



CD/K/520-3:2010  
ICS 67.120.30

## EAST AFRICAN STANDARD

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Canned fish — Part 3: Fish canned in oil — 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

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

KS 05-522-3:1987, *Specification for canned fish — Part 3: Fish canned in oil*

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.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](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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## Canned fish — Part 3: Fish canned in oil — Specification

### 1 Scope

This East African Standard applies to canned finfish in oil in hermetically sealed containers. It is intended to be used for the inspection of canned finfish species for which specific product standards have not been elaborated.

Canned finfish shall be prepared from sound, wholesome raw material 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*

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 6887-2, *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*

### **3 Requirements**

#### **3.1 Ingredients requirements**

**3.1.1 Fish** — The fish to be canned under this standard shall be of sound quality, free from taint or decomposition and fit for human consumption. It shall also be free from heads, tail-tips, fins and entrails. Scales, if present, shall be removed before canning. The fish to be canned shall also comply with CAC/RCP 52.

**3.1.2 Oil** — Only refined, pure, clean and deodorized edible vegetable oil complying with the relevant East African Standard, shall be used for canning fish. The oil shall be free from any foreign matter or mineral oils and objectionable flavour and odour.

**3.1.3 Salt** — Edible salt complying with EAS 35 shall be used for canning.

## **3.2 Packaging**

**3.2.1 Container** — The fish shall be packed in suitable internally lacquered cans and the cans sealed hermetically. The lacquer used shall be such that it does not impart any 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 the oil to any extent. The exterior of the can shall be free from major dents, perforations and seam distortions. The interior of the can shall not show any visible rusting or pitting and the inside lacquer shall be in good condition.

**3.2.2 Fish** — The fish shall be neatly packed. Regular packs shall be reasonably free from cross packs and pieces of skins or sections of the vertebrae across the top of the can.

## **3.3 Processing**

The processing temperature and time shall ensure the proper cooking and adequate sterilization of the finished product. The water used for cooling the cans shall be maintained in clean condition and chlorinated to maintain a minimum free residual chlorine concentration of 2 mg/kg.

## **3.4 Other presentations**

Any other presentation of the product may be permitted provided that it:

- a) is sufficiently distinctive from the forms of presentation set out above;
- b) meets all other Regulatory requirements; and
- c) is adequately described on the label and in accordance with all regulatory labelling requirements.

## **4 Requirements for the finished product**

### **4.1 Vacuum**

The can shall give a negative pressure when punctured. Canned fish packed in round cans or deeper containers shall have a minimum level of vacuum at 50 mm Hg.

### **4.2 Colour and appearance**

The manufacturing process shall ensure that the product is attractive in appearance and uniform in colour. The colour shall be characteristic of good quality canned fish of the particular species.

**4.3 Uniformity of size** — The pieces of fish in any container shall be reasonably uniform in size.

### **4.4 Fill of container**

The drained liquid shall not contain more than 10 per cent by volume of water.

NOTE The drained liquid shall be collected in a measuring cylinder and kept for separation of oil from the water and the volume of oil and water shall be noted and percentage of water determined.

### **4.5 Freedom from Defects**

The product shall be free from residual clotted blood, scales, hard bones, dirt, grit, parasitic infestation and other extraneous contaminants. The can shall not show leaking, paneling or swelling.

**4.6 Oduor and flavor**

The odour and flavour of the product shall be fresh and characteristic of good quality canned fish of the particular species. The flavour shall be free from excessive saltiness. No off-odours or off-flavours of any kind shall be present.

**4.7 Texture** — The product shall be firm and tender, free from mushiness and grittiness.

**5 Food additives**

**5.1** No other additives shall be used except citric acid, acetic acid or tartaric acid may be added in accordance with EAS 103.

**5.2 Artificial colouring and firming agents**

The canned fish in oil shall be free from artificial colouring matter and firming agents.

**5.3 Spices**

Only permitted spices shall be used complying with EAS 103.

**6 Hygiene**

**6.1** The material shall be prepared, filled and processed under hygienic conditions and only in premises maintained in a thoroughly clean and hygienic manner complying with CAC/RCP 1, CAC/RCP 52 and duly approved or licensed by the authorities concerned for fish products. The water used for processing of fish shall conform to EAS 12.

**6.2** The details of the scheduled processes, the heat penetration data, bacteriological and chemical test shall be kept and be readily available for inspection for a minimum period of 3 years from the date of the last production to which they relate.

**6.3** When processed containers are cooled in water, the water used for cooling the cans shall be maintained in clean condition and chlorinated to maintain a minimum residual-free chlorine concentration of two parts per million. If cooling water is re-circulated, it shall be filtered and super chlorinated (5 ppm of residual chlorine) before use or each re-use.

