

7.3.5 Canned crustaceans and vegetables and/or fruits and/or cereals and/or edible garnish

7.3.5.1 Preparation and presentation

The product may be prepared from crustaceans with vegetables and/or fruits and/or cereals with or without edible garnish, seasoning materials, spices or other appropriate ingredients.

7.3.5.2 Drained mass

The drained mass when determined in accordance with 11.5, shall be not less than 55 % of the d.n.m. When crustaceans appear first in the name of the product, the mass of crustaceans shall be not less than 25 % of the d.n.m., unless the fact that the mass is less than 25 % of the d.n.m. appears on the label. When crustaceans do not appear first in the name of the product, the crustacean content shall constitute not less than 10 % of the d.n.m, unless the fact that it constitutes less than 10 % of the d.n.m. is declared on the main panel of the label.

7.4 Canned seafood mixtures

7.4.1 General

The raw material for canned seafood of any mixture of fish, molluscs and crustaceans with or without vegetables and/or fruits and/or cereals falling within the scope of this specification, shall comply with the requirements in section 5 as applicable.

7.4.2 Drained mass

The drained mass of any mixture of fish, molluscs and crustaceans when determined in accordance with 11.5, shall be not less than 60 % of the d.n.m.

When any mixture of fish, molluscs and crustaceans are presented with vegetables and/or fruits and/or cereals the drained mass of the total solids shall be not less than 55 % of the d.n.m. When reference is made in the product name or indicating any mixture ingredient of fish, molluscs or crustaceans, the drained mass of that mixture ingredient shall be not less than 25 % of the d.n.m., unless the fact that it is less than 25 % of the d.n.m. appears on the label.

When the meat ingredient of the mixture does not appear first in the name of the product, the meat content shall constitute not less than 10 % of the d.n.m, unless the fact that it constitutes less than 10 % of the d.n.m. is declared on the main panel of the label.

7.5 Canned fish pies or puddings

When determined in accordance with 11.5, the drained mass shall be as follows:

- a) in pies or puddings containing only fish or marine molluscs or crustaceans or any mixture of these, the mass of fish or marine molluscs or crustaceans within the pie crust or pudding shall be not less than 35 % of the d.n.m.;
- b) in pies or puddings containing fish, or marine molluscs or crustaceans or any mixture of these with vegetables and/or mushrooms and/or fruit, and/or cereal, the mass of fish or marine molluscs or crustaceans shall be not less than 25 % of the d.n.m. The mass of vegetable and/or mushroom and/or fruit and/or cereal as relevant as the part of the product in the pie crust or pudding shall constitute not less than 15 % of the d.n.m.

Where the name of a minor ingredient also appears in the name of the product, the mass of that minor ingredient shall constitute not less than 5 % of the d.n.m.

7.6 Unspecified canned seafood

7.6.1 General

Any product falling within the scope of this specification shall be prepared from material complying with the requirements in section 5. The product shall be appropriately described on the label.

7.6.2 Drained mass

Subject to the container being filled to practical capacity (see 5.1.4) the drained mass when determined in accordance with 11.5 shall be as follows:

a) Fish:

- 1) Canned fish not less than 70 % of the d.n.m.
- 2) Canned fish products not less than 60 % of the d.n.m.

b) Molluscs:

- 1) Canned molluscs not less than 60 % of the d.n.m.
- 2) Canned molluscs products not less than 55 % of the d.n.m.

c) Crustaceans:

- 1) Canned crustaceans not less than 60 % of the d.n.m.
- 2) Canned crustaceans products not less than 55 % of the d.n.m.

Where the drained mass of any unspecified fishery product is less than 50 % of the d.n.m., the product description shall clearly indicate that it is a special type of product of which fish, crustaceans or molluscs are an ingredient and the fish, crustaceans or molluscs content shall be declared on the label.

7.7 Semi-preserved or pasteurized canned products

7.7.1 Product definition and methods of preservation

Canned fish, molluscs and crustaceans or their products covered by this standard, may be packed as semi-preserved. The product is preserved by any combination of salting, brining, pickling, smoking, low acid or preservatives allowed in terms of regulations under the Foodstuffs, Cosmetics and Disinfectants Act and chilled in storage below 5 °C. Products may also be rendered shelf stable by incorporating heat processing and at least a pasteurization treatment process.

7.7.2 Product requirements

Particular product descriptions shall comply with the requirements for the particular products as relevant on condition that where product is preserved by the packing medium and is labelled semi-preserved, the drained mass may be a minimum of 50 % of the d.n.m. (This requirement is not applicable to products in 7.1.9).

8 Microbiological requirements

8.1 Commercially sterilized products

8.1.1 Incubation

- a) The frequency and number of samples from a production lot to be incubated shall be determined at the discretion of the authority administering this specification. Such discretion shall be established on criteria such as, the past records and ability of the factory to produce a microbiologically safe product, the length of time the factory was idle, any delays or deviations occurring in the scheduled processing plan for the product and the use of raw materials, ingredients or packing material or production of unaccepted, defective or doubtful quality.

The capability of a factory depends on attributes such as adequate supervision, competent and technically trained personnel, a positive attitude and commitment, the use of calibrated instruments and consistent and carefully maintained and adjusted equipment, and adequate implementation of management systems based on programmes such as good manufacturing and sanitation practices, quality management and process control and the successful application of a system that identifies specific hazards and preventative measures for their control to ensure the safety of the product.

- b) The factory shall provide sufficient incubation facilities at the factory. The incubation of the samples shall be under the sole control of the authority administering this specification.

8.1.2 Microbiological spoilage

A product in its container, after incubation at 37 °C for 14 d or after it has been kept at ambient temperature, shall be considered to have undergone microbiological spoilage if the container

- a) shows a positive pressure,
b) leaks, or
c) whether having a positive pressure or not, shows evidence of bacterial proliferation indicated, when compared with sound samples by a significant change in pH value, or by disintegration or decomposition, or by significant discolouration of the product. Evidence of bacterial proliferation shall be confirmed by microscopical or cultural examination (see 12.1 and 12.2).

8.1.3 Microbiological requirements

When examined or tested (or both) in accordance with 12.1 and 12.2, products in containers shall show no evidence of microbiological spoilage or of the presence of viable pathogenic organisms or organisms liable to cause spoilage of the product under normal conditions of storage.

8.2 Pasteurized, semi-preserved and salt-preserved products

8.2.1 Microbiological spoilage

A product in its container shall be considered to have undergone microbiological spoilage if the container

- a) shows a positive pressure,
b) leaks, or

- c) whether having a positive pressure or not, shows evidence of bacterial proliferation indicated, when compared with sound samples, by a significant change in pH value, or by disintegration or decomposition, or by significant discoloration of the product.

Evidence of bacterial proliferation shall be confirmed by microscopical or cultural examination (see 12.1 and 12.2).

8.2.2 Microbiological requirements

When tested in accordance with 12.1 and 12.2, products in containers examined or tested or both shall show no presence of viable micro-organisms considered to be pathogenic nor the evidence of microbiological spoilage or of viable spoilage organisms in numbers liable to cause spoilage of the product during storage at the temperature recommended by the canner, or, in the case of pasteurized or semi-preserved products at the required storage temperature in accordance with 10.2.1(e) that is stated on the label.

