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EAST AFRICAN STANDARD

Beche-de-mer — 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

Processed sea cucumber or Beche-de-mer accounts for a quite sizable quantity of dried fish products exports. In preparation of Beche-de-mer, size is the most important criteria as sea cucumbers shrink to one-third of their original size during processing.

This standard has been formulated to standardize the sizes of Beche-de-mer and the method of preparation besides prescribing chemical and microbiological requirements to ensure quality of the product.

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

IS 14513:1998(R2003), *Beche-de-mer — 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.mrldatabase.com>

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

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

Assistance derived from these sources is hereby acknowledged.

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Beche-de-mer — Specification

1 Scope

1.1 This standard prescribes requirements and method of sampling and test for processed and dried Beche-de-mer (sea cucumber).

1.2 Following species have been covered in this standard:

- a) *Holothuria scabra*
- b) *H. spinifera*
- c) *H. atra*
- d) *Bohadschia marmorata*
- e) *B. argus*
- f) *Actinopyga mauritiana*
- g) *A. lacanora*
- h) *A. miliaris*
- i) *A. echinites*
- j) *Thelenota ananas*
- k) *Microthele*

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 52:2003(Rev. 4:2008), *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 38, *Labelling of prepackaged foods — Specification*

3 Grades

Based on the size of finished product, processed and dried Beche-de-mer (sea cucumber) shall be of the following grades

Grade	Size in cm
Small	7.5 to below 10
Medium	10 to 15
Large	Above 15

4 Description

The product shall be neat, dark coloured and free from dirt, sand, white chalky deposits or any other foreign matter.

5 Requirements

5.1 Hygiene requirements

The material shall be prepared and processed under hygienic conditions, 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.

5.2 The material shall conform to the requirements given in Table 1.

5.3 The microbiological counts for beche-de-mer shall not exceed the limits given in Table 2.

Table 1 — Requirements for beche-de-mer

Characteristic (1)	Requirement (3)	Method of test (4)
i) Moisture, % by mass, max	15.0	B
ii) Sodium chloride (on moisture free basis), % by mass, max	2.5	C
iii) Acid insoluble ash (on moisture free basis), % by mass, max	2.5	D

Table 2 — Microbiological and heavy metal limits for beche-de-mer

Characteristic (1)	Requirement (2)	Method of test (4)
i) Total bacterial count per g of fish meat, Max	100 000	ISO 4833
ii) <i>Escherichia coli</i> count/g, Max	20	ISO 7251
iii) <i>Salmonella</i> , per 25 g	Absent	ISO 6579
iv) Coagulase positive <i>staphylococci</i> , per g of fish meat, max	100	
v) Heavy metals:		
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
d) Arsenic, mg/kg, Max	0.1	EAS 41
e) Lead, mg/kg, Max	0.3	EAS 41
f) Cadmium, mg/kg, Max	0.3	EAS 41

6 Packing and marking

6.1 Packing

The material shall be packed in suitable containers as agreed to between the purchaser and the supplier, so as to protect it from deterioration. The containers shall be of such a quality that will withstand handling during transport.

6.2 Marking

6.2.1 Each container shall be legibly and indelibly marked with the following information:

- Name and grade of the material;
- Name and address of the-processor;
- Batch or code number;
- Gross mass and net mass;
- Date of packing (in code);

- f) Date before which the contents should be consumed, be indicated by marking the words 'Use before (month and year); and
- g) Any other requirement as given OIML R87, *Quantity of product in prepackages*.

