



EAST AFRICAN STANDARD

Prawns/shrimp canned in brine — Specification



EAST AFRICAN COMMUNITY

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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Introduction

Canned prawns is an important export commodity. There is ample scope for the development of the external as well as the internal trade in this commodity if proper quality control measures are taken.

In the process of canning prawns, the fresh material is first peeled; removing the heads, shells and viscera or the 'venis'. The material is then cleaned thoroughly with water and the slime is removed. It is then blanched, graded for size and filled in cans with brine and the cans are exhausted and sealed. The sealed cans are processed by heating to ensure thorough cooking and sterilization of the material.

In the preparation of this East African Standard, the following sources were consulted extensively:

IS 2236:1968(R2005), *Specification for Prawns/Shrimp Canned in Brine*

CAC/RCP 52:2003(Rev. 4:2008), *Code of practice for fish and fishery products*

IS 4303-1:1975, *Code of hygienic conditions for fish industry — Part 1: Pre-processing stage*

IS 4303-2:1975, *Code of hygienic conditions for fish industry — Part 2: Canning stage*

Codex Alimentarius website: http://www.codexalimentarius.net/mrls/vetdrugs/jsp/vetd_q-e.jsp

USDA Foreign Agricultural Service website: <http://www.mrldatabase.com>

USDA Agricultural Marketing Service website: <http://www.ams.usda.gov/AMSV1.0/Standards>

European Union: http://ec.europa.eu/enterprise/sectors/pharmaceuticals/veterinary-use/maximum-residue-limits/index_en.htm

Assistance derived from these sources is hereby acknowledged.

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Prawns/shrimps canned in brine — Specification

1 Scope

This standard prescribes the requirements and the methods of sampling and test for prawns/shrimp canned in brine.

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.

CAC/GL 21, *Principles for the establishment and application of microbiological criteria for foods*

CAC/RCP 1, *Recommended international code of practice — General principles of food hygiene*

CAC/GL 30, *Principles and guidelines for the conduct of microbiological risk assessment*

CAC/GL 31, *Guidelines for the sensory evaluation of fish and shellfish in laboratories*

CAC/GL 48, *Model certificate for fish and fishery products*

CAC/RCP 52[CD/K/521:2010], *Code of practice for fish and fishery products*

CAC/GL 53, *Guidelines on the judgement of equivalence of sanitary measures associated with food inspection and certification systems*

EAS 12, *Drinking (potable water) — Specification*

EAS 35, *Edible salt — Specification*

EAS 38, *Labelling of prepackaged foods — Specification*

EAS 41, *Fruits, vegetables and derived products — Sampling and methods of test*

EAS 103, *Schedule for permitted food additives*

EAS 123, *Distilled water — Specification*

ISO 4831, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of coliforms — Most probable number technique*

ISO 4832, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coliforms — Colony-count technique*

ISO 4833, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of microorganisms — Colony-count technique at 30 degrees C*

ISO 6579, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of *Salmonella* spp.*

ISO 6887-1, *Microbiology of food and animal feeding stuffs — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 1: General rules for the preparation of the initial suspension and decimal dilutions*

ISO 6887-3, *Microbiology of food and animal feeding stuffs — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 3: Specific rules for the preparation of fish and fishery products*

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

ISO 6888-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) — Part 2: Technique using rabbit plasma fibrinogen agar medium*

ISO 6888-3, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) — Part 3: Detection and MPN technique for low numbers*

ISO 7251, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of presumptive Escherichia coli — Most probable number technique*

ISO 7937, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of Clostridium perfringens — Colony-count technique*

ISO 13720, *Meat and meat products — Enumeration of Pseudomonas spp.*

ISO 21567, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Shigella spp.*

ISO/TS 21872-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of potentially enteropathogenic Vibrio spp. — Part 1: Detection of Vibrio parahaemolyticus and Vibrio cholerae*

ISO/TS 21872-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of potentially enteropathogenic Vibrio spp. — Part 2: Detection of species other than Vibrio parahaemolyticus and Vibrio cholerae*

3 Description

3.1 Definitions

For the purpose of this standard the following definitions shall apply.