9 Requirements to control the integrity of cans and other types of containers

9.1 General requirements

Containers, including lids or caps shall meet the following requirements:

- a) be capable of maintaining the preservation of their contents in a sound wholesome condition;
- b) be made of a suitable material and constructed so that they can be easily closed and sealed;
- c) be sufficiently durable to withstand mechanical and thermal stresses during the canning processes and to resist physical damage and maintain their normal appearance during normal distribution and storage;

NOTE Collapsible tubes if unsuitable for heat sterilization, should be used only for products such as fish pastes or fish roe with a high salt content where heat sterilization is not obligatory.

- d) protect the contents from contamination by micro-organisms or any other substance;
- e) be suitable for the type of product and the conditions of storage and transportation;
- f) their inner surfaces shall be adequately coated with a suitable material and shall not react with the contents in any way that would adversely affect the product or the containers;
- g) the internal surface coating such as lacquer shall be uniformly applied and shall not become loose or peel off the surface of the can or lid during processing and normal storage conditions;
- h) the outer surfaces shall be resistant to corrosion under normal storage and retail conditions;
- i) the compound sealing material on lids or caps shall be suitable for the purpose and for the type of product used;
- j) lids shall be tamper-proof, a tamper detector shall be provided in cases where lids or caps can be removed by hand, such as with screw-on caps on jars; and
- k) the containers shall be such that the contents can be easily emptied out.

9.2 Condition of containers and closures

Containers or lids with signs of poor or doubtful container integrity shall not be used. The inner surfaces of all containers and closures shall, at the time of use, be clean and in the case of cans, free from corrosion, pinholes, evidence of de-tinning, de-lacquering, damages, serious solder

splashing or excess application of solder. When lacquered cans or lids or both are used, the lacquer shall be free from drops or splashes of lacquer, significant scratches and other imperfections, and it shall have no detrimental effect on the product such as foreign flavours, foreign odours and discolouration. The seams and seals, where applicable, shall be normal in appearance with a strong leakproof structure and quality. The sealing compound on closures shall be evenly applied around the entire contour with a normal appearance and adhesion.

Can bodies and lids with scoring lines for easy opening purposes of the final product by the consumer, shall be subjected to appropriate examinations for integrity. There shall be no signs of corrosion in the scoring lines.

9.3 Transport and storage of empty containers

Containers and lids or closures from manufacturers shall be delivered covered by wrapping material or in covers and shall be transported and stored under protection against risk of contamination, damaging and the weather. The storage area shall be kept clean and shall be insect-, bird- and rodent-proof. Containers and lids or closures shall be stored in a dry store, protected against wind, rain or vapour from the sea and away from steam, humidity, condensation or sudden temperature variations. The storage area shall be used solely for the storage of empty containers and lids.

The stacking of pallets with empty cans shall be such that the cans shall be not damaged. Empty cans or pallets with empty cans shall be not stepped on.

9.4 Inspection on receipt

The can manufacturer shall, by means of applying a quality management system, ensure that consignments of containers and lids supplied to the canner are in compliance with the correct characteristics and documented parameters that were agreed upon between the can manufacturer and the canning factory. The canning factory shall on receipt of the consignments, conduct a routine inspection system that includes a visual examination and physical testing to determine the freedom of integrity defects and other defects.

Inspection results and corrective procedures where applicable shall be documented and kept on file. Consignments not in compliance with the standards set by the container manufacturer shall not be used.

Each pallet or package with containers and lids shall be provided with a means of identity of the container and lid manufacturer. A system of collecting and retaining these identities shall be exercised and be such that, should problems arise, the affected containers or lids from a particular pallet or package can be related and traced to a specific production code lot from which these containers or lids were selected.

9.5 Handling of containers in the canning operation

Containers shall be not exposed to contamination or damaging to their bodies, seams or flanges while distributed, on runways or feeding lines. Containers shall be removed from the runways or feeding lines at the end of production unless the containers are adequately covered and protected against risks of contamination and damages.

9.6 Coding and sealing of containers

9.6.1 Coding

Each container shall be indelibly and legibly marked, and visible with the naked eye, coded from which the details of manufacture (see 10.2(g)) including the seamer and/or packing line identification and where applicable any sub-coding system used, can be determined.

Sub-coding may indicate and change according to the following: intervals or periods during a work shift; personnel shift changes; batches or catches, provided that containers comprising such batches shall not extend over a period of more than one personnel shift.

When coding is done by embossing, the lids or closers shall not be damaged.

9.6.2 Seam closing machines

Lids or closures and containers shall not be damaged during handling or sealing or closing of containers. Only specially trained and adequately qualified personnel shall conduct the correct operation, careful maintenance, adjustment and frequent regular inspection of the seam closing machines. The seam closing operation shall be performed at a speed that is consistent with the speed of the production line to prevent a delay of containers before the seamer, resulting in a subsequent drop in contents temperature.

A system of identifying each retort trolley, basket or crate being filled with containers after sealing and the time of sealing shall be in place.

9.6.3 Sealing

9.6.3.1 Seam quality

All container closures shall be strongly and accurately made and well formed with the parameters and dimensions within the accepted tolerances for the particular double seam or closure attributes of the container.

9.6.3.2 Seam evaluation

Routine evaluations at regular intervals of the quality of the closures shall be conducted by competent personnel under illumination complying with 3.2.7. Such evaluations shall be a formalised programme that shall include visual inspections for the absence of defects likely to affect the hermetic seal and internal inspections of the seams in accordance with the standards, parameters, attributes and methods of evaluation provided by the container manufacturer and shall be available at the container seam inspection station.

9.7 Container washing prior to retorting

9.7.1 Water used in a detergent solution for container washing purposes or in water sprays for washing shall be clean potable water in compliance with 3.4.1.

9.7.2 All dirt, grease and organic material shall be removed from the outside surfaces of the containers.

9.7.3 The detergent solution shall be regularly replaced to ensure its effectiveness and to prevent accumulation of contaminants.

9.7.4 The temperature of the washing water or detergent solution shall be such to ensure that the product temperature remains in compliance with the initial temperature specified in the sterilization schedule.

9.8 Handling of the product between container closure and retorting

9.8.1 Damaging of containers during collection or loading in the retort baskets or trolleys shall be avoided. The stacking of containers shall be such to avoid obstruction of the flow of the heat medium in the retort.

9.8.2 The period of time between the closing of containers and retorting shall be kept to a minimum. Unnecessary delays between the closure of containers and the retort process shall be avoided.

9.8.3 If the temperature of the product before retorting dropped below the initial temperature that has been used to determine the time-and-temperature process of the product, the retort sterilization schedule shall be extended according to a pre-determined plan that shall ensure commercial sterility of the product. Just before the start of the retort process whenever a drop of the normal schedule initial temperature is suspected, the content of the coldest container to be processed shall be shaken or stirred to determine the average temperature.

9.8.4 A system for product traffic control shall be established to prevent the product from bypassing the thermal processing operation and being accidentally taken into the storage area, or being subjected to multiple processing. A method to indicate whether a retort trolley or basket has been thermally processed such as with the application of a heat sensitive tape or tag shall be employed. A container on top of a retort trolley or basket shall be conspicuously marked with a heat sensitive tape or a heat sensitive tag shall be tied to the retort trolley or basket.

