Initially and annually
Manganese	0,5 mg/L	SANS 5209/SANS 11885	Initially and annually
Mercury	0,001 mg/L	SANS 6059	Initially and annually
Molybdenum	0,07 mg/L	SANS 11885	Initially and annually
Nickel	0,02 mg/L	SANS 6171/SANS 11885	Initially and annually
Nitrate	50 mg/L, calculated as NO_3[b]	SANS 163-1/SANS 5210	Initially and quarterly
Organic matter	3 mg/L, calculated as O_2, absorbed	SANS 5220	Initially and quarterly
Zinc	5,0 mg/L	SANS 5214	Initially and annually
Selenium	0,01 mg/L	ASTM D3859	Initially and annually
Sulfide	0,1 mg/L, calculated as H_2S	SANS 6056	Initially and quarterly
Surface active agents	Below limit of quantification	SANS 7875-1	Initially and quarterly

NOTE Test methods that deliver equal or better results may be substituted for those listed in column 3.

[a] Bottled water that contains more than 1 mg/L fluoride shall have the expression "contains fluoride" affixed in close proximity to the name of the water or in a prominent place on the label. If it contains more than 1,5 mg/L fluoride, the expression "this product is not suitable for infants and children under the age of seven years" shall be affixed in close proximity to the name of the water or in a prominent place on the label.

[b] 50 mg/L as NO_3 converts to 11 mg/L as N.

Amdt 1; amdt 3

6.4.2 Physical and macro constituents

In addition to the substances in table 2, the product shall be tested in accordance with the methods given in column 3 of table 3 for the qualities given in column 1.

Table 3 — Physical and macro constituents

1	2	3	4
Quality	**Limits** (if applicable)	**Test method**	**Frequency of testing**
Alkalinity	–	APHA method 2320	Initially and quarterly
Bicarbonate	–	Calculated using APHA method 4500-CO_2 D and the results obtained for pH value (using SANS 5011) and alkalinity	Initially and quarterly
Calcium	–	SANS 6265/SANS 11885	Initially and quarterly
Chloride	–	SANS 163-1/SANS 374	Initially and quarterly
Colour	Maximum 20 mg/L Pt	SANS 7887	Daily
Dissolved solids	–	SANS 5213	Initially and quarterly
Electrical conductivity	–	SANS 7888	Daily
Magnesium	–	SANS 6265/SANS 11885	Initially and quarterly
Odour	< 5 TON	APHA method 2150 B	Daily
pH value	4,0 − 9,5	ISO 10523	Daily
Potassium	–	APHA method 3500-K B/SANS 11885	Initially and quarterly
Sodium	–	SANS 6050/SANS 11885	Initially and quarterly
Sulfate	–	SANS 163-1/SANS 6310	Initially and quarterly
Taste	< 5 FTN	APHA method 2160 B	Daily
Turbidity	Maximum 1 NTU	SANS 5197/SANS 375	Daily
NOTE Test methods that deliver equal or better results may be substituted for those listed in column 3.			

Amdt 2; amdt 3

6.5 General requirements

6.5.1 Flavour and odour

The product shall have a well-balanced, pleasant, characteristic, palatable flavour. Off-flavours and off-odours shall not be present. The flavour of the product shall be in accordance with any claim made or implied.

6.5.2 Net volume of the product

The net volume of the product shall comply with the regulations framed under the current relevant national legislation (see foreword).

6.5.3 Freedom from physical defects

The product shall comply with the test for turbidity under normal conditions of storage. Dust, fibre particles, surface film or scum, sediment and other foreign matter shall not be present.

6.5.4 Carbonation

If carbonated, the bottled water shall be carbonated in accordance with the claimed product type stipulated on the label.

The carbon dioxide used (other than carbon dioxide from the source) shall be of beverage (food) grade having a purity of at least 99,9 %.

6.5.5 Shelf life

The composition and preparation of the product shall ensure a shelf life of at least 3 months under the storage conditions recommended by the manufacturer.

When tested for shelf life, the product shall comply with the tests for turbidity and microbiological requirements.

6.6 Microbiological requirements

6.6.1 When the treated product is tested in accordance with SANS 5221:

a) coliform bacteria shall be absent in 100 mL;

b) faecal coliform bacteria shall be absent in 100 mL. Should faecal coliforms be detected, the test for *E. coli* using SANS 9308-3 shall be carried out;

c) after bottling, the total viable colony count shall not exceed 100 per 1 mL. The total viable colony count shall be measured within 24 h after bottling, the water being maintained at 4 °C ± 3 °C during this period. Thereafter, up to and including the point of sale, the total viable colony count shall be no more than that which results from the normal increase in the bacterial content that the water had at source; and

d) moulds shall be absent when using malt extract agar instead of plate count agar, and incubating at 25 °C for 5 d.

6.6.2 When the treated product is tested in accordance with ISO 16266 initially and quarterly thereafter, *Pseudomonas aeruginosa* shall be absent in 100 mL.

7 Bottles

7.1 Types of bottles

The product shall be packed in suitable bottles that will not contaminate or adulterate the product. In addition, the bottles shall not impart foreign flavours or foreign odours to the product. The bottles shall be delivered to the bottling plant in sealed containers.

