



CD/K/513-2:2010  
ICS 67.120.30

## EAST AFRICAN STANDARD

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Fresh and frozen groundfish block and fillet — Part 2: Groundfish block and fillet — Specification



EAST AFRICAN COMMUNITY

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## 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

This standard for fresh and frozen groundfish fillets and blocks including minced fish defines minimum acceptability for taint, decomposition, and unwholesomeness and other requirements, other than weight, and describes methods for determining that acceptability.

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

KS 1399-2:2003, *Specification for fresh and frozen fin fish — Part 2: Fresh and frozen fish fillet* (Third Edition)

Codex Alimentarius website: [http://www.codexalimentarius.net/mrls/vetdrugs/jsp/vetd\\_q-e.jsp](http://www.codexalimentarius.net/mrls/vetdrugs/jsp/vetd_q-e.jsp)

USDA Foreign Agricultural Service website: <http://www.mrlatabase.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](http://ec.europa.eu/enterprise/sectors/pharmaceuticals/veterinary-use/maximum-residue-limits/index_en.htm)

Assistance derived from these sources is hereby acknowledged.

Draft for comments only — Not to be cited as East African Standard

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*Draft for comments only — Not to be cited as East African Standard*

## Fresh and frozen groundfish block and fillet — Part 2: Groundfish block and fillet — Specification

### 1 Scope

This standard applies to fresh, frozen or defrosted fillets or fillet blocks or minced blocks of groundfish, prepared from any one of the following families or orders of groundfish:

- a) The family *Gadidae* — including cod, haddock, pollock, hake and cusk;
- b) The family *Anarchichadidae* — wolffish or catfish;
- c) The family *Scorpaenidae* — including ocean perch (redfish) and black belly rosefish;
- d) The family *Hexagrammidae* — ling cod;
- e) The order *Pleuronectiformes* — including flounder, sole, greysole, turbot and other related flatfish species;
- f) The family *Lophiidae* — monkfish.

Fresh, frozen or defrosted groundfish fillets or fillet blocks or minced blocks should be prepared from sound, wholesome raw material and processed using good manufacturing practices.

### 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*

CD-K-572-2010, *Fish and fisheries products — Methods of sampling*

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

EAS 35, *Edible salt — Specification*

EAS 12, *Drinking (potable water) — 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 6887-2, *Microbiology of food and animal feeding stuffs — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 2: Specific rules for the preparation of meat and meat products*

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 16050, *Foodstuffs — Determination of aflatoxin B<sub>1</sub>, and the total content of aflatoxin B<sub>1</sub>, B<sub>2</sub>, G<sub>1</sub> and G<sub>2</sub> in cereals, nuts and derived products — High performance liquid chromatographic method*

ISO 16654, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Escherichia coli O157*

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*

ISO 11290-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of Listeria monocytogenes — Part 1: Detection method*

ISO 11290-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of Listeria monocytogenes — Part 2: Enumeration method*

### **3 Description**

#### **3.1 Product definition**

Fillets are slices of irregular size and shapes which are removed from the fish carcasses by cuts made parallel to the backbone.

#### **3.2 Process definition**

**3.2.1** The product shall be subjected to a freezing process and shall comply with the conditions laid down hereafter. The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum crystallization is passed quickly.

**3.2.2** The freezing process shall not be regarded as complete unless and until the product temperature has reached  $-18\text{ }^{\circ}\text{C}$  ( $0\text{ }^{\circ}\text{F}$ ) at the thermal centre after thermal stabilization.

**3.2.3** The product shall be maintained at a low temperature such as it will maintain the quality during transportation, storage and distribution to the time of final sale.

#### **3.3 Presentation**

**3.3.1** The product shall be presented as

- a) skin on;
- b) skinless;
- c) boneless.
- d) fillets, blocks or minced fish blocks

**3.3.2** The fillets may be presented as boneless, provided that deboning has been completed.

**3.3.3** Any other presentation may be permitted provided that it:

- a) is sufficiently distinctive from the forms of presentations set out in 3.3.1 and 3.3.2; and
- b) meets the requirements of this standard; and
- c) is adequately described on the label and in accordance with all regulatory labelling requirements.

#### **3.4 Quality requirements for filleting equipment**

**3.4.1** All work surfaces and all containers, trays, tanks or other equipment used for processing fillets shall be of smooth, impervious, non-toxic material which is corrosion-resistant and shall be designed and constructed to prevent hygienic hazards and permit easy and thorough cleaning.

**3.4.2** Returnable boxes shall be clean to avoid contamination and strong enough to withstand physical damage to the fillet during transit.