9.8.5 Containers with product requiring different retort processes that are being packed at the same time shall be identified and routed to receive the specified processes.

9.8.6 Retorts containing containers not yet processed shall be identified by means such as with a distinctive marker to prevent confusion.

9.8.7 Retorts shall not be closed until ready to start the process.

9.8.8 A clean new time and temperature chart or thermogram (see 3.3.6(k)) shall be installed at the start of each day's operation and be synchronized with the time indicated on the wall clock. The recording pen shall be filled with ink and the functioning of the timing mechanism and the correct length of the recorder pen arc shall be checked. After a power failure where the thermograph was inactivated, the time and temperature chart or thermogram shall be reset to the correct time.

9.9 Thermal processing of product

9.9.1 In the case of products in containers other than semi-preserves and salt-preserved products, the filled containers shall, where appropriate, be exhausted, hermetically sealed, and fully thermally processed. The containers of semi-preserves and salt preserved products shall be hermetically sealed.

9.9.2 The thermal process shall be continuous.

9.9.3 All rigid containers shall be exhausted, sealed, and processed in a proper manner resulting in their ends remaining concave and the bodies remaining normal during normal commercial conditions of storage and distribution.

9.9.4 The time-temperature process in the case of heat-preserved products shall ensure

- a) the destruction of pathogenic organisms, and
- b) freedom from microbiological spoilage.

9.9.5 Retorts and other heat processing equipment are to be operated as per requirements for the particular type of retort or equipment by trained and qualified individuals. The processor is required to document prescribed operating procedures for each product and container size and these procedures have to be available for inspection and validation by the authority administering this specification.

9.9.6 Appropriate alternative sterilization schedules shall be provided for immediate application in case of any deviations in processing.

9.9.7 Processing data and recorded charts of all processes that deviate from the scheduled process, shall be submitted to the heat processing authority that investigated and authorised the original documented scheduled process. The heat processing authority shall submit a written report on the heat dose calculated for the particular deviation for submission to the authority administering this specification.

9.10 Handling of sealed containers after heat processing

Any container whose process status before and after the retort process is unknown shall be immediately destroyed.

After having been removed from the retort in their baskets or trolleys the containers shall not be subjected to after-sterilization contamination. Hot or wet containers or containers having a positive internal pressure after the retort process shall not be removed out of their trolleys or baskets or be handled individually or be touched by hand. Containers shall not be handled or bulk-stacked before being thoroughly dried and cooled to an internal temperature not in excess of 50 °C.

A clean separated area for the sole purpose of cooling containers after retorting shall be provided. Such an area shall be

- a) enclosed with unauthorized entrance being restricted,
- b) physically separated from areas from which steam is emitted, and
- c) away from other normal factory traffic, other than the handling of trolleys or baskets with containers after retorting. There shall be no crossflow of other factory traffic along the route of the baskets or trolleys between the retorts and the cooling area.

After the containers have been cooled and dried, and only on instruction from a designated person, may the baskets or trolleys be moved out of the cooling area to a pick-up area. The process of removing the containers out of the trolleys or baskets and the stacking shall be done in such a way as to avoid rough handling or damaging of the containers or causing unnecessary stress to their seams or seals.

Containers, and in particular their seams, shall not be exposed to contamination. The equipment and conveyors used for the pick-up and stacking of containers shall be regularly sanitized.

9.11 Storage of the end product

9.11.1 General

The end product storage areas shall be used solely for the intended purpose.

All containers of the same production code or batch code or sub code, where applicable, shall be stored together and not be mixed with containers of other production days' codes. Each stack or pallet with containers shall be identified with the code appearing on the containers and with their inspection status. Any production lots in which defects or a deviation from process requirements were detected, shall be identified as such and be stored separately from other production lots. Any non-conforming production lots, shall be identified as such and stored in an area physically separated from the rest of the end product stock.

9.11.2 Products not requiring refrigeration

Canned products not requiring refrigeration shall, both before and after labelling and packaging for commercial distribution, be stored orderly in dry conditions, protected against steam, condensate, moisture, dust and the weather. Canned products shall not be stored under conditions that are conducive to corrosion of the containers or be exposed to extreme temperatures.

The final product shall be stacked in such a way that container damage shall not occur due to pressure from excessive mass of pallets with containers stacked above. Workers shall not be allowed to step on containers or on pallets with containers. Precautions shall be exercised to avoid container damaging in particular with fork-lift truck handling.

9.11.3 Products requiring refrigeration

Where products are required to be stored under refrigeration, the storage temperature shall not exceed 5 °C. Refrigeration rooms shall be clean and shall be hygienically maintained. The product shall be protected against risks of corrosion.

10 Labelling and marking

10.1 Labelling operations

10.1.1 Labelling area

Before the start of the labelling operation, the area shall be cleared of any stray cans. The labelling area shall be maintained in a clean, tidy and orderly condition.

10.1.2 Condition and handling of containers during labelling

Containers shall be in a condition complying with 9.2.

The handling of containers during the labelling process shall be done in a manner so as to avoid container abuse or damaging or their seams being subjected to undue stress or mechanical shock.

10.1.3 Labels

Labels, outer wrappers, outer cartons, lithographic markings and printing on containers, pictorial presentation and colouring shall be in accordance with the labelling requirements of 10.2.

The size of the label, outer wrapper and outer carton shall be suitable to the container size without being oversized. Printing shall be correct, proper and neat.

It is recommended that the authority administering this specification be consulted with regard to the printed lettering size, statements, pictorial presentation and colouring on newly designed labels, outer wrappers, outer cartons or lithographed cans before they are taken into use.

10.1.4 Attachment of labels

Labels, outer wrappers or outer cartons shall not be attached or applied to containers by any person other than the manufacturer or by his authorized agent.

Labels, outer wrappers or outer cartons on containers, shall be clean, neat, unspoiled, undamaged and labels or outer wrappers shall be securely attached at the time of despatch from the factory (or at the time of arrival when imported).

Misaligned labels, excess glue or lack of glue, or loose or pleated labels or outer wrappers shall not be present. Labels or outer wrappers shall not be superimposed over other labels or over outer wrappers that have been affixed on to containers or onto lithographic printed containers.

Materials such as adhesives or glues used for attaching or applying labels, outer wrappers or outer cartons or closing of packages shall not be hygroscopic, or liable to deteriorate during storage after being applied or conducive to corrosion of the can or lid.

10.1.5 Packages – outer containers

Packages in which containers are packed shall be clean, neat and undamaged. Outer containers such as boxes or cases shall be suitable for the purpose of use, be of correct size to avoid damaging of containers by squeezing or loose movement of the containers inside the outer container. Containers shall not be packed in outer containers in positions prone to cause damaging such as packing containers on their sides.

Outer containers shall be strong enough to protect the finished product during normal handling and transport.

10.1.6 Marking of packages

The following regarding the containers in the package shall be printed or stencilled on the outside of every package: The number and size or net mass of the containers and the information required by 10.2(a), 10.2(b), 10.2(g), 10.2(h), 10.2(i) (where applicable) and 10.2(f). The business address of the manufacturer need not be the full address but shall be sufficient for identification purposes.

In addition to the date code required by 10.2(h), any sub-coding indicating a time period of the production date, and/or any line or seamer number, that appeared on the containers shall also be printed or stencilled on every package. When a code system other than the conventional lettering and digital form such as a bar or edge coding system is used, sufficient information shall appear on the packages to identify the production date and any sub-coding.