7.2 Condition of bottles

At the time of filling, all bottles shall be clean and sound. Bottles shall be free from chips, cracks and other defects. Metal containers shall be free from corrosion and internal scratches and other lacquer imperfections. Closures shall be clean at the time of capping or sealing. Crown caps shall be fitted internally with a solid cork or composition cork disc or with an acceptable plastics disc. The bottles used for the product shall not be used to store ingredients, raw materials or other products or preparations, and such containers shall not be used by workers for drinking purposes.

7.3 Washing of bottles

All returnable bottles (and, where necessary, new bottles) used for the product shall be cleaned by a suitable automatic process immediately before being filled. The process shall include:

a) a pre-soak or pre-rinse;

b) soaking or jetting with an efficient cleaning solution for a sufficient time at a temperature high enough to ensure thorough cleaning; and

c) thorough rinsing with potable water to remove all traces of the cleaning solution from the bottles.

Test the rinsed bottles with an alcoholic solution of phenolphthalein to determine that the rinsing has been effective. The indicator shall not turn red. New bottles including all non-returnable (PET) bottles that do not require the treatments in 7.3(a) to (c) shall be rinsed with the treated product or with potable water that complies with 4.3.

7.4 Filling and sealing of bottles

Bottles shall be filled under strictly hygienic conditions by means of manual or automatic equipment maintained in a hygienic state. The open ends of bottles shall not be touched by hand. All containers shall be sealed immediately after they have been filled. Closing machines shall be kept clean and contamination of the product from soiled equipment or detached particles of material shall be avoided.

7.5 Inspection of bottles

Inspection of washed, unfilled and filled bottles shall be performed on a continuous basis, either by means of electronic equipment maintained in perfect working order, or by means of personnel who operate as sighters. Inspection time should be limited to 20 min per sighter, or at shorter intervals if deemed necessary. The rest periods between bottle inspections shall be at least twice the sighting period. For visual inspection line speed should be limited to 200 bottles per minute if the bottle volume is less than 500 mL and 150 bottles per minute if the bottle volume is greater than 500 mL. The eyes of each sighter shall be tested at least every 12 months.

When determined using the relevant methods in *Clinical Refraction* the visual acuity (Snellen test) of each sighter shall be at least 6/9 in each eye, or at least 6/12 in one eye provided that the other eye has an acuity of at least 6/6. Alternatively, the sighter's visual acuity shall have been corrected to be within the mentioned limits of refraction. The colour vision of each sighter shall be Ishihara Normal 1.
Amdt 4

8 Packaging and labelling

8.1 Packaging

The bottled product shall be packaged as required, and in accordance with the requirements of the current relevant national legislation (see foreword) in sealed retail containers suitable for the prevention of the possible adulteration or contamination of water. **Amdt 4**

8.2 Labelling

8.2.1 General

The requirements of the current relevant national legislation (see foreword) shall be complied with.

Applied labels on bottles shall be clean, neat and securely attached. They shall not be superimposed on other labels or on printed matter printed direct on the bottles. They shall not be applied by any person other than the manufacturer or his authorized agent.

8.2.2 The type of product

The type of product (see 6.1) shall be a true description of the product concerned.

Amdt 4

8.2.3 Specific and general composition and carbonation of the product

8.2.3.1 Specific composition

The composition of the product shall be declared in advertising and on the label. The concentration of the following constituents, in units of milligrams per litre (mg/L), shall be included in the declaration and shall be listed on the label in the following order: **Amdt 1**

Calcium	as Ca
Magnesium	as Mg
Sodium	as Na
Potassium	as K
Chloride	as Cl
Sulfate	as SO_4
Total alkalinity	as $CaCO_3$
Nitrate	as N
Fluoride	as F

In addition, the amount of total dissolved solids shall be declared in milligrams per litre, and the pH value shall be declared in pH units.

8.2.3.2 General composition

The label shall state whether the product has a high ($\geq$ 1 000 mg/L), medium (500 mg/L to 1 000 mg/L), low ($\leq$ 500 mg/L) or very low ($\leq$ 50 mg/L) total dissolved solids content.

8.2.3.3 Carbonation

The label shall state whether the product is non-carbonated ("still") or carbonated ("sparkling"), or slightly carbonated as a means of preservation.

8.2.4 Cautionary notices

8.2.4.1 Diuretic effect

Where the product contains more than 1 000 mg/L of total dissolved solids or more than 600 mg/L of HCO_3 (490 mg/L of HCO_3 as $CaCO_3$), a statement shall be made to the effect that excessive consumption (which shall be defined) might have a diuretic effect.

8.2.4.2 Fitness for infants

In the case where the product has a sodium content exceeding 100 mg/L, or a sulfate content exceeding 200 mg/L, or a nitrate (as N) content exceeding 6 mg/L, or any combination of these, a statement shall be made to the effect that the product is not suitable for the preparation of food for infants (see also the labelling requirement for fluoride content in table 2).