3.1.1

blanching

Heating the prawns in boiling brine for an adequate period so that the material is curled and attains the characteristic colour and flavour and a firm texture.

3.1.2

count

Number of prawns per 100 g on the basis of drained weight.

3.2 Product definition

Canned shrimp is the product prepared from any combination of species of the families *Penaeidae*, *Pandalidae*, *Crangonidae* and *Palaemonidae* from which heads, shell, antennae have been removed.

3.3 Process definition

Canned shrimp are packed in hermetically sealed containers and shall have received a processing treatment sufficient to ensure commercial sterility.

3.4 Raw materials

The raw material used for preparation of prawns/shrimp canned in brine shall be fresh or frozen, sound, wholesome, properly cleaned and free from entrails.

3.5 Grades

3.5.1 Unless agreed otherwise between the purchaser and the vendor, the material shall be of 8 grades, namely, Colossal/Supreme Jumbo, Jumbo, Large, Medium, Small, Tiny, Cocktail/Mini/Salad and Broken and these grades shall be on the basis of the count as indicated in Table 1.

3.5.2 Any pack showing broken pieces more than 10 percent by weight irrespective of the number of pieces present in the can shall be declared as broken.

Table 1 — Grades of prawns/shrimps canned in brine

Grade Designation	Count/100 g	Abbreviation
Colossal/Supreme Jumbo	Up to 8	C/SJ
Jumbo	9 to 13	J
Large	14 to 22	L
Medium	23 to 36	M
Small	37 to 63	S
Tiny	64 to 102	T
Cocktail/Mini/Salad	103 and above	CT/MI/SD
Broken (Whole and Broken)	Not limit	B/WB

3.5.2.1 Any piece showing less than 4 segments shall be treated as broken.

3.5.3 Any sample shall contain not less than ninety percent of the pieces of the declared size grade.

3.6 Presentation

The product shall be presented as:

3.6.1 Peeled shrimp (conventional) — shrimp which have been headed and peeled without the intentional removal of the dorsal tract;

3.6.2 Peeled and de-veined (Cleaned) — peeled shrimp which have had the back cut open and the dorsal tract removed at least up to the last segment next to the tail. The portion of the cleaned or de-veined shrimp shall make up 95% of the shrimp contents;

3.6.3 Cocktail (Picnic) — Any mixture of shrimp sizes which does not contain more than 15% of the drained weight of the contents (m/m) broken shrimp.

3.6.4 Salad — Any size or mixture of sizes, which does not contain more than 50% m/m broken shrimp in a can.

3.6.5 Broken shrimp — more than 10% of the shrimp contents consist of pieces of peeled shrimp of less than four segments with or without the vein removed;

3.6.6 Other forms of presentation

Any other presentation shall be permitted provided that it:

3.6.6.1 is sufficiently distinctive from other forms of presentation laid down in this standard;

3.6.6.2 meets all other requirements of this standard;

3.6.6.3 is adequately described on the label to avoid confusing or misleading the consumer.

3.6.7 Size

Canned shrimp may be designated as to size in accordance with:

- (i) the actual count range may be declared on the label; or
- (ii) provisions given in Annex "B".

3.7 Preparation and processing

3.7.1 The prawns shall be peeled, removing the heads, shells and 'veins' or viscera before canning. They shall be washed repeatedly in clean running water free from viable pathogenic organisms until all the surface slime is removed.

3.7.2 The clean prawns shall be properly blanched using edible common salt of a quality suitable for canning. The blanched prawns shall be cooled, further dressed and freed from all loose particles of flesh, graded and filled in clean cans along with brine. Very small quantities of monosodium glutamate, citric and, acetic acid or tartaric acid may be added.

3.7.3 The cans shall be exhausted by heat, steam or mechanical process and sealed in hot condition by double seaming. The sealed cans shall be processed at such temperature and for such length of time as will ensure thorough cooking and adequate sterilization of the finished, product without burning, scorching or overcooking. Water used for the cooling of cans shall be maintained in clean condition and chlorinated to maintain a minimum residual chlorine concentration of one part per million.