**3.4.3** The filleting line shall be easy to dismantle for cleaning purposes and shall be constructed from a corrosion-resistant material such as stainless steel or marine grade aluminium.

**3.4.4** All machines and working surfaces used for gutting, washing, filleting, skinning shall be thoroughly cleaned, disinfected and rinsed as often as possible and at least once in every three hours of continuous production.

### **3.5 Handling of fish for filleting**

**3.5.1** All fish shall be carefully sorted for freshness before they are filleted.

**3.5.2** All fish shall be thoroughly washed before being placed on the filleting boards and cutting tables.

**3.5.3** Fish shall be well washed after descaling where applicable.

**3.5.4** All filleters shall be trained and shall use filleting techniques in which contact between the cut surfaces of the fillet and the filleting board is minimized.

**3.5.5** All fish handlers shall be medically fit and examined at least every 6 months.

**3.5.6** Cutting through the belly cavity during filleting of ungutted fish shall be avoided.

**3.5.7** All fish fillet taken for human consumption shall be free from obvious diseases or parasitized tissue or any other abnormal condition such as fungal and bacterial infection.

## **4 Essential composition and quality factors**

### **4.1 General**

**4.1.1** Fish fillets shall be prepared from sound fish of the designated species which are of a quality such as to be fit to be sold fresh for human consumption.

**4.1.2** Fillets shall be properly chilled to a temperature of 0 °C before being packed for shipment.

**4.1.3** Fish fillet shall be bright in appearance.

**4.1.4** Fish fillet shall have no blood clot.

**4.1.5** All fillet shall have its own fresh characteristic smell.

**4.1.6** Fish fillet shall be firm.

**4.1.7** Fish fillet shall be free from any abnormal condition such as chalkiness, jelliness and disease.

**4.1.8** Fish fillet shall have no organoleptically detectable spoilage.

### **4.2 Final product**

**4.2.1** The fillets shall be free from foreign matter and all internal organs and shall be reasonably free from ragged edges, tears and flaps, fins, significantly discoloured flesh, blood clots, black membrane (bellywall), nematodes and, where appropriate, skin, scales and bones.

**4.2.2** After cooking by steaming, baking or boiling, the product shall have a flavour characteristic of the species and shall be free from any objectionable flavour and odour, and its texture shall be firm and not tough, soft or gelatinous.

**4.2.3** The final product shall be reasonably free from undesirably small fillet pieces. A fillet weighing less than 30 g is classified undesirably small.

## 5 Food additives

Type	Max. level
Monophosphate, monosodium or Monopotassium orthophosphate (Na or K)	
Diphosphate, tetrasodium or Tetrapotassium, pyrophosphate (Na or K)	0.5 % m/m of the final product expressed as P <sub>2</sub> O <sub>5</sub> singly or in combination
Trisphosphate, pentasodium or Pentapotassium or pentapotassium or Calcium Na, K or Ca tripolyphosphates	
Polyphosphate, sodium	
Hexametaphosphate (Na)	
Ascorbate, potassium or sodium	0.1 % m/m of the final product expressed as ascorbic acid

## 6 Hygiene and handling

**6.1** The product covered by the provisions of this standard shall be prepared and handled in accordance with CAC/RCP 52[CD/K/521:2010] and the relevant public health regulations.

**6.2** Fillet shall be free from micro-organisms which represent a health hazard to consumers, and shall not show signs of spoilage.

**6.3** Processed fillets shall be kept separately from unprocessed fish to avoid any cross contamination.

**6.4** When tested by appropriate methods of sampling and examination, the product shall not contain any other substance including substances derived from microorganisms in amounts which may represent a hazard to health in accordance with standards established by the CAC; and

**6.5** The limits for pathogenic indicators for fillets shall be the same as for fresh fin fish shown in Table 1.

**Table 1 — Microbiological limits for fresh fin fish**

SL No	Micro-organisms	Max. limits	Method of test
i)	<i>Salmonella</i> per 25 g	Absent	ISO 6579
ii)	<i>E. coli</i> per gram	10	ISO 7251
iii)	<i>Shigella</i> per gram	Absent	ISO 21567
iv)	Coliforms per gram	100	ISO 4832
v)	<i>Staphylococcus aureus</i> per gram	100	ISO 6888
vi)	<i>Clostridium perfringens</i> per gram	Absent	ISO 7937
vii)	<i>Vibrio Spp</i> per gram	Absent	ISO/TS 21872
viii)	Total viable count per gram	10 <sup>6</sup>	ISO 4833

