EAST AFRICAN STANDARD

Frozen minced fish meat — 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

With the increased catch of inexpensive varieties of fish, their utilization deserves utmost attention. Possibilities exist of separating out meat from these fish and freezing it in consumer packs of various mass, so that it could form as a base material for various preparations. This standard is being formulated to provide guidelines for quality control to the trade and to meet the consumer demand for wholesome fish muscle.

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

IS 10763:1983(R2005), Specification for Frozen Minced Fish Meat
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

Assistance derived from these sources is hereby acknowledged.
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Frozen minced fish meat — Specification

1 Scope

This standard specifies the requirements and method of sampling and test for frozen minced fish meat.

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
3 Description

3.1 Product definition

Minced fish meat consists of minced flesh removed from the fish carcasses by cuts made parallel to the backbone.

3.2 Raw materials

3.2.1 Clean, wholesome and fresh fish which do not show any signs of degradation and spoilage shall be used.
3.2.2   The fish shall be gutted, the tail, entrails, bones, tips, skin, head and other non-edible portion shall be removed and eviscerated. Fish shall be washed thoroughly with clean potable water to remove the blood, etc. Variety of fish used shall be specified.

3.2.3   The fish shall be properly iced and maintained at a temperature not exceeding 5°C till transported to the freezing factory.

3.3   Processing requirements

3.3.1   Fresh fish, shall be washed free of any foreign matter preferably with chilled potable water (5°C) having 5 mg/kg (ppm) of available chlorine and meat separated from fish in wholesome condition.

3.3.2   The material shall be quick frozen at a temperature not exceeding -30°C in polyethylene wrappers containing 250 g, 500 g, 1 kg or 2 kg of material and packed in waxed cartons in the minimum possible time.

3.3.3   The quick frozen material shall be stored in the cold storage at a temperature not less than -23°C.

4   Essential composition and quality factors

4.1   The frozen minced fish meat, on thawing, be clean and shall be sound, undamaged and free from defects. Deterioration, such as dehydration, oxidative rancidity and adverse changes in the texture shall not be present. The product shall be free from foreign matter and finishing agents.

4.2   The product shall also conform to the requirements prescribed in Table 1.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Requirement</th>
<th>Method of test</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Colour of minced fish meat</td>
<td>Characteristic colour of the species</td>
<td>—</td>
</tr>
<tr>
<td>ii) Texture of the minced meat</td>
<td>Characteristic colour of the species</td>
<td>—</td>
</tr>
<tr>
<td>iii) Odour</td>
<td>Characteristic colour of the species, free from rancid, putrid or foreign odour</td>
<td>—</td>
</tr>
<tr>
<td>iv) Flavour</td>
<td>Characteristic colour of the species, sweetish and pleasant, free from spoilt or foreign flavour</td>
<td>—</td>
</tr>
<tr>
<td>v) Bone content, percent by mass, max</td>
<td>1.0</td>
<td>Annex A</td>
</tr>
</tbody>
</table>

5   Food additives

Type

Monophosphate, monosodium or
Monopotassium orthophosphate (Na or K)

Diphosphate, tetrasodium or
Tetrapotassium, pyrophosphate (Na or K)

Trisphosphate, pentasodium or
Pentapotassium or pentapotassium or
Calcium Na, K or Ca tripolyphosphates

Polyphosphate, sodium

Hexametaphosphate (Na)

Ascorbate, potassium or sodium

Max. level

0.5 % m/m of the final product expressed as $P_2O_5$
singly or in combination

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 Minced fish meat shall be free from micro-organisms which represent a health hazard to consumers, and shall not show signs of spoilage.

6.3 Processed minced fish meat 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 listed in Clause 2; and

6.5 The limits for pathogenic indicators for minced fish meat shall be as shown in Table 2.

Table 2 — Microbiological and heavy metal limits for frozen minced fish meat

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Requirement</th>
<th>Method of test</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Total bacterial count per g of fish meat, Max</td>
<td>100 000</td>
<td>ISO 4833</td>
</tr>
<tr>
<td>ii) Escherichia coli count/g, Max</td>
<td>20</td>
<td>ISO 7251</td>
</tr>
<tr>
<td>iii) Salmonella, per 25 g</td>
<td>Absent</td>
<td>ISO 6579</td>
</tr>
<tr>
<td>iv) Coagulase positive staphylococci, per g of fish meat, max</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>v) Heavy metals:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Mercury, mg/kg, Max</td>
<td>0.5</td>
<td>EAS 41</td>
</tr>
<tr>
<td>b) Copper, mg/kg, Max</td>
<td>20.0</td>
<td>EAS 41</td>
</tr>
<tr>
<td>c) Zinc, mg/kg, Max</td>
<td>50.0</td>
<td>EAS 41</td>
</tr>
<tr>
<td>d) Arsenic, mg/kg, Max</td>
<td>0.1</td>
<td>EAS 41</td>
</tr>
<tr>
<td>e) Lead, mg/kg, Max</td>
<td>0.3</td>
<td>EAS 41</td>
</tr>
</tbody>
</table>

6.6 Chemical analysis of fillets

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

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

7 Packing and marking

7.1 Packing

The frozen material packed in containers which may withstand the stress and strain of transportation and can prevent deterioration during storage. A layer of polyethylene shall be used between the material and individual packs.