10.1.7 Containers for export

Provided that the requirements of the importing country are met and subject to there being no attempt to misrepresent the product, products may be exported either unlabelled, or labelled differently from the requirements of this specification. The requirements of 10.1.6 shall, however, apply, except that a code mark may be used in lieu of the name of the manufacturer.

10.2 Details required on each container or label

The following information shall appear on each container or label, clearly visible in legible and indelible markings not affected by pictorial or other matter, printed or otherwise, in type of such size and presentation as prescribed by regulation promulgated under the said Foodstuffs, Cosmetics and Disinfectants Act and the Trade Metrology Act, 1973 (Act 77 of 1973) (as amended from time to time):

- a) the name and full physical address of the manufacturer, importer, producer, proprietor or controlling company, or in the case of containers packed on behalf of any other person or body, the name and full physical address of that person or body;
- b) taking cognisance of the provisions of the correct Merchandise Mark Act the name and true description of the contents (see 10.3), including where applicable, the nature of the packing medium in which the product is packed;
 - 1) the description "natural oil" or "natural" shall not be used for products in a "plain" or "brine" packing medium;

- 2) where the product is packed in oil, the name of the type of oil. If the term "vegetable oil" appears in the name of the product, the specific type of vegetable oil shall be declared in the list of ingredients;
 - 3) if the product has been smoked or smoked flavoured, this information shall appear on the label in close proximity to the name of the product. The qualifying word(s) e.g. "smoked" or "smoke-flavoured" whatever is appropriate shall appear in immediate conjunction to the product name in a letter size at least half that in that the product name is featured and in equal prominence and boldness;
- c) where applicable, a list of ingredients including the name(s) of the fish, molluscs or crustacean species;
- d) where permitted by the Foodstuffs, Cosmetics and Disinfectants Act, the presence of artificial colorants;
- e) where the product is required to be stored under refrigeration, the words "Perishable – Keep under refrigeration at a temperature not exceeding 5 °C" in a prominent position on the main panel, in plain capital letters at least half the size of that used for the product name, with a minimum of 3 mm in height, except that the word "Perishable" shall be in bold type of at least 4,0 mm in height;
- f) the d.n.m. of the contents;
- g) the product identification, the date of canning, the batch number (if used) and the factory identification embossed or otherwise indelibly marked on the container or, in the case of jars, on the cap or label (see 9.6.1); any mark or code used for the foregoing shall be disclosed to the authority administering this standard. Where individual containers are labelled, wrapped in an outer wrapper or packed inside an outer carton in such a way that the code on the container is not visible without removing the label, outer wrapper or outer carton, the corresponding code of the container shall be marked on the label or outer carton;
- h) words indicating the country of origin where the product was produced; and
- i) information required in terms of the relevant subsection(s) dealing with the specific product.

10.3 True description of the canned product

10.3.1 General

10.3.1.1 The name of canned fish, molluscs or crustaceans declared on the label shall be the common or usual name applied to the species.

10.3.1.2 The product shall be correctly described in the name of the product appearing on the label.

10.3.1.3 In addition to 10.3.1.1 and 10.3.1.2, the label shall include other descriptive terms that will avoid misleading or confusing the consumer.

10.3.1.4 Any descriptive terms used including those denoting style of presentation, shall accurately reflect the contents of the container.

10.3.1.5 No fish, molluscs or crustaceans shall be labelled under a name or designation that is misleading or no descriptive terms or statements that are misleading or confusing to the consumer shall be used.

10.3.1.6 Where the words "selected fish" or similar words are used to describe the product, the name of the fish, molluscs or crustaceans shall appear in plain type of the same letter size and colour as the product name.

10.3.1.7 The name of the product shall be qualified by a term descriptive of the representation. A product presented as solid pack or chunks or as flaked, grated, shredded, minced or similarly prepared, shall be described by the appropriate word(s) on the main panel of the label in letters of the same size and prominence as the name of the product that shall include the name of the fish. Where the name of a minor ingredient appears in the name of the product, the mass of the minor ingredient shall not constitute less than 5 % of the d.n.m.

10.3.1.8 Fish packs other than whole packs (heads and tails removed and eviscerated) such as cutlets, fillets or slices shall be appropriately described on the main panel(s) of the label.

10.3.1.9 Pictorial presentations shall not be misleading or confusing to the consumer. Any fish, molluscs or crustaceans depicted on the container, label, outer wrapper or outer carton shall bear a reasonable likeness to the type of fish, molluscs or crustacean, cut of fish or colour of fish or product in the container.

10.3.1.10 Where applicable, the common or usual name of the product shall be qualified by the country, or region of origin.

10.3.1.11 The "Best before" date or expiry date shall appear legibly on the label.

10.3.2 True description of canned fish

10.3.2.1 Where stockfish is used in the preparation of products labelled "curried fish", "fried fish", or "pickled fish" the name "stockfish" need not to appear in the title; in the case of other fish used for these types of products the name of the fish shall appear in the title in conjunction with the descriptions. The type of fish used shall appear in the list of ingredients (see 10.2.1(c)).

10.3.2.2 Mullet shall be described only as "Mullet" or "Haarders" / "Harders".

10.3.2.3 Marsbanker (*Trachurus spp.*) shall be described only as "Marsbanker" or "Jack Mackerel".

10.3.2.4 Mackerel (*Scomber spp.*) in any form shall be described only as "Mackerel"/"Makriel" or "Middlecut".

10.3.2.5 The words "middle cut"/"middelstuk" shall be used only when coupled with the name of the fish and when in fact middle cuts have been packed; the words "middle cut"/"middelstuk" shall appear in type of the same size and prominence as that of the name of the fish.

10.3.2.6 Canned sardines or sardine type products are prepared from the following species:

Sardina pilchardus

Sardinops melanostictus, *S. neopilchardus*, *S. ocellatus*, *S. sagax*, *S. caeruleus*,

Sardinella aurita, *S. brasiliensis*, *S. maderensis*, *S. longiceps*, *S. gibbosa*

Clupea harengus

Sprattus sprattus

Hyperlophus vittatus

Nematalosa vlaminghi

Etrumeus teres

Etrumeus whiteheady

Ethmidium maculatum

Engraulis anchoita, *E. mordax*, *E. ringens*

Opisthonema oglinum

Depending on the species used, the name of the product shall be

- a) "Sardines" exclusively reserved for *Sardina pilchardus* (Walbaum); or
- b) "X sardines" where "X" is the name or description of a country, the species, or the common name of the species in accordance with this specification and in a manner not confusing or misleading to the consumer (see 10.3.1) in close proximity and in a letter size at least half the size of the word sardines and in equal prominence, with the exception that the species ***Sprattus sprattus*** may be described as brisling sardines.
- c) Except when packed in accordance with 7.1.2, pilchards (*Sardinops ocellatus*, *S. melanostitus*, *S. neopilchardus*, *S. sagax* and *S. caeruleus*) shall only be described as "Pilchards"/"sardientjies"/"Sardyntjies". When packed in accordance with 7.1.2, pilchards may be described as "Sardines".
- d) *Sardinella spp* shall be described as "Sardinella". The descriptive terms "Pilchards" shall be not used for packs consisting of *Sardinella spp*.
- e) *Etrumeus spp* shall be described as "X herring" where "X" is the name or description of a country, a geographic area, the species, or the common name of the species in a manner not to mislead or confuse the customer. The species *Etrumeus whiteheadi* (Rooi-oog ronde haring) qualify for labelling "South Atlantic herring"/"Suid Atlantiese Haring".
- f) *Engraulis spp* shall be described as anchovies.
- g) Canned Saury shall be prepared from *Scomberesox spp* and *Cololobis spp*.

