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EAST AFRICAN STANDARD

Accelerated freeze dried prawns (shrimps) — 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

Accelerated freeze dried prawns (shrimps) are being exported from the country. A need was felt to prepare this standard to provide quality parameters for guidance of the processors and purchasers.

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

IS 14949:2001, *Accelerated Freeze Dried Prawns (Shrimps) — Specification*

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.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

Assistance derived from these sources is hereby acknowledged.

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EAST AFRICAN STANDARD

Accelerated freeze dried prawns (shrimps) — Specification

1 Scope

This standard prescribes the requirements and the methods of sampling and test for accelerated freeze dried prawns.

The accelerated freeze dried prawns shall be of any edible species including the following:

- (a) *Penaeidae*
- (b) *Pandalidae*
- (c) *Crangonidae*
- (d) *Palaemonidae*

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*

DKS AS 4044: 2004

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 16050, *Foodstuffs — Determination of aflatoxin B₁, and the total content of aflatoxin B₁, B₂, G₁ and G₂ 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*

Specification



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Introduction

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

KS05-424:1986, *Specification for dried salted fish*

IS 14950:2001, *Fish — Dried and dry-salted — Specification*

Codex Alimentarius website: 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

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Dried and dry-salted fish — Specification

1 Scope

This standard specifies the requirements and the methods of sampling and test for various types of dried and dry-salted fish.

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.*

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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*

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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*

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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 and definitions

3.1 Presentation

Accelerated freeze dried prawns shall be of the following types.

3.1.1 Peeled, undeveined and cooked — Head and shell removed completely and cooked.

3.1.2 Peeled, deveined and cooked — Head, shell and dorsal tract removed and cooked.

3.1.3 Cooked and peeled — Peeled after cooking.

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

(i) meets all other requirements of this standard, and

(ii) is adequately described on the label to avoid confusing or misleading the consumer.

3.2 Raw materials

3.2.1 The raw material shall be prepared from clean, wholesome and fresh prawns, and shall not show any visible sign of spoilage.

3.2.2 The colour of the raw material shall typically be of freshly caught prawns. The meat shall be firm and shall have the typical odour of freshly caught prawns. The material shall be free from any discoloration and off odours.

3.2.3 Size groups of the raw materials

The raw material may be grouped to sizes which are expressed in terms of the number of prawns per kg or count per kg according to the requirements of purchaser.

3.2.4 The material used for a particular size of pack shall be of reasonably uniform size, appearance, colour and species.

4 Essential composition and quality factors

4.1 Visual examination

When observed visually, physical defects for various characteristics shall not exceed the values given in Table 1.

Table 1 — Physical defects for various characteristics

Characteristic	Requirement, percent by count
i) Deterioration with spoiled pieces	Nil
ii) Discolouration	3
iii) Black spots	Nil
iv) Broken and damaged pieces	2
v) Legs, bits of veins etc.	Nil
vi) Foreign matter or filth	Nil

4.2 Rehydration

When tested in accordance with method given in Annex B, the extent of rehydration shall be minimum 300 percent.

5 Food additives

Only the use of the following additives is permitted.

Additives

Preservatives

200 Sorbic acid

201 Sodium sorbate

202 Potassium sorbate

Maximum level in the final product

200 mg/kg, singly or in combination expressed as sorbic acid

6 Hygiene and handling

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 in the standards listed in Clause 2, the product:

- (i) shall be free from micro-organisms capable of development under normal conditions of storage;
- (ii) shall not contain any other substance including substances derived from microorganisms in amounts which may represent a hazard to health; and
- (iii) shall not contain histamine that exceeds 20 mg/100 g in any sample unit.

6.3 It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of CAC/RCP 1 and CAC/RCP 52.

6.4 The water used in the processing of prawns shall be of potable quality complying with EAS 12 and shall contain 5 mg/kg available chlorine.