8.2.4.3 Laxative effect

In the case where a product has a sulfate content (other than calcium sulfate content) exceeding 600 mg/L, a statement shall be made to the effect that the product might have a laxative effect.

8.2.5 Net contents

The net contents shall be declared by volume in the metric system (SI units).

8.2.6 Name and address

The name, location (which includes the physical address of the source) and the physical address of the exploiter shall be declared.

8.2.7 Lot identification

Each bottle shall be embossed or otherwise permanently marked, in code or otherwise, to identify the producing factory, the lot and the date of manufacture. The use of a code is permissible only if the key to the code is disclosed to the authority administering this standard.

8.2.8 Additional labelling requirements

If either type of product (see 6.1) has been submitted to a treatment in accordance with 6.2.1 or 6.2.2 (as relevant) the treatment shall be declared on the label.

8.2.9 Optional labelling

The following are examples of optional labelling:

a) the term "Bottled in ABC" where ABC is the country where the water originates, may appear on the label only if the product is from a source in that country and has been bottled in accordance with the requirements of this standard;

b) a trade name; and

c) the date of authorization by the testing authority or the authority administering this standard, as relevant, to commence collection and production.

The terms given in table 4, descriptive of the particular properties of the product, may appear on the label as part of, or in close proximity to, the name of the product or in an otherwise prominent position, provided that the conditions specified are adhered to.

Table 4 — Optional labelling

1	2	3
Property	**Limits**	**Test method**
"Acidulous"	Where the product contains more than 250 mg/L of free carbon dioxide	APHA method 4500-CO_2 D
"Alkaline"	Where the product contains more than 500 mg/L of HCO_3 expressed as $CaCO_3$	APHA method 2320
"Contains fluorine"	Where the product contains more than 1 mg/L of F	SANS 163-1/SANS 10359-1
"Contains iodine"	Where the product contains more than 1 mg/L of I	APHA method 4500-I B
"Contains iron"	Where the product contains more than 1 mg/L of Fe	SANS 5207
"Saline"	Where the product contains more than 1 000 mg/L of NaCl	SANS 374 and SANS 6050

Amdt 2

8.2.10 Labelling prohibitions

8.2.10.1 No claims concerning medicinal (preventative, alleviative or curative) or other beneficial effects relating to the health of the consumer shall be made in respect of the properties of the product covered by this standard.

8.2.10.2 The name of a locality, village or specified place may not form part of the trade name unless it refers to product collected at the place designated by that trade name.

8.2.10.3 The use of any statement or of any pictorial device which might create confusion in the mind of the public or in any way mislead the public about the nature, origin, composition and properties of the product put on sale is prohibited.

9 Transportation of the finished product

The conditions of transportation shall be such that the finished product is protected against damage, contamination, deterioration and rough handling, and is shielded from direct sunlight.

NOTE If natural bottled water is transported at temperatures above 30 °C, normal flora can multiply and create turbidity, which will detract from the appearance of the product.

Annex A

Deleted by amendment No. 4.

Annex B
(normative)

Sampling and compliance with this standard

B.1 Sampling

B.1.1 General

The following sampling procedure shall be applied to determine whether a lot, submitted for inspection and testing, complies with the relevant requirements of this standard. The samples so taken shall be deemed to represent the lot.

This section applies to the sampling for inspection and testing before acceptance or rejection of single lots (consignments) in cases where no information about the implementation of quality control or testing during manufacture is available to assist in assessing the quality of the lot. It is also used as the procedure for adjudicating in cases of dispute.

B.1.2 Samples for inspection and testing

B.1.2.1 Sample for physical examination and for the inspection of containers

After inspection for compliance with 8.1 and 8.2, from the lot, take at random the number of containers, shown in column 2 of table B.1.

B.1.2.2 Sample for chemical analysis

After inspection for compliance with 8.1 and 8.2, from the lot, take at random the number of containers that will deliver the volume given in column 3 of table B.1.

B.1.2.3 Sample for microbiological examination

After inspection for compliance with 8.1 and 8.2, from the lot, take at random one container at the beginning of the bottling cycle, one container in the middle of the cycle and one container at the end of the cycle.

Table B.1 — Sampling procedure

1	2	3	4
Lot size number of containers	**Sample size for physical examination** number of containers	**Sample volume for chemical analysis**	**Sample size for micro-biological examination[a]** number of containers
0 – 5 000	3	3 L	3
5 001 – 12 500	6	3 L	3
12 501 – 25 000	9	3 L	3
25 001 – 50 000	16	3 L	3
50 001 upwards	30	3 L	3
[a] For examination for parasites, 10 L of product is required.			

B.2 Compliance with this standard

The lot shall be deemed to comply with the relevant requirements of this standard if, after inspection and testing of the samples taken in accordance with B.1, no defective is found.

Annex C
(informative)

Quality verification of bottled water of subterranean origin

When a purchaser requires ongoing verification of the quality of bottled water of subterranean origin, it is suggested that, instead of concentrating solely on evaluation of the final product, he also direct his attention to the manufacturer's quality system. In this connection it should be noted that SANS 9001 covers the provision of an integrated quality system.

Bibliography

SANS 9001/ISO 9001, *Quality management systems – Requirements*.