4 Essential composition and quality factors

4.1 The contents of the can on opening shall present a good appearance and shall not display any appreciable disintegration. Pieces from which portions have separated out shall be treated as disintegrated units. The proportion of disintegrated portions of prawns, calculated on the basis of the drained weight, shall not exceed 5 percent, by weight, based on the average of 5 cans.

4.2 The surface of the prawns shall not appear slimy to the touch. The meat shall be soft but firm and shall not crumble to granular form when pressed between the fingers.

4.3 The prawn pieces shall not be pressed together and it should be possible to separate the pieces easily. The pieces shall be of uniform size and shall be clean and free from loose hanging pieces of meat.

4.4 The brine shall be clear and not discoloured and shall not jell when stored at low temperature (about 4 °C).

4.5 The material shall have the odour and flavour of freshly caught and cooked prawn meat and shall be free from any undesirable odour. The material shall be free from scorched, bitter or any objectionable flavour.

4.6 The material shall be free from a pale or bleached colour with a greenish-yellow tint indicative of pre-processed spoilage or a deep red colouration indicative of post-processed spoilage. The material shall be free from any black discolouration.

4.7 The material shall be free from dirt, insect or hair or other extraneous matter. It shall be free from bits of veins, shell particles and pieces of appendages.

4.8 The material shall be free from any poisonous and deleterious substances.

5 Food additives

Only refined salt conforming to EAS 35 shall be used.

6 Hygienic requirements

6.1 The final product shall be free from any foreign material, that poses a threat to human health.

6.2 When tested by appropriate methods of sampling and examination listed in Clause 2, the product:

- (i) shall be free from micro-organisms capable of development under normal conditions of storage; and
- (ii) shall not contain any other substances including substances derived from micro organisms in amounts which may represent a hazard to health; and
- (iii) shall be free from container integrity defects which may compromise the hermetic seal.

6.3 It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the current edition of CAC/RCP 1 and the sections on the Products of Aquaculture in the International Code of Practice for Fish and Fishery Products CAC/RCP 52.

6.4 Microbiological and heavy metal contaminant limits

The material shall meet the microbiological and heavy metal requirements as given in Table 1.

Table 1 — Microbiological and heavy metal limits for tuna canned in curry

Type of contaminant		Requirement	Method of test
(i)	Microbiological requirements	Shall be commercially sterile	E.5
(ii)	Vacuum of the can in mm, min	100	Annex A
(iii)	Head space of the can in mm	5.0 to 7.5	---
(iv)	Drained weight of the contents of the can, as percentage by weight of the water capacity of the can, min	64	Annex B
(v)	Sodium chloride in brine, % (w/v), max	3.5	
(vi)	Acidity in brine as citric acid (anhydrous), % (w/v)	0.06 to 0.20	
(vii)	Arsenic, mg/kg, max	1.0	EAS 41
(viii)	Copper, mg/kg, max	0.4	EAS 41
(ix)	Tin, mg/kg, max	250.0	EAS 41
(x)	Mercury, mg/kg, max	0.5	EAS 41
(xi)	Lead, mg/kg, max	0.3	EAS 41
(xii)	Cadmium, mg/kg, max	0.3	EAS 41
(xiii)	Zinc, mg/kg, max	50.0	EAS 41
(xiv)	Histamine content, mg/100 fish meat, max	20.0	Annex B

7 Packing and marking

7.1 Packing

7.1.1 **Packing in cans** — The material shall be packed in suitable internally and uniformly lacquered cans and the cans sealed hermetically. The lacquer used shall be such that it does not impart any foreign unpleasant taste and smell to the contents of the can and does not peel off during processing and storage. The lacquer shall not be soluble in brine to any extent. The can exterior shall

be free from major dents, rust, perforations and seam distortions. The cans shall not show leaking, panelling or swell. The interior of the can on opening shall not show any visible black discolouration, rusting or pitting and the inside lacquer shall be in good condition.

7.1.1.1 The cans may also be lacquered externally subject to agreement between the purchaser and the vendor.

7.1.2 Packing in cases — Unless agreed otherwise between the purchaser and the vendor, the cans shall be packed in cases, strong enough to withstand rough handling by rail, road or sea-transport without damage to the contents. The number of cans in each case shall be as agreed to between the purchaser and the vendor.