6.5 The material shall also satisfy the limits for heavy metals and microbiological activity prescribed in Table 2.

Table 1 — Microbiological and heavy metal limits for accelerated freeze dried prawns/shrimps

Characteristic	Requirement	Method of test
(1)	(2)	(3)
i) Total bacterial count/g, in the finished product, Max	10 000	ISO 4833
ii) <i>Escherichia coli</i> count/g, Max	Absent	ISO 7251
iii) Faecal <i>Streptococci</i> count/g, Max	Absent	Annex H
iv) Coagulase positive <i>Staphylococci</i> /g, Max	Absent	ISO 6888
v) <i>Salmonella</i> , per 25 g	Absent	ISO 6579
vi) <i>Shigella</i> , per 25 g	Absent	ISO 21567
vii) <i>Vibrio cholerae</i> , per 25 g	Absent	ISO/TS 21872
viii) <i>Listeria monocytogenes</i> , per 25 g	Absent	ISO 11290
ix) Histamine content, mg/100 g, max	10.0	Annex ___
ix) Formaldehyde mg/kg, Max	10.0	Annex F
x) Indole, mg/kg, Max	2.5	Annex G
xi) Moisture, percent, max	2.0	---
xi) Heavy metals¹⁾:		
a) Mercury, mg/kg, Max	0.5	EAS 41
b) Copper, mg/kg, Max	20.0	EAS 41
c) Zinc, mg/kg, Max	50.0	EAS 41
f) Arsenic, mg/kg, Max	1.0	EAS 41
e) Lead, mg/kg, Max	0.3	EAS 41
f) Tin, mg/kg, Max		
(i) For product packed in tin plate containers	250.0	EAS 41
(ii) For product packed in other packing containers	50.0	EAS 41
g) Cadmium	0.3	EAS 41
h) Methylmercury	0.5	EAS 41

¹⁾ These requirements are in reconstituted product (based on moisture content of 70 percent in fresh shrimps). For analysis, reconstitute the product by immersing in cold, reagent grade water for 5 minutes. The reconstituted prawns are drained for 2 minutes.

7 Packing and marking

7.1 Packing

The material shall be packed in suitable container as agreed between the purchaser and the processor. In the absence of any such agreement the material shall be packed in containers which may withstand the stress and strain of transportation and prevent deterioration during transportation and frozen storage. A layer of food grade polyethylene shall be used between the material and the container when individually freeze dried prawns are packed.

7.2 Marking

7.2.1 In addition to the provisions of EAS 38, each container shall be marked legibly and indelibly with the following particulars:

- a) Name and type of the material with brand name, if any;
- b) Name and address of the processor;
- c) Batch number or code number;
- d) Count per kg (if required by the purchaser);
- e) Minimum net mass of the contents;
- f) Date of packing;
- g) The words 'Best before (month and year)' to be indicated; and
- h) Any other requirement as given OIML R87, *Quantity of product in prepackages*.

7.2.2 The product may also be marked with a Standard 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 single 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.

9 Definition of defects

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

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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.).

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)**Processing**

A.1 The material to be dried is prepared, frozen (see CD-K-511-2010) and loaded into the chamber of the drier. The drier is maintained during the process. Heat is applied to the material, when the water in the frozen material sublimates. Input of heat is so adjusted that at no time energy in excess of what is utilized for the sublimation process is made available and at no point during the process, the material gets a chance to thaw to the least extent. When almost 90 percent of the water is removed, the temperature of the material is allowed to rise slowly to reduce the moisture content to less than 2 percent. The drying is completed at 30 to 50 °C. After drying is over, the vacuum in the chamber is broken by sending in some dry inert gas like nitrogen or carbon dioxide. Then the material shall be packed in suitable containers in order to protect it from mechanical damage, oxygen and moisture pick up. Suitable moisture-proof and air-tight packing materials such as foil laminates shall be used. The material may preferably be packed under an inert atmosphere.

A.2 The net mass of the contents shall be the same as declared and the count per kg of the material shall be the same as declared.

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Annex B
(normative)

Determination of the extent of rehydration

B.1 Weigh 20 g of the sample and cover with cold water in a flat dish. It is necessary to hold the fish under water as the displacement of gas from the tissues is slow if it is allowed to float on the surface. At 5 min intervals the material is taken out and surplus water removed by blotting carefully with coarse filter paper. Weigh it quickly and return to the water. The procedure is repeated at intervals until constant weight is reached.

B.2 Calculation

Extent of rehydration, percentage = $\frac{\text{Mass of rehydrated product}}{\text{Mass of the product}} \times 100$

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Annex C
(normative)**Determination of moisture****C.1 Procedure**

Weigh about 5 g of the sample into a tared silica crucible or dish. Dry the dish in an air oven at 100 ± 1 °C for 6 h. Cool in a desiccator and weigh.

C.2 Calculation

$$\text{Moisture per cent by mass} = \frac{M_1 \times 100}{M_2}$$

M_1 = loss in mass, in g, of the sample; and

M_2 = mass, in g, of the sample taken for test.

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