10.3.2.7 Snoek (*Thyrsites atun*) in any form shall be described only as "Snoek", "Barracouta" or "Atun".

10.3.2.8 Subject to 10.3.2.1, South African *Merluccius spp* shall be described only as "Hake" or "Stockfish"/"Stokvis" or as Cape Whiting.

10.3.2.9 Yellow-tail (*Seriola spp*.) shall be described only as "Yellow-tail"/"Geelstert", "Halfkoord", "Amberjack".

10.3.2.10 Canned Tuna and Bonito (see 6.1.4) are the product consisting of the flesh of any of the appropriate species listed below:

Thunnus alalunga

Thunnus albacares

Thunnus atlanticus

Thunnus obesus

Thunnus maccoyii

Thunnus thynnus

Thunnus tongae

Euthynnus affinis

Euthynnus alletteratus

Euthynnus lineatus

Katsuwonus pelamis (syn. *Euthynnus pelamis*)

Sarda chilensis

Sarda orientalis

Sarda sarda

10.3.2.10.1 The name of the product as declared on the label shall be "Tuna" or "Bonito" and may be preceded or followed by the common or usual name of the species in a manner not confusing or misleading to the consumer.

10.3.2.10.2 The name of the product labelled as "Tuna" shall be qualified or accompanied by a term descriptive of the representation in accordance with 10.3.1.7 and of the colour of the product provided that the term "white" shall be used only for the product of the meat of the tuna species *Thunnus alalunga* that shall comply with the requirements of 7.1.4.2(a). The term "light" shall be used for a tuna product that corresponds to the colour designation as set out in 7.1.4.2(b). A tuna product that corresponds to a colour designation as set out in 7.1.4.3 shall be labelled as "dark". Blends of tuna of different colour designation shall be specifically described in the title of the product. All colour designation terms qualifying "tuna" shall be in letters of at least the same size and prominence as "Tuna" or "Tunny".

The name "Albacor" when used for the labelling of tuna shall be reserved for the tuna species *Thunnus alalunga* and shall be coupled with "Tuna" or "Tunny" in letters of the same size and prominence.

10.3.2.10.3 Products consisting of the meat of *Sarda spp.* shall be labelled as "Bonito" and shall not be described as "Tuna" or any reference made to tuna.

10.3.2.11 Kabeljou shall be described only as "Kabeljou" or "Cape Cob".

10.3.2.12 Canned salmon (see 7.1.6) is the product prepared from any of the species listed below, with the proviso that the common names in brackets may only be used in conjunction with the corresponding species names as follows:

Salmo salar - (Atlantic salmon, salmon);

Oncorhynchus nerke - (Sockeye salmon, red sockeye salmon, red salmon);

Oncorhynchus kisutch - (Coho salmon, silver salmon, medium red coho salmon);

Oncorhynchus tshawytscha - (Chinook salmon, spring salmon, king salmon);

Oncorhynchus gorbuscha - (Pink salmon, humpback salmon);

Oncorhynchus keta - (Chum salmon, keta salmon, dog salmon); and

Oncorhynchus masou - (Cherry salmon, Japanese or Masou salmon).

Tips, tails, minced and similar forms of canned salmon shall be labelled to disclose their true nature, all words qualifying the word "salmon" being in type of the same size and prominence as "Salmon".

The species *Oncorhynchus gorbuscha* - (Pink salmon, humpback salmon) is the only species that may be labelled "Pink Salmon". The colour of the fish flesh in the can may deviate from the characteristic pink colour provided

- a) that the fish is from the abovementioned species,
- b) that written verification from an authority in the country where the fish is canned is provided,
- c) that there is no pictorial presentation depicting pink salmon on the label, and
- d) if white fish is depicted in the pictorial presentation on the label it may not be labelled "Pink Salmon".

The colour of the fish flesh depicted in the pictorial presentation shall be a true reflection of the fish flesh colour of the contents.

10.3.3 True description of the contents of fish paste

Any fish named in the description of a fish paste shall be used in sufficient quantity to justify the use of the name. If only one variety of fish is named, the paste (except in the case of anchovy) shall contain at least 60 % by mass of that fish. Where two or more varieties are named, except where one variety is anchovy, the total quantities of the named fish shall be not less than 60 % by mass and the quantity of any one particular variety of fish named shall be not less than 15 % by mass. In the case of fish paste labelled anchovy, the anchovy content shall be not less than 30 % by mass. Where anchovy appears in the name of the product, the anchovy content shall be not less than 10 % by mass and the total quantities of the varieties of fish indicated in the name of the product shall be not less than 50 % by mass. In the case of fish pastes made from more than one variety of fish, the names of the varieties featuring in the title shall appear in the title in decreasing order of amounts by mass present. All types of fish used in the preparation shall appear in the list of ingredients in decreasing order of amounts by mass present. For the purpose of this subsection the term "fish" shall be deemed to include molluscs and/or crustacea, provided that the presence of molluscs and/or crustacea as a fish paste ingredient shall be specifically stated on the label.

10.3.4 True description of molluscs

The common names given in table 4 may be used as indicated:

Table 4 □ Common and scientific names of molluscs

1	2
Common name	Scientific name
Abalone/Perlemoen	<i>Haliotis midae</i> and other edible species of the family <i>Haliotidae</i> .
Mussel	Edible species of the family <i>Mytilidae</i> .
White mussel	<i>Donax serra</i>
Black mussel	<i>Chloromytilus meridionalis</i> , <i>mytilus gallo provincialis</i>
Brown mussel	<i>Perna perna</i>
Green mussel	<i>Perna canaliculus</i> , <i>mytilus smaragdinus</i>
Oyster	Edible species of the <i>crassostrea</i> spp and other edible species of the <i>Ostreidae</i> family.
Knysna oyster	<i>Crassostreaa margaritacea</i>
Razor shell (Razor clam)	Edible species of <i>Solenidae</i> family.
Octopus (Seacat)	Edible species of the <i>Octopus</i> spp, <i>Polypus</i> spp; <i>Eledone</i> spp.
Cuttlefish	Edible species of the <i>Sepia</i> spp; <i>Sepiola</i> spp.
Squid, Inkfish, Inks, Sea arrow, Calamari	Edible species of the <i>Loligidae</i> family.
Clams	<i>Menetrix</i> spp. <i>Donax</i> spp. <i>Corbicula</i> spp. <i>Mya arenaria</i> <i>Saxidomus giganteus</i> <i>Saxidomus nuttali</i> <i>Venus mortoni</i> <i>Protothaca thaca</i> <i>Protothaca stamina</i> <i>Paphia stamina</i> <i>Austrovenus stutchburyi</i> <i>Mercenaria mercenaria</i> <i>Venus mercenaria</i> <i>Mactra sachalinensis</i> <i>Anadara subcrenata</i> <i>Tilapia cordata</i> <i>Tivela stultorum</i> <i>Spisula solidissima</i> <i>Ensis directus</i> <i>Arctic islandica</i>
Cockle	Edible species of the <i>Veneridae</i> and <i>Cordidae</i> families.
Scallop	Edible species of the <i>Pectinidae</i> family.
NOTE Where molluscs are not shucked, the presence of shells shall be reflected in the description of the product on the main panel of the label.	