7.2 Marking

The labelling of the cans shall be done by printing or lithographing on the cans themselves or by attaching labels printed on paper, subject to agreement between the purchaser and the vendor.

7.2.1 The labels shall give the following information:

- a) Name and grade of the material with the brand name, if any;
- b) Name and address of the manufacturer (optional for export purposes);
- c) Minimum net weight of the contents of the can in grams (and also in ounces, if required by the purchaser) — optional for export purposes;
- d) Drained weight of the contents of the can in grams (and also in ounces, if required by the purchaser) — optional for export purposes;
- e) Batch or lot number and the date of manufacture in code to be embossed on the can;
- f) List of additives added; and
- g) Licence number, if any, under which the manufacturer has been permitted to can the material.

7.2.2 The warranty period may also be mentioned on the label subject to agreement between the purchaser and the vendor.

7.2.3 Each can may also be marked with a Certification Mark.

8 Sampling, examination and analyses

8.1 Sampling

8.1.1 The sampling and tolerance plans in CD-K-572:2010 shall be used to determine the acceptability of the lot. The sampling plans dictate the minimum sample size to be taken. If necessary, in the opinion of the inspector, more than the minimum sample size specified may be taken.

8.1.2 Sampling of lots for the sensory examination of the product shall be in accordance with CD-K-572:2010 except that a lower acceptance number for decomposition shall be used as indicated in the sampling tables.

The tables specify the minimum number of sample units to be used for the following types of inspections:

- a) Level I — Sensory examinations of all products subject to inspection other than lots which are subject to reinspection.
- b) Level II — Sensory examinations of all products which are under reinspection.

8.1.3 The sample unit shall consist of a can of shrimp and the entire contents thereof.

8.2 Sensory and physical examination

Samples taken for sensory and physical examination shall be assessed by persons trained in such examination in accordance with CAC/GL 31.

8.3 Determination of net weight

Net contents of all sample units shall be determined by the following procedure:

- (i) Weigh the unopened container;
- (ii) Open the container and remove the contents;
- (iii) Weigh the empty container, (including the end) after removing excess liquid and adhering meat;
- (iv) Subtract the weight of the empty container from the weight of the unopened container. The resultant figure will be the net content.

8.4 Determination of drained weight

The drained weight of all sample units shall be determined by the following procedure:

- (i) Maintain the container at a temperature between 20 °C and 30 °C for a minimum of 12 hours prior to examination;
- (ii) Open and tilt the container to distribute the contents on a pre-weighed circular sieve which consists of wire mesh with square openings of 2.8 mm × 2.8 mm;
- (iii) Incline the sieve at an angle of approximately 17-20° and allow the shrimps to drain for two minutes, measured from the time the product is poured into the sieve;
- (iv) Weigh the sieve containing the drained shrimps;
- (v) The weight of drained shrimps is obtained by subtracting the weight of the sieve from the weight of the sieve and drained product.

8.5 Determination of size designation

The size, expressed as the number of shrimp per 100g of drained product, is determined by the following equation:

$$\frac{\text{Number of whole shrimp in unit}}{\text{Actual drained weight of unit}} \times 100 = \text{Number of shrimps/100g}$$

8.6 Physical examination

8.6.1 Complete external can examination.

8.6.2 Open can and complete drained weight determination, according to defined procedures. A drained weight determination should only be conducted on samples which have equilibrated at room temperature for several hours. This will ensure that any gelled brine has liquified.

8.6.3 Remove product from can. Examine can interior for presence of foreign material, sulphide blackening, struvite, and corrosion or other can interior defects.

8.6.4 Examine liquid and surface of shrimp for presence of struvite crystals, sulphide blackening, foreign material, or undesirable parts. Assess colour.

8.6.5 Examine each unit for style of presentation as required: When a size designation is declared, count the number of whole shrimp present. Calculate the whole shrimp present per 100 g using the following formula:

$$\frac{\text{number of whole shrimp in unit}}{\text{actual drained weight of unit}} \times 100 = \text{no. of shrimp/100 g}$$

During this procedure, separate broken pieces and determine the percentage of broken shrimp present. The percentage of broken shrimp may be calculated using the following formula:

$$\frac{\text{weight of broken shrimp}}{\text{actual drained weight of unit}} \times 100 = \% \text{ broken shrimp}$$

Where shrimp is further described on the label (e.g. "deveined"), product is examined for compliance. All percentages are calculated based on the actual drained weight of the unit.