7.2 Marking

7.2.1 Each frozen wrapper containing material shall be marked or labelled with the following particulars in such a way that printing ink does not come in direct contact with the material:

a) Name of the fish (variety of fish);

b) Name and address of the processor;

c) Lot number in code;
d) Gross mass and net mass;

e) Date of packing (in code); and

f) Any other requirement as given OIML R87, *Quantity of product in prepackages.*

7.2.2 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 container 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 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 **Examination of minced fish**

The following procedure should be used in the assessment of this product.

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 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:

<table>
<thead>
<tr>
<th>Pack size</th>
<th>Reject parasite level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kg</td>
<td>Use average as described above</td>
</tr>
<tr>
<td>2.27 kg</td>
<td>3</td>
</tr>
<tr>
<td>4.54 kg</td>
<td>5</td>
</tr>
<tr>
<td>6.81 kg</td>
<td>7</td>
</tr>
<tr>
<td>7.5 kg</td>
<td>8</td>
</tr>
<tr>
<td>8.4 kg</td>
<td>9</td>
</tr>
<tr>
<td>9.1 kg</td>
<td>10</td>
</tr>
<tr>
<td>22.7 kg</td>
<td>23</td>
</tr>
</tbody>
</table>

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, and 7 are met.
Annex A  
(normative)

Determination of bone content in minced frozen fish meat

A.1 Principle

Urea solubilizes protein. In addition, aqueous alkaline solution is used to dissolve flesh.

A.2 Procedure

Add 100 g minced fish meat to 2000 ml of 3 M urea containing 0.02 M sodium hydroxide, stir the suspension gently overnight (16 hours) at temperature 30-40°C by magnetic stirrer (use of infra-red lamps are indicated). Recover the bones by simple pouring-off the bone urea solution. Alternatively, test sieve of 420 micron can also be used. Wash these bones twice or thrice with distilled water. Dry at 105 °C – 110 °C till the mass is constant. Calculate the percentage of the bones in the sample.
Annex B
(normative)

Sampling of frozen minced fish meat

B.1 General requirements

B.1.1 The sampling instrument shall be clean, dry and sterile.

B.1.2 The samples shall be protected against adventitious contamination.

B.1.3 Samples shall be stored in such a manner that there is no deterioration of the frozen material.

B.2 Scale of sampling

B.2.1 Lot — All the containers in a single consignment of the material packed on the same day shall constitute a lot. If the consignment is declared to consist of material packed on different dates, the material shall be separated date-wise and the containers of the same grade shall be grouped to constitute separate lots.

Samples shall be tested from each lot for ascertaining conformity of the material to the requirements of this specification.

B.2.2 The number of containers to be selected from a lot shall depend on the size of the lot and shall be in accordance with col1 and col2 of Table B.1.

Table B.1 — Selection of containers

<table>
<thead>
<tr>
<th>No. of containers in the lot</th>
<th>No. of containers to be selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>2 to 15</td>
<td>2</td>
</tr>
<tr>
<td>16 to 40*</td>
<td>3</td>
</tr>
<tr>
<td>41 to 65</td>
<td>5</td>
</tr>
<tr>
<td>66 to 110</td>
<td>7</td>
</tr>
<tr>
<td>111 to 180</td>
<td>8</td>
</tr>
<tr>
<td>181 to 300</td>
<td>9</td>
</tr>
<tr>
<td>301 and above</td>
<td>10</td>
</tr>
</tbody>
</table>

B.2.3 The containers shall be selected at random from the different portions of the lot so as to get a representative sample.

B.1.4 From each of the selected containers, in order to select at random the required number of packs, Table B.1 may be applied here. Column 1 may be taken to represent the number of packs in a container and col2 may be taken to represent the number of packs to be selected.

B.1.5 In addition to the packs selected from each selected container (see B.1.4), one pack shall be selected at random from the container for microbiological requirements.

B.3 Number of tests

B.3.1 Each of the packs selected in B.1.4 shall be tested for all the requirements of this specification except the microbiological requirements.

B.3.1 Each of the pack selected in B.1.5 shall be tested for microbiological requirements.
B.4 Criteria for conformity

B.4.1 The lot shall be declared to be in conformity if all the requirements of this specification when B.4.2 and B.4.3 are satisfied.

B.4.2 The lot shall be considered to be in conformity if all the requirements of this specification except the microbiological requirements of all the pack selected in B.2.4 satisfy the corresponding requirements.

B.4.3 The lot shall be considered to be in conformity with respect to microbiological requirements when all the pack selected in B.3.2 satisfy the relevant requirement specified.