6.2.2 Each container may also be marked with a Certification Mark.

7 Sampling

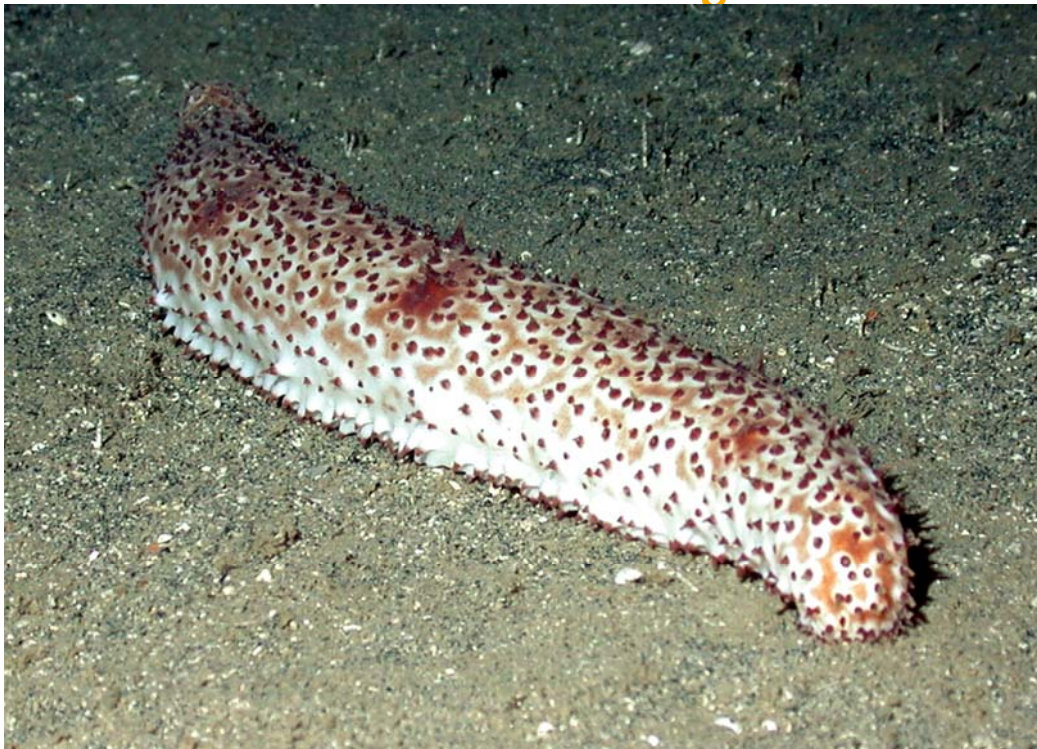
The method of drawing representative samples of the material for carrying out tests and the criteria for conformity shall be according to the method prescribed in Annex B.

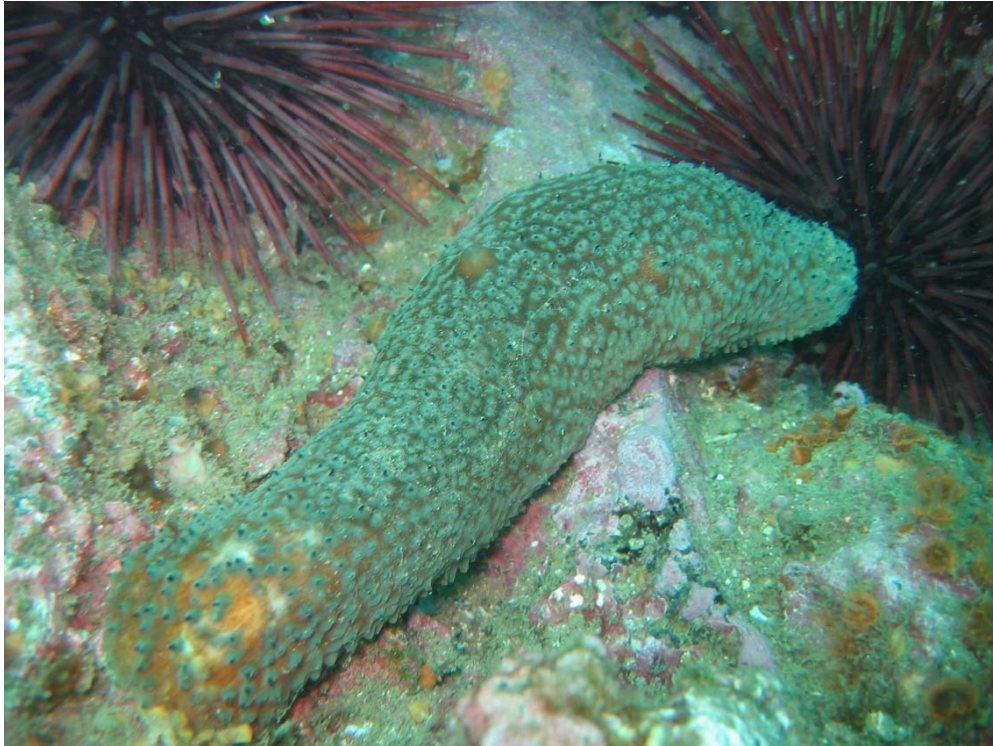
8 Tests

8.1 Test shall be carried out by appropriate method as referred to in Tables 1 and 2.

8.2 **Quality of Reagents** — Unless specified otherwise, pure chemicals and distilled water (see EAS 123) shall be employed in test.