**6.6** Fresh fin fish and fresh fillet shall comply with the limits given in Table 2.

Table 2 — Contaminants limits

Type of contaminant		Maximum limit (mg/kg)	Method of test
(i)	Arsenic	0.1	EAS 41
(ii)	Copper	0.4	EAS 41
(iii)	Iron	5.0	EAS 41
(iv)	Tin		
	(a) For product packed in tin plate	50.00	EAS 41
	(b) For product packed in other packing containers	250.00	EAS 41
(v)	Mercury	0.5	EAS 41
(vi)	Lead	0.3	EAS 41
(vii)	Cadmium	0.3	EAS 41
(viii)	Methylmercury	0.5	EAS 41
(ix)	Zinc	50.0	EAS 41

## 6.7 Chemical analysis of fillets

6.7.1 Fresh fillet shall not contain more than 30 mg N/100 g of T.V.B.

6.7.2 The limits for pathogenic indicators for fillets shall be the same as for fresh fin fish shown in Table 1.

6.7.3 Fresh and frozen fillets shall not contain histamine levels exceeding 100 ppm.

## 7 Packaging and labelling

### 7.1 Packaging

7.1.1 The graded fillets shall be packaged by counts i.e. the average number of fillets of comparable size per unit weight (or mass) expressed in g or kg as unit required by the country in which the fillet is sold.

7.1.2 Fillets of comparable size and colour shall be packaged together but not fillets with obvious visual differences in size.

7.1.3 Fillets shall be packaged hygienically in food grade containers.

7.1.4 Packaging materials shall be sufficiently strong and durable to withstand stresses during processing, handling, storage and distribution.

7.1.5 Packaging material shall be clean and stored in hygienic manner and packaging shall also be carried out under conditions that prevent contamination of the product.

### 7.2 Labelling

7.2.1 The containers shall be labelled in accordance with EAS 38 and shall include the following:

- i) name of product;
- ii) name and physical address of processor/packer;
- iii) net weight in g/kg and number of pieces of fillets per pack;
- iv) date of processing;
- v) batch or code number;

- vi) "expiry date";
- vii) storage temperature;
- (viii) country of origin.

**7.2.2** There may appear on the label reference to the form of presentation as skin-on, skinless and/or boneless, as appropriate.

**7.2.3** The words "Fresh Fillet" shall also appear on the label.

**7.2.4** A complete list of ingredients shall be declared on the label in descending order.

## **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 fish and the entire contents thereof.

### **8.2 Sensory and physical examination**

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

### **8.3 Examination methods**

#### **8.3.1 Scope**

The methodology described in this section outlines a procedure for the examination of groundfish fillet and block products. The examination shall be made of end-of-line final products in the fresh, frozen and defrosted state for tainted, decomposed or unwholesome conditions.

#### **8.3.2 Equipment required**

- candling table
- calculator
- measuring tape or ruler
- examination tray, measuring approximately 30 x 50 cm
- knife

### 8.3.3 Examination for frozen state defects

The frozen package of fillet or block is examined for presence of freezer burn, i.e. dehydration which can only be removed with a knife or other sharp instrument.

**8.3.3.1** The area affected by dehydration is measured and the total surface of the fillets or blocks is determined. Inspectors shall then determine the percent of area affected by the following calculation:

$$\% \text{ of dehydration} = \frac{\text{Area affected}}{\text{Total surface area}} \times 100$$

### 8.3.4 Examination of fresh or defrosted fillet or block packs excluding minced fish

The fresh or defrosted sample unit is examined in its entirety. Each fillet is examined individually. Care should be exercised in separating the fillets to prevent tearing or mutilation.

#### 8.3.4.1 Candling procedures

Each fillet is individually examined on the illuminated candling table for presence of parasites, i.e. nematodes or copepods. Each parasite whether whole or in part or encapsulated is considered a parasite incidence. The examination is to be non-destructive in nature, that is, no slicing is permitted nor is the skin to be removed from skin-on fillets. The parasites are removed and the total number of incidents counted to determine the sample unit or entire sample compliance as per requirements in section 9.4 c) 2).

#### 8.3.4.2 Determining the cause for rejection of a fillet

Fillets within the sample units shall be classified according to whether they are acceptable or not acceptable. If not acceptable, the inspector will classify the fillet as decomposed, tainted or unwholesome. Should a fillet be both tainted and decomposed, for the purpose of the application of this standard and the interpretation of the sampling plan, the fillet is deemed to be decomposed. In the case of tainted or decomposed fillets, the inspector shall weigh the affected fillets, as necessary, to determine the percent of the sample unit which is affected by each category. The calculation is performed as follows:

$$\% \text{ Decomposed fillets} = \frac{\text{Weight of fillets affected}}{\text{Declared weight of pack}} \times 100$$

$$\% \text{ Tainted fillets} = \frac{\text{Weight of fillets affected}}{\text{Declared weight of pack}} \times 100$$

A similar calculation is made when jellied flesh (unwholesome) is encountered.