8.6.6 Assess odour. Assess flavour and texture as required.

8.6.7 Record any defect for that unit on the appropriate worksheet.

9 Definition of defectives

A sample unit will be considered defective when it fails to meet any of the following final product requirements.

9.1 Taint

A unit will be considered tainted when any of the following conditions are found:

- a) **Rancid** — Odour characterized by the distinct or persistent odour of oxidized oil; or
Flavour characterized by that of oxidized oil which leaves a distinct bitter aftertaste.
- b) **Abnormal** — Distinct and persistent uncharacteristic odours or flavours such as burnt or acrid, metallic, or associated with feed, and not defined as rancid or decomposed; or
Flavour or odour resulting from the improper addition or mixing of ingredients.

9.2 Decomposition

A unit will be considered decomposed when any of the following conditions are found:

- a) **Odour or flavour** — A sample unit affected by persistent and distinct objectionable odours or flavours indicative of decomposition or rancidity. Persistent, distinct and uncharacteristic odour or flavour including but not limited to the following: fruity, vegetable, musty, yeasty, sour, faecal, ammonia, hydrogen sulphide, putrid.
- b) **Discolouration** — A sample unit affected by distinct blackening of more than 10% of the surface area of individual shrimp which affects more than 15% of the number of shrimp in the sample unit.
- c) **Texture** — Breakdown of muscle structure characterized by:
 - 1) muscle structure which feels dry as though no packing medium had been used; or
 - 2) muscle structure which is very soft, mushy or pasty uncharacteristic of the species in the presentation; or
 - 3) muscle structure which is rubbery or tough, to the feel, or when chewing.

9.3 Unwholesome

- a) **Critical foreign material** — A lot will be considered defective when any of the following conditions are found:
- the presence of any material which has not been derived from shrimp (and packing media) and which poses a threat to human health (such as glass, etc.); or
 - distinct and persistent odour or flavour of any material which has not been derived from shrimp (and packing media) and which poses a threat to human health (such as solvents, fuel oil, etc.).
- b) **Foreign material** — A unit will be considered defective when the following condition is found:
- the presence in the sample unit of any matter, which has not been derived from shrimp (and packing media) but does not pose a threat to human health (such as insect pieces, sand, etc.), and is readily recognized without magnification or is present at a level determined by any method including magnification that indicates non-compliance with good manufacturing or sanitation practices.
- c) **Other defects** — A unit will be considered defective when any of the following conditions are found:
- 1) **Struvite crystals** (magnesium ammonium phosphate crystals) — Any struvite crystal greater than 5 mm in length.
 - 2) **Sulphide blackening** (smut) — Sulphide blackening affecting greater than 5% of the drained contents.
 - 3) **Undesirable parts** — Any combination of loose or attached shell, head pieces or antennae in excess of 2% of the drained weight.

9.4 Failure to meet a standard of identity

- a) **Broken Shrimp** — A unit will be considered defective for broken shrimp if it fails the following criteria when examined by the method outlined in Clause 8.

Size Designation	Maximum Number of Broken Shrimp Permitted (% m/m)
Extra Large, Jumbo	5
Large	5
Medium	5
Small	10
Tiny	15
No size designation	10
Style Designation	
Picnic or Cocktail	15
Salad	50
Broken	no maximum

- b) **Deveining (Cleaning)** — In the case of deveined shrimp, a unit will be considered defective for deveining if it is found to contain more than 5% m/m of improperly cleaned or deveined shrimp, when examined using the method outlined in section 7.

- c) **Size Designation** — When a size designation is declared, a unit will be considered defective for size designation if it exceeds the maximum count per 100 g declared weight specified in section 4.2, when examined by the method outlined in Clause 8.
- d) **Count Range** — When a count range is declared, a unit will be considered defective for count range if the count is greater than or less than the range specified on the label, when examined by the method outlined in Clause 8.