10.3.5 True description of crustaceans

The common names given in table 5 may be used as indicated:

Table 5 □ Common and scientific names of crustaceans

1	2
Common name	Scientific name
Rock lobster, spiny lobster	<i>Jasus spp</i>
Crawfish	<i>Palinurus spp</i> and <i>Panulirus spp</i>
West coast rock lobster,	<i>Jasus lalandii</i>
Cape rock lobster, kreef	
Vema rock lobster,	<i>Jasus tristani</i>
Tristan rock lobster	
Natal rock lobster	<i>Palinurus gilchristi</i>
Crayfish	<i>Panulirus homarus</i> . Freshwater lobsters of <i>Cambarus spp</i> and <i>Astacus spp</i> .
Port Elizabeth mud crayfish	<i>Scyllorus elizabethae</i>
Langoustine	Edible <i>Nephrops spp</i>
King prawn	<i>Nephrops andamanica</i>

Crab meat shall be prepared from any of the edible species of the sub-order *Brachyura* of the order *Decapoda* and all species of the family *Lithodidae*.

The name "Shrimp", "Shrimps" or "Prawns" shall only be used for the product prepared from species of the families *Penaeidae*, *Pandalidae*, *Crangonidae*, *Palaemonidae*.

"X Shrimp", "X Shrimps" or "X Prawns" may be used where the "X" is the name of a country or a geographic area from that the shrimps originate or the common name.

Size designations or count ranges are not required on the label, but if used, they shall be in accordance with 7.3.3.2. Where a count range is declared on the label in place of a size designation; no tolerances shall be applicable to the specified count ranges.

11 Methods of physical examination

NOTE A sample unit consists of a container of product and the entire contents thereof.

11.1 External and internal examination of containers

11.1.1 Determine whether the code digits are legible and indelible and if embossed, examine for any abnormalities such as damage of the tinplate or lacquer.

11.1.2 Examine the seams, seals or closures and outer and inner surfaces of the container for any abnormalities or integrity defects.

11.2 External and internal examination of seams

Conduct internal and external examinations of container seams, seals or closures in accordance with the method provided by the container manufacturer to determine whether the container seam, seal or closure is in compliance with the prescribed standards, parameters and attributes supplied by the container manufacturer to ensure the integrity of the hermetic sealing.

11.2.1 Leak test by applying vacuum inside the can

11.2.1.1 Preparation of the cans

a) Empty unused cans:

Immerse empty unused cans for 5 min in boiling water. Remove the cans from the boiling water and cool to 30 °C or below before testing.

b) End product:

In the case of 3-piece cans – Open the end product by cutting out one of the lids of the can without damaging the circumference of the seam. In case of 2-piece cans, remove the bottom of the can (opposite the seam) without damaging the expansion ring on the bottom end. After removal of the content, immerse the can for 60 min in boiling water. Remove from the boiling water and dry for 6 h at approximately 55 °C before testing.

11.2.1.2 Testing

Add some water to submerge the entire seam. Place a rubber seal on the open end to cover the entire top of the circumference of the seam or expansion ring. Place a perspex plate connected with a vacuum tube on top of the rubber seal. Observe the entire seal covered with water at the opposite end of the can during the removal of air out of the can. Appearance of a succession of air bubbles from the seam into the water indicates leakage through the seam at that particular point.

11.3 Determination of net mass of the contents of the container

11.3.1 Weigh unopened container.

11.3.2 Open container and remove the contents.

11.3.3 Wash, dry and weigh the container complete with lid.

11.3.4 Subtract the mass of the empty container from the mass of the unopened container. The resultant figure is the net mass.

11.4 Determination of the vacuum inside a container, the net headspace and the fill of the container

11.4.1 Vacuum

Tap the unopened container slightly on the surface of the inspection table to move the contents away from the inside surface of the lid. Impress the point of a vacuum gauge through the lid to measure the vacuum inside the container. Check for compliance with 6.1.7.

11.4.2 Net headspace

In case of

- a) a container with a lid attached by a double seam, partially cut out lid without removing or altering the height of the double seam, or
- b) another type of container, remove the lid.

Determine the average vertical distance, in mm, from the inside surface of the lid of the container to the upper level of the contents by taking measurements over the surface of the contents. The result is the net headspace.

11.4.3 Fill of container

In case of containers with lids attached by double seams, fill the container with water at room temperature to a vertical distance of 5 mm below the top level of the container. Weigh the container thus filled and determine the mass of the water by subtracting the mass of the container.

Draw off water from the filled container to the level of the contents, weigh the container with the remaining water and determine the mass of the remaining water by subtracting the mass of the container.

Divide the mass of the remaining water by the mass of the water and multiply by 100. The result is the percentage of the total volume capacity of the container occupied by the content expressed as the fill of the container.

In case of a container with a lid attached otherwise than by a double seam, remove the lid and proceed as above, but fill the container to the top or to the level of the inside surface of the lid instead of to 5 mm below the top.

11.5 Determination of drained mass

11.5.1 Maintain the container at room temperature approximately between 20 °C and 30 °C for a minimum of 12 h prior to examination.

11.5.2 Open and tilt the container to distribute the entire contents from the container on a pre-weighed sieve having a wire mesh with square openings of 2,8 mm × 2,8 mm.

11.5.3 Incline the sieve at an angle of approximately 17° to 20° and allow the contents to drain for 2 min, measured from the time the product is poured onto the sieve.

11.5.4 Immediately weigh the sieve containing the contents.

11.5.5 In case of a product with a sauce adhering to the contents or onto the sieve, wash the sauce off with a gentle spray of warm tap water (approximately 40 °C) using a wash bottle (e.g. plastic). Incline the sieve at an angle of approximately 17° to 20° and allow the contents to drain for 2 min, measured from the time the washing has finished.

11.5.6 Immediately remove adhering water from the bottom of the sieve by use of a paper towel and weigh the sieve containing the washed contents.

11.5.7 In case of products packed in a jelled medium that does not liquefy at a room temperature between 20 °C and 30 °C within 12 h, remove the jelled medium by hand and weigh the solid contents.

11.5.8 The drained or washed mass (A) is obtained by subtracting the mass of the sieve from the mass of the sieve with the drained or washed product.

11.5.9 In case of products containing optional ingredients such as vegetables, fruits, cereals or garnish, determine the total drained or washed mass (B) as described above, then separate the optional ingredients and re-weigh. The mass of the material remaining on the sieve is the drained or washed mass of the fish content (C).

11.5.10 In case of products wrapped in parchment paper such as crab meat, proceed as above but remove the parchment paper after removing any adhering meat.

11.5.11 The percentage drained or washed mass (% P_A) is expressed as:

$$\% P_A = \frac{A}{d.n.m.} \times 100$$

where

A is the drained or washed mass.

$d.n.m.$ is the declared net mass.