### 8.3.5 Examination of minced fish

Similar to the examination of fillet packs the entire sample unit of minced fish is examined. The following procedure should be used in the assessment of this product.

**8.3.5.1** A sub-sample of 1 kg is extracted from the container and evenly spread on an examination tray to a depth of 1 cm. An assessment is then made under normal overhead lighting conditions for the presence of whole parasites which may be visible on the surface of the minced fish. The parasites are removed and the number of incidents counted and recorded. Following this, the minced fish is examined for tainted or decomposed conditions or other evidence of unwholesome conditions other than parasites.

The process of spreading a 1 kg sub-sample on the tray is repeated and examination made as described above until the entire sample unit is inspected. The decision on classifying minced fish is the same as outlined in 8.3.4.2.

#### 8.4 Classification of defectives

A sample unit of fillets or blocks including minced fish is classified defective when one or more of the following conditions are encountered:

- a) **Decomposed**, when more than 10% of the declared weight of the fish is found to be decomposed as described in section 6, the sample unit is considered decomposed and the lower acceptance number in parentheses is used to determine lot acceptance; or
- b) **Tainted**, when more than 10% of the declared weight of the fish is found to be tainted as described in section 6, the sample unit is considered tainted and the regular acceptance number is used to determine lot acceptance; or
- c) **Tainted/Decomposed**, when assessed individually the amounts of tainted or decomposed fish are each less than 10%, but when combined, the amount of tainted and decomposed fish exceeds more than 10% of the declared weight, the sample unit is rejected as tainted/decomposed and the regular acceptance number is used to determine lot acceptance.
- d) **Unwholesome**, when:
  - 1) the number of incidents of parasites exceed the tolerance as described in 9.4 c) 2); or
  - 2) the sample unit is affected by foreign matter; or
  - 3) the sample unit is affected by dehydration on more than 10% of the total surface area; or
  - 4) the presence of excessive jellied flesh exceeds 10% of the declared weight of the pack; or
  - 5) the incidence of bones exceeds the tolerance prescribed in 9.4 c) 4) in packs designated as boneless.

#### 9 Definition of defects

A sample unit will be considered defective when it exhibits any of the properties defined below.

##### 9.1 Decomposition

A sample unit will be classified decomposed when more than 10% of the declared weight is affected by:

- a) **Odours** — Persistent and distinct odours in a fillet, part of a fillet or in minced fish characterized by: fruity, vegetable, musty, saltfish-like, sour, sour milk-like, faecal, ammonia, hydrogen sulphide, bilge, putrid; or
- b) **Colour** — Distinct green colour in a fillet or part fillet of flatfish species.

##### 9.2 Taint

A sample unit will be classified tainted when more than 10% of the declared weight is found to be:

- a) **Rancid** — Odour in a fillet or part of a fillet or minced fish which is characterized by the persistent and distinct odour of oxidized oil (this may be characterized by a pungent sensation in the nasal passage); or
- b) **Abnormal** — Distinct and persistent odour in a fillet or part of a fillet or minced fish which is organic sulphide-like, such as dimethyl sulfide (blackberry), or iodine-like, as associated with feed.

**9.3** A sample unit shall be classified as defective when more than 10% of the declared weight of the sample unit is affected by any combination of tainted or decomposed conditions.

**9.4 Unwholesome**

- a) **Critical foreign matter** — A lot will be considered defective when any of the following conditions are found:
  - 1) the presence of any material which has not been derived from fish and which poses a threat to human health (such as glass, etc.); or
  - 2) distinct and persistent odour of any material which has not been derived from fish and which poses a threat to human health (such as solvents, fuel oil, etc.).
- b) **Foreign matter** — A unit will be considered defective when the following condition is found:
  - the presence of any material which has not been derived from fish but does not pose a threat to human health (such as insect pieces, sand, etc.).
- c) **Other defects** — A unit will be considered defective when any of the following conditions are found:
  - 1) **Dehydration** (freezer burn) — Fillet Packs or Blocks — More than 10% of the surface area of a sample unit is affected. Fillets (IQF or Layer Pack) — More than 10% of the declared weight of the fillets in the sample unit is affected with dehydration conditions affecting more than 10% of the fillet surface area.
  - 2) **Nematodes or Copepods** — Only nematodes or copepod parasites having a capsular diameter of greater than 3 mm or, if not encapsulated, a length of greater than 10 mm will be considered in determining whether the lot is acceptable with respect to parasites. For packs of 1 kg and greater, the presence of 2 or more parasites per kg of sample unit will result in rejection of the sample. For packs of less than 1 kg an average of 1 parasite per kg of total sample will result in rejection of the sample. For example, a sample consisting of 13 units of 500g each would be rejected if 7 or more parasites were found.