NOTE 'Pure chemicals' shall mean chemicals that do not contain impurities which effect the result of analysis.





Individually packed sea cucumbers

Draft for com

Draft for
Standard



Cleaned sea cucumbers



Prepared sea cucumbers

Draft for



Frozen sea cucumbers



Dried sea cucumbers

Standard

Draft for



Draft for com

Annex A
(normative)

Preparation and processing

A.1 The material shall be prepared from live sea cucumber. The sea cucumber shall be eviscerated properly and then introduced into boiling water so that it is quickly killed in seconds. This facilitates formation of cylindrical shape.

A.2 The material shall then be buried in sand pit in a moistened jute covered bag for about 18 h, following which the buried material shall be taken out and chalky external deposits removed. After removal of the chalky deposits, the material shall be put into potable water for second boiling for 20 min to ensure complete removal of chalky material.

A.3 The product shall be finally dried over wire net on raised platform in order to prevent admixture with sand.

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Annex B
(normative)**Determination of moisture****B.1 Preparation of the sample**

Cut the large sized samples into smaller ones and mix. Keep the material in an air-tight container in order to prevent loss of moisture during subsequent handling and use this material for testing.

B.2 Procedure

Weigh accurately 10 g of the prepared sample (see B.1) into a well cleaned dry tared silica crucible or dish. Heat the dish in an air oven at $100 \pm 1^\circ\text{C}$ for 6 h. Cool in a desiccator and weigh. Retain the dried material for the determination of sodium chloride and acid insoluble ash.

B.3 Calculation

Moisture, percent by mass = $\frac{\text{Loss of mass, in g, of the sample} \times 100}{\text{Mass, in g, of the sample taken for test}}$

Annex C
(normative)

Determination of sodium chloride

C.1 Reagents

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

C.1.2 Dilute Nitric Acid — 1:4.

C.1.3 Ferric Ammonium Indicator Solution — A saturated solution of ferric alum $\text{Fe}(\text{NH}_4)(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$.

C.1.4 Standard potassium thiocyanate solution — 0.1N

C.2 Procedure

C.2.1 Take 0.3 g to 0.5 g of the dried products in a 250-ml Erlenmeyer flask. Add a known volume of the standard silver nitrate solution in quantity more than sufficient to precipitate all the chloride as silver chloride and then add 20 ml of dilute nitric acid. Boil on a hot plate or sand bath until the solids, except silver chloride, dissolve. Cool and add 50 ml of water and 5 ml of the ferric ammonium indicator solution and titrate against the standard potassium thiocyanate solution until a permanent light brown colour appears.

C.3 Calculation

C.3.1 Sodium chloride, per cent by weight

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

where,

- V_1 = volume of the standard silver nitrate solution;
 V_2 = volume of the standard potassium thiocyanate;
 N_1 = normality of the standard silver nitrate solution;
 N_2 = normality of the standard potassium thiocyanate; and
 W = weight, in g, of the dried product taken for the test.

Annex D
(normative)**Determination of acid insoluble ash****D.1 Reagents****D.1.1 Dilute Hydrochloric Acid****D-2 Procedure**

D.2.1 Weigh accurately 5 g of dried material (see B.2) in a tared porcelain silica or platinum dish. Ignite with a burner for about one hour. Complete the ignition by keeping in a muffle furnace at 600 ± 20 °C until grey ash results. Cool and add 35 ml hydrochloric acid, cover with a watch glass and heat on a water bath for 10 min. Cool and filter through Whatman filter paper No. 42 or its equivalent. Wash the residue with hot water and test the filtrate with silver nitrate solution to ensure complete removal of chlorides. Return the filter paper with the residues to the dish. Keep it in an electric air oven maintained at 135 ± 2 °C for about 3 h. Cool it in a desiccator and weigh. Ignite the dish again for 30 min, cool and weigh. Repeat the process till the difference between two successive weighings is less than one milligram.

Note the lowest mass.

D.3 Calculation

Acid insoluble ash, on moisture free basis, percent by mass =
$$\frac{100 \times (M_1 - M)}{M_1 - M}$$

where

M_2 = lowest mass, in g, of the dish with the acid insoluble ash;

M = mass, in g, of the empty dish; and

M_1 = mass, in g, of the dish with the dried material taken for the test.

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