11.5.12 The percentage total drained or washed mass (% P_B) is expressed as:

$$\% P_B = \frac{B}{d.n.m.} \times 100$$

where

B is the total drained or washed mass.

$d.n.m.$ is the declared net mass.

11.5.13 The percentage drained or washed mass of the fish content (% P_C) is:

$$\% P_C = \frac{C}{d.n.m.} \times 100$$

where

C is the drained or washed mass of the fish content.

$d.n.m.$ is the declared net mass.

11.6 Determination of percentage exuded liquid in an oil packing medium

Drain the entire liquid packing medium from a container and collect by means of a funnel directly into a graduated volumetric measuring glass cylinder of a suitable size. Record the total volume (T) in mL. After the oil has been separated, record the volume (V) in mL of the exuded watery liquid.

Express the percentage exuded liquid as (% P_{EL}):

$$\% P_{EL} = \frac{V}{T} \times 100$$

where

V is the volume of the exuded liquid in mL.

T is the total volume of packing medium in mL.

The average exuded liquid in a number of containers of the same batch code can be obtained by collecting the entire packing medium of all the samples examined into a glass measuring cylinder and proceed as above.

11.7 Determination of percentage of tuna

11.7.1 Open the can and drain the contents, following the procedures outlined in 11.5.

11.7.2 Remove and place the contents onto a tared 12 mm mesh screen equipped with a collecting pan.

11.7.3 Separate the fish with a spatula being careful not to break the configuration of the pieces. Ensure that the smaller pieces of fish are moved to the top of a mesh opening to allow them to fall through the screen onto the collecting pan.

11.7.4 Segregate the material on the pan according to flaked, grated (shredded) or paste and weigh the individual portions to establish the mass of each component.

11.7.5 If declared as a "chunk" pack, weigh the screen with the fish retained and record the mass. Subtract the mass of the sieve from this mass to establish the mass of solid and chunk fish.

11.7.6 If declared as "solid" pack remove any small pieces (chunks) from the screen and reweigh. Subtract the mass of the sieve from this mass to establish the mass of "solid" fish.

11.7.7 Express the mass of flaked, grated (shredded and paste) (F) as a percentage of the total drained mass of fish.

$$\% F = \frac{M_F}{M_T} \times 100$$

where

M_F is the mass of flaked, grated or shredded fish.

M_T is the total mass of fish.

11.7.8 Calculate the mass of solid and chunk fish (M_{SC}) retained on the screen by difference and express as a percentage of the total drained mass of fish.

$$\% SC = \frac{M_{SC}}{M_T} \times 100$$

where

M_{SC} is the mass of solid or chunk fish.

M_T is the total mass of fish.

11.7.9 Calculate the mass of solid fish (M_S) retained on the screen by difference and express as a percentage of the total mass of drained mass.

$$\% S = \frac{M_S}{M_T} \times 100$$

where

M_S is the mass of solid fish.

M_T is the total mass of fish.

11.8 Examination methods for shrimps, prawns and langoustines

11.8.1 Determination of size designation

The size designation (*SD*) if expressed as the number of shrimps or prawns of 100 g of drained product, shall be determined from the number of whole units (*N*) and the actual drained mass (*M*), using the following equation:

$$SD = \frac{N}{M} \times 100$$

where

N is the number of whole units.

M is the total number of units.

11.8.2 Determination of percentage broken units

Separate the broken pieces from the whole units and calculate the percentage of broken units (% BU) by using the following equation:

$$\% \text{ BU} = \frac{M_B}{M} \times 100$$

where

M_B is the number of broken units.

M is the total number of units.

11.8.3 Determination of percentage undeveined units

Separate any units not deveined or cleaned from the product labelled as "deveined" or "cleaned" and calculate the percentage units not deveined or cleaned (*M_U*) by using the following equation:

$$\% \text{ Mu} = \frac{M_U}{M} \times 100$$

where

M_U is the number of undeveined units.

M is the total number of units.

11.8.4 Determination of percentage discoloured units

Separate units with distinct discolouration of more than 10 % of their surface area and calculate the percentage discoloured units (% DU) by using the following equation:

$$\% \text{ DU} = \frac{M_D}{M} \times 100$$

where

M_D is the number of discoloured units.

M is the total number of units.

11.9 Sensory and physical examination of contents

11.9.1 Open container.

11.9.2 Carefully remove the contents out of the container onto a white coloured tray for physical examination.

11.9.3 Assess immediately the odour remaining in the empty container.

11.9.4 Assess the odour, flavour and texture of the contents.

11.9.5 Assess the product in accordance with the applicable requirements stipulated for the product.

11.9.6 Where the product is cross cut, round pilchards (not filleted) or sardinella packs or sardines in round cans, determine whether scales are present by gently scratching with the finger tips, any remaining scales off from the surface of the skin.

11.9.7 Split the units length wise open from the dorsal side down to the ventral side to determine the texture of the flesh, the bones, the colour of the flesh, the flavour and the presence of any remains of intestines with feed. Check for compliance with 6.1.9.

11.10 Examination of fish paste, fish spread

Transfer the contents from the container onto a white ceramic tile. Examine the contents for discolouration, defects or any other abnormalities. Spread the contents in thin layers over the tile with a spatula, in order to detect any sandiness, grittiness or other coarse pieces or tough portions or clots and examine the product for compliance with 7.1.16.1.

11.11 Measurement of blob diameter of tomato paste

Measure the blob diameter at 25 °C by placing a cylindrical chromium-plated copper tube of height 60 mm and inside diameter 19 mm on a horizontal glass plate, and filling it to the level of the top rim with the paste under test and gently lifting the tube from the plate at a slow and even rate such that the time taken to empty the cylinder is 4 s. Then immediately measure the lengths, in mm, of two diameters (at right angles to each other) of the paste blob, including in the measurements, any exuded liquid, and record the mean of these values. Perform this determination twice and record the overall mean value as the blob diameter. Check for compliance with 4.3.7.

11.12 Determination of Munsell value of canned tuna

11.12.1 Apparatus

11.12.1.1 An apparatus for comparing the reflectance of the tuna sample and the neutral Munsell discs.

11.12.1.2 A light source suitable for illuminating the sample and the Munsell disc with the radiating light at a wavelength centered at 555 nm (540 nm to 570 nm), or a comparator device fitted with a filter (on the eyepiece) that transmits light centered at the above wavelength.

11.12.1.3 Munsell discs of values 6,3 and 5,3.

11.12.2 Preparation of sample

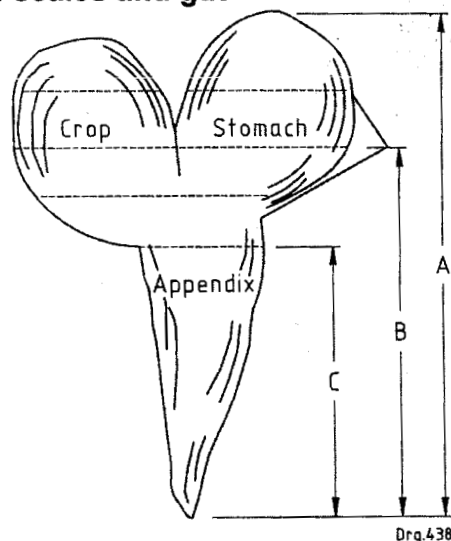
Pass the contents of the container through a sieve of nominal aperture size 6,7 mm. Mix the sieved material and place it in a 84 mm × 46 mm open-top can with a false bottom 13 mm deep, the can being painted flat black inside and out. Fill the can to within 3 mm to 6 mm of its top edge. In the case of blended tuna, separate the flesh of the two colours and proceed as indicated with each colour separately.