10 Lot acceptance

A lot shall be considered as meeting the requirements of this standard when:

- (i) not any single instance of critical foreign matter occurs; or
- (ii) the total number of sample units found defective for taint, decomposition or unwholesomeness, individually or in combination, does not exceed the acceptance number for the sample size designated in the sampling plans; or
- (iii) the total number of sample units found defective for decomposition does not exceed the acceptance number (c) shown in parentheses for the sample size designated in the sampling plans in CD-K-572:2010; or
- (iv) the average net weight and the average drained weight of all sample units examined is not less than the declared weight and provided there is no unreasonable shortage in any individual container;
- (v) the Food Additives, Hygiene and Labelling requirements of Clauses 5, 6, and 7 are met.
- (vi) the total number of sample units found defective for standards of identity (style of presentation) and size designation or count range (if a size designation or count range is declared), does not exceed the acceptance number for the sample size designated in the sampling plans.



Canned shrimp example



Canned prawn example

Draft for comments only — Not to be cited

can Standard

Annex A
(normative)

Determination of vacuum of cans

The vacuum in the cans may be determined with a vacuum gauge of the piercing type or of an electric recording type.

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Annex B
(normative)

Determination of drained weight

B.1 Apparatus

B.1.1 Test sieve 200 (aperture 2.00 mm) — BS Sieve 8 or Tyler Sieve 9 or ASA Sieve 10 (same as ASTM Test Sieve), may also be used.

B.2 Procedure

B.2.1 Carefully weigh the clean and dry sieve and transfer the contents of the can to the sieve. Allow to drain for five minutes and weigh the sieve with the contents. The difference between the two weights gives the drained weight. Calculate the drained weight as percentage of the water capacity of the can. Retain the residue on the sieve as well as the drained liquid and also the can for preparing the solution for the estimation of sodium chloride in the brine.

B.2.2 Determine the water capacity of the can by the procedure given in B.2.2.1 to B.2.2.4.

B.2.2.1 Cut out the lid without removing or altering the height of the double seam.

B.2.2.2 wash, dry and weigh the empty can.

B.2.2.3 Fill the container with distilled water at 20 °C to 4 mm vertical distance below the top level of the container and weigh.

B.2.2.4 Subtract the weight in B.2.2.2 from the weight in B.2.2.3. The difference shall be considered to be the weight of water required to fill the container.

Annex C (normative)

Determination of sodium chloride

C.1 Reagents

C.1.1 Standard Silver Solution — 0.1 N, standardized against 0.1 N sodium chloride solution.

C.1.2 Dilute Nitric Acid — 1:4.

C.1.3 Ferric ammonium indicator solution — A saturated solution of ferric alum $[\text{Fe}(\text{NH}_4)(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}]$.

C.1.4 Standard Potassium Thiocyanate Solution — 0.1N

C.2 Procedure

C.2.1 Wash the emptied can thoroughly with water and wash the residue on the sieve at least thrice with cold water. Collect the drained liquid and all the washings together in a 1 000 ml graduated flask and make up the volume. Centrifuge the made-up liquid for at least 5 min at 1 000 rev/min.

C.2.2 Take a suitable aliquot of the clear supernatant solution prepared as in C.2.1, add a known volume of the standard silver nitrate solution in slight excess and then add 20 ml of dilute nitric acid. Boil gently on a hotplate or a sand-bath until all solids except silver chloride dissolve (usually 15 min). Cool, add 50 ml of water and 5ml of the ferric alum indicator solution and titrate with the standard ammonium thiocyanate solution until permanent light brown colour appears.

C.3 Calculation

C.3.1 Sodium chloride in the brine, per cent by weight

$$= 5.85 \frac{(V_1 N_1 - V_2 N_2)}{W}$$

where,

V_1 = volume of the standard silver nitrate solution;

V_2 = volume of the standard potassium thiocyanate;

N_1 = normality of the standard silver nitrate solution;

N_2 = normality of the standard potassium thiocyanate; and

W = weight, in g, of the dried product taken for the test.

NOTE The total weight of brine is obtained by finding the difference between the net weight and the drained weight of the contents of the can.

Annex D
(normative)

Determination of acidity in brine

D.1 Reagents

D.1.1 Standard sodium hydroxide solution

0.1N.