**6.4** It is essential that water used for can cooling shall be free from harmful organisms. Even though the can seams are satisfactory, small quantities of water can enter the can during this cooling coliform organisms at monthly intervals and coliforms shall not be detected in any samples of 100 ml. A colony count of less than 100 organisms per millilitre after incubation for 5 days at 26 °C to 22 °C is satisfactory, but any significant variation from the established limits shall be investigated immediately.

**6.5** The water used for cooling shall not contain toxic chemical quantities likely to cause harm to health.

**6.6** After processing, the containers shall be handled in such a manner as to avoid contamination of the product.

**6.7** A damaged can shall not be offered for sale.

**6.8 Microbiological requirements**

The product shall be free from pathogenic micro-organisms and shall also satisfy the test in accordance with the methods of Annex J of CD/K/520-1:2010.

**6.9 Other requirements**

The canned fish shall also comply with the following requirements in Table 1.

**Table 1 — Microbiological and heavy metal limits for fish canned in oil**

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	2.0	EAS 41
(viii)	Copper, mg/kg, max	20	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 Marking

**7.1** Each container shall be legibly and indelibly marked with the following information in addition to information required by EAS 38:

- a) Name of the material along with brand name, if any;
- b) Name and address of the manufacturer;
- c) Grade;
- d) Net mass of the contents of the can;
- e) Proportion of oil in the cans, if required by the purchaser;
- f) Nature of the canning medium used and ingredients;
- g) Licence number, date and authority, if any, under which the manufacturer has been permitted to can the product (optional for export);
- h) Batch or lot number and the date of manufacture;
- i) The words 'Best before ..... (month and year to be indicated)'; and
- j) Any other requirement as given OIML R87, *Quantity of product in prepackages*.

**7.2** Each container 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 fish 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 the fill of the container**

#### **8.3.1 Apparatus**

##### **8.3.1.1 Top pan balance**

##### **8.3.1.2 Rotary can opener**

#### **8.3.2 Procedure**

**8.3.2.1** The container selected shall be undamaged in all respects. Carefully open the container and note the level of the contents by means of a pencil mark on the internal surface of the can. Wash, dry and weigh the container.

**8.3.2.2** Fill the container with distilled water at 20 °C to the height of the contents. Weigh the container plus the water. Subtract the weight of the container from this weight to give the weight of the equivalent to the volume of the contents.

**8.3.2.3** Fill the container with additional water at 20 °C a distance of 4.76 mm below the top level of the container if the container has a double seam. (For other container, fill up to the top of the container). Weigh the container plus the water. Subtract the weight of the container from this weight to give the weight of the equivalent to the full volume of the container.

#### **8.3.3 Calculation**

Fill of container, per cent mass of remaining water

$$= \frac{\text{mass of the equivalent full volume of the content}}{\text{mass of water equivalent to full volume of content}} \times 100$$

## **8.4 Physical examination**

**8.4.1** Complete external can examination. Open can and complete net weight determination, according to defined policies and procedures for these examinations.

**8.4.2** Examine appearance of product in can. Carefully remove fish from can to examination tray. Inspect can contents for presence of foreign material or other undesirable parts, carefully separating fish as necessary.

**8.4.3** Examine can interior for presence of foreign material, smut, struvite, and corrosion or other can interior defects.

- 8.4.4** Observe colour of flesh as an indicator of decomposition.
- 8.4.5** Assess odour, flavour and texture as required.
- 8.4.6** 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 referred to in Clause 4.

### 9.1 Taint

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

- a) **Rancid** — The contents in the container show the following defects:
- 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 and/or mixing of ingredients.

### 9.2 Decomposition

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

- a) **Odours and flavours** — Persistent, distinct and uncharacteristic odour or flavour including but not limited to the following: fruity, vegetable, stale, musty, yeasty, sour, faecal, ammonia, hydrogen sulphide, bilge-like and putrid.
- b) **Discolouration** — Discolouration associated with decomposition which is uncharacteristic of the species and type of pack, such as flushed pink, dark brown, green or yellowish to orange colours.
- c) **Texture** — Breakdown of muscle structure due to decomposition characterized by:
- muscle structure which is very tough, dry, mealy or chalky; or
  - muscle structure which is very soft, mushy, or pasty.

### 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 fish (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 fish (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 of any material which has not been derived from fish (and packing media) 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) **Struvite crystals** (magnesium ammonium phosphate crystals) — Any struvite crystal greater than 5 mm in length.
- 2) **Sulphide blackening** (smut) — Staining affecting greater than 5% of the drained contents.
- 3) **Undesirable parts** — Any combination of head parts, heads, tails, scales and viscera exceeding 2% of the drained weight.

## 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 Sections 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.



Mackerel fillets in oil



Tuna canned in oil



Example of canned fish in oil

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Fish canned in oil

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