11.12.3 Procedure

Within 10 min of sieving the sample determine the Munsell value as follows:

Using two Munsell discs of the same value each mounted 8 mm below the top edge of a 84 mm × 46 mm open-top can (painted as in 11.12.2), regulate the source of illumination so that, when viewed, the two discs appear to be of equal brightness. Without altering the adjustment, remove one can and replace it by the prepared sample and observe whether the sample appears to be lighter or darker than the standard. For tuna designated "white" and "light" conduct the comparison using Munsell discs of value 6,3 and 5,3 respectively. Check for compliance with 7.1.4.2.

11.13 Determination of scales and gut



Symbols

- A – complete gut
- B – half gut
- C – one-third gut

Figure 1 □ External gut

Determination of the seriousness of the defect caused by the presence of gut

The undermentioned symbols are used to indicate the degree to which gut is present in fish units but have no bearing on the degree to which feed is present in the gut.

The presence of the extremity of the anal canal is allowed and is therefore not considered in determining the extent of the presence of gut. Gut without feed is not considered to be a significant defect.

The degree to which the gut is full is indicated by means of the following symbols:

- D – Serious (half full to full gut)
- E – Less serious (less than half full gut)
- F – Slight (presence of feed in the gut not obvious)

From the above it follows that a complete gut which is half to totally full is considered to represent one serious defect, viz., 1 AD. The following formulae are used for the purpose of calculating the equivalent number of AD's in a production of canned fish in which gut, containing feed, is present:

$$1 \text{ AD} = 2 \text{ AE} = 2 \text{ BD} = 4 \text{ BE}$$

$$1 \text{ AD} = 3 \text{ CD} = 6 \text{ CE}$$

A unit containing spilt green or red feed with or without gut is considered to be a serious defect and constitutes 1 AD.

11.14 Interpretation and calculation of scales

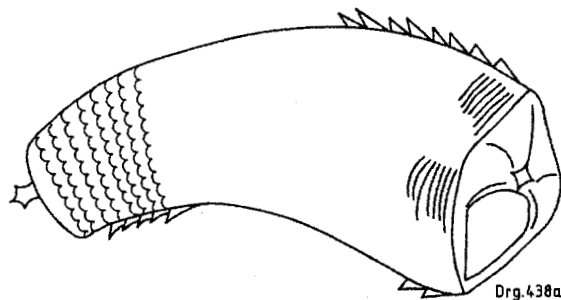


Figure — 2(a) Slight scales

Slight scales on one side = 1/8 unit full scales.
Slight scales on both sides = 1/4 unit full scales.

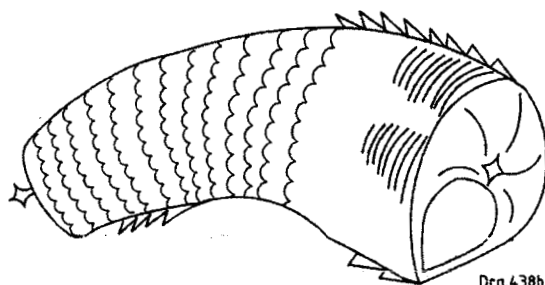


Figure — 2(b) Half scales

Half with scales on one side = 1/4 unit full scales.
Half with scales on both sides = 1/2 unit full scales.

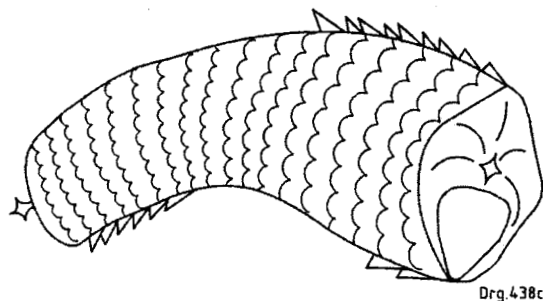


Figure — 2(c) Full scales

Full of scales on one side = 1/2 unit full scales.
Full of scales on both sides = 1 unit full scales.

Figure 2 □ Interpretation and calculation of scales

12 Microbiological test methods

12.1 Microbiological spoilage

Use SANS 6257 (SABS SM 1257), *Microbiological examination of canned meat and fish products*.

12.2 Tests for pathogenic organisms

Use the following test methods:

SANS 6579/ISO 6579 (SABS ISO 6579), *Microbiology – General guidance on methods for the detection of Salmonella*.

SANS 6888-1/ISO 6888-1 (SABS ISO 6888-1), *Microbiology of food and animal feeding stuffs – Horizontal method for enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) – Part 1: Technique using Baird-Parker agar medium*.

SANS 7932/ISO 7932 (SABS ISO 7932), *Microbiology – General guidance for enumeration of Bacillus cereus – Colony count technique at 30 °C*.

SANS 7937/ISO 7937 (SABS ISO 7937), *Microbiology of food and animal feeding stuffs – Horizontal method for enumeration of Clostridium perfringens – Colony count technique*.

13 Chemical test methods

13.1 Determination of protein nitrogen

Use SANS 6317, *Methods of chemical analysis of meat and fish products*, or any other internationally recognized method that delivers equivalent results.

13.2 Determination of starch content

Use SANS 6317, *Methods of chemical analysis of meat and fish products*, or any other internationally recognized method that delivers equivalent results.

13.3 Determination of salt content (as sodium chloride)

13.3.1 Reagents

13.3.1.1 Silver nitrate solution, 0,1 N, accurately standardized.

13.3.1.2 Potassium thiocyanate solution, 0,1 N.

13.3.1.3 Ferric alum indicator – a cold saturated aqueous solution of ferric ammonium sulphate to which a few drops of 6 N nitric acid have been added.

13.3.1.4 Sodium carbonate solution – a saturated aqueous solution.

13.3.1.5 Nitrobenzene.

13.3.2 Procedure

Weigh accurately a suitable quantity of the prepared sample into an evaporating basin or crucible, moisten with the sodium carbonate solution and dry on a waterbath. Char the dried sample and ash it at a temperature not exceeding 500 °C. Extract the residue with dilute nitric acid (about 6 N) and filter into a 100 mL volumetric flask. Make up to volume with the dilute nitric acid.

To a suitable aliquot in a 250 mL Erlenmeyer flask add 25 mL of the silver nitrate solution, 5 mL nitrobenzene and 1 m ferric alum indicator. Shake well. Titrate with 0,1 N potassium thiocyanate to the end point – colour change to reddish brown. Carry out a blank determination omitting the sample. From the difference between blank titration and the test titration determine the volume (A) of silver nitrate solution applicable to the sample used.

13.3.3 Calculation

Calculate the result as follows:

$$\% \text{ sodium chloride} = \frac{A \times 5,845 \times N}{W}$$

where

A is the volume of silver nitrate solution used by the aliquot, in mL;

N is the normality of silver nitrate used;

W is the mass of original sample represented by the aliquot used in the titration, in grams.