D.1.2 Phenolphthalein indicator solution

Dissolve one gram of phenolphthalein in 100 ml of 95 percent (w/v) alcohol.

D.2 Procedure

D.2.1 Take a suitable aliquot of the brine solution (see C.2.1), add about 200 ml of water and titrate against the standard sodium hydroxide solution using phenolphthalein indicator solution. Calculate the percentage acidity of the brine in terms of citric acid from the relationship: 1ml of 0.1 N sodium hydroxide solution is equivalent to 0.0064 g of citric acid (anhydrous).

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Annex E (normative)

Sampling of prawns/shrimp canned in brine

E.1 General requirements for sampling

E.1.1 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

E.1.2 Samples may be tested at a laboratory agreed to between the purchaser and the vendor.

E.2 Scale of sampling

E.2.1 Lot — In any consignment, all the cases containing cans of the same size and from the same batch of manufacture shall be grouped together to constitute a lot.

E.2.1.1 Samples shall be tested for each lot for ascertaining conformity of the material to the requirements of this standard.

E.2.2 The number of cases to be selected from each lot shall be in accordance with col 1 and 2 of Table E.1.

Table E.1 — Selection of packing cases

Number of cases in the lot (1)	No. of cases to be selected (2)
Up to 8	2
9 to 25	4
26 to 40	5
41 to 65	6
66 to 110	7
111 to 180	8
181 to 300	9
301 to 500	10

E.2.3 The cases shall be selected at random. In order to ensure randomness of selection, random number tables shall be used. In case such tables are not available, the following procedure may be adopted:

Starting from any case count them as 1, 2, 3, ..., r and so on in a systematic manner. Every r th case thus counted shall be withdrawn, r being the integral part of N/n , where N is the total number of cases in the lot, and n the number of cases to be selected, till the requisite number is obtained.

E.2.4 From each of the cases selected as in E.2.2, draw at random one can for testing the physical and chemical requirements.

E.2.5 In addition to the cans selected as in E.2.4, 8 cans shall be selected at random as far as possible from all the cases chosen (see E.2.2), for testing for microbiological activity.

E.3 Number of tests

E.3.1 Each of the cans selected as in E.2.4 for testing the physical and chemical requirements shall

be tested individually for vacuum and head space.

E.3.2 After testing for vacuum and head space, half of the cans shall be tested individually for drained weight, sodium chloride content in brine and acidity of brine, while the contents of all the remaining cans shall be mixed to form a composite sample and the composite sample so formed shall be tested for arsenic, lead, copper, zinc and tin.

E.3.3 Tests for microbiological activity

E.3.3.1 Incubation at 37 °C — Half of the cans selected as in E.2.5 shall be incubated at 37 °C for not less than 14 days and subjected to bacteriological examination.

E.3.3.2 Incubation at 55 °C — The remaining half of the cans shall be incubated at 55 °C for not less than 14 days and subjected to bacteriological examination.

E.4 Criteria for conformity

E.4.1 Vacuum and head space requirements — The lot shall be declared as conforming to the requirements for vacuum and head space when each of the cans tested individually (see E.3.1) satisfies the requirements specified in Table 1.

E.4.2 Drained weight, sodium chloride in brine and acidity of brine — The test results for these characteristics for each of the cans tested (see E.3.2) shall satisfy the requirements prescribed in Table E.1.

E.4.3 Metallic impurities — The test results for metallic impurities on the composite sample (see E.3.2) shall satisfy the requirements prescribed for arsenic, lead, copper, zinc and tin in Table E.1.

E.4.4 Microbiological requirements — For declaring the conformity of the lot to the microbiological requirements, the test results (see E.3.3.1 and E.3.3.2) shall satisfy the requirements prescribed in Table E.1.

E.5 Commercial sterility test

With a sterile pipette, transfer aseptically 1 ml of the liquid portion from the can to the thioglycollate broth and incubate the tube at 37 °C for 48 hours. If there is growth in the tubes after 48 hours, the cans are not commercially sterile. In doubtful cases the contents of the tube may be reinoculated and tested for a period of 48 hours. No cans shall show non-sterile conditions.

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