The following parasite occurrences will result in the sample unit being classified as defective:

Pack size	Reject parasite level
1 kg	Use average as described above
2.27 kg	3
4.54 kg	5
6.81 kg	7
7.5 kg	8
8.4 kg	9
9.1 kg	10
22.7 kg	23

- 3) **Gelatinous Conditions** — More than 10% of the sample unit by declared weight is affected by excessive jellied conditions of the flesh.
- 4) **Bones** (Boneless Packs Only) — One bone A 1 mm in diameter or A 10 mm in length per kg fish.

**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 in CD-K-572:2010; 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 Food Additives, Hygiene and Labelling requirements of Sections 5, 6.1, 6.2, and 7 are met.



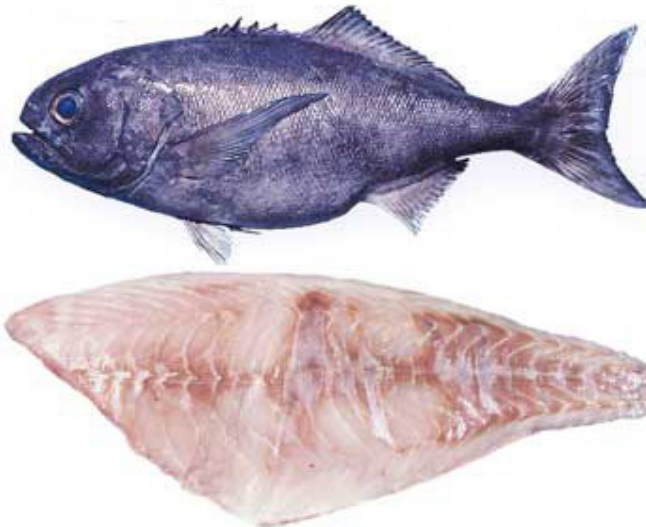
Fish fillet — Packaging and labelling



Frozen tilapia fillet



Fresh tuna fillet



Blue eyed cod whole fish and fillet



Salmon fillet



Black fin tuna fish fillet



Frozen shark fish fillet

Draft for



Fresh fish fillet



Frozen fish fillet

Standard

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Frozen fish fillet



Frozen fish fillet

Draft



Fresh fish fillet



Fresh catfish fillet

Draft for

**Annex A**  
(normative)

**Determination of total volatile bases and trimethylamine**

**A.1 Principle of the method**

This method is based on a semi-microdistillation procedure. Extracts or solutions are made alkaline with sodium hydroxide. The bases are steam distilled into standard acid and back titrated with standard alkali. Formaldehyde is added to the neutralized mixture and the acid released is equivalent to the volatile bases other than trimethylamine.

**A.2 Procedure**

Weigh  $100 \pm 0.5$  of prepared sample into a homogenizer with 300 ml of 5 per cent m/v trichloroacetic acid. Run the homogenizer to obtain a uniform slurry, filter or centrifuge to obtain a clear extract. By pipette, transfer 5 ml of the extract to a semi-microdistillation apparatus. Add 5 ml 2M sodium hydroxide solution. Steam distil. Collect in 15 ml 0.01M standard hydrochloric acid. Add indicator solution (1 per cent rosolic acid in 10 per cent v/v ethanol). Titrate to a pale pink end point with 0.01M sodium hydroxide. Add 1 ml 16 % m/v neutralized formaldehyde for every 10 ml liquid in the tildrafim flask. Titrate the liberated acid with 0.01M sodium hydroxide.

**A.3 Calculation**

$$\text{Total base nitrogen} = \frac{14 (3 + W) \times V_1}{500} \text{ mg} / 100 \text{ g}$$

$$\text{Trimethylamine nitrogen} = \frac{14 (300 + W) \times V_2}{500} \text{ mg} / 100 \text{ g}$$

where;

$V_1$  is volume standard acid consumed in the first titration;

$V_2$  is volume standard acid released for the second titration;

$W$  is water content of the sample mg/100 g.

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