TBS/AFDC 23 (1517) DTZS

ICS 67.120.30

DRAFT TANZANIA STANDARD

Dried sea cucumber — Specification

TANZANIA BUREAU OF STANDARDS

ICS 67.120.30

0 Foreword

Sea cucumbers are echinoderms from the class Holothuroidea. They are marine animals with a leathery skin, an elongated body and buccal tentacles.

This Tanzania Standard was prepared in order to ensure safety and quality of dried sea cucumber produced and/ or traded in Tanzania.

In the preparation of this Tanzania Standard, considerable assistance was derived from PNS/BAFPS 128:2013 Dried sea cucumber and stakeholders producing the product.

In reporting the results of a test or analysis made in accordance with this Tanzania Standard, if the final value, observed or calculated is to be rounded off, it shall be done in accordance with TZS 4 (see clause 2).

1 Scope

This Tanzania Standard specifies requirements and methods of sampling and test for dried sea cucumber intended for human consumption.

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.

TZS 4: 2009, Rounding off numerical values

TZS 109, Code of hygiene for food processing units – General

CXG 50- *General guideline on sampling*

Codex Stan 193, Contaminants in foods

TZS 118/ISO 4833-1*, Microbiology of food chain — Horizontal method for the enumeration of microorganisms — Part 1: Colony-count at 30 degrees C by the pour plate technique*

TZS 122/ISO 6579*, Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Salmonella spp.*

TZS 125/ISO 6888 (all parts)*, Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species)*

TZS 731/ISO 7251*, Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of presumptive Escherichia coli — Most probable number technique* TZS 538 – Packaging and labelling in food

TZS 127-1/ ISO 21872-1, Microbiology of the food chain- Horizontal method for the determination of Vibrio spp.- Part 1: Detection of potentially enteropathogenic Vibrio parahaemolyticus, Vibrio cholerae and Vibrio vulnificus

TZS 2426-1/ ISO 21527-1 Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of yeasts and moulds - Part 1: Colony count technique in products with water activity greater than 0.95

TZS 2044 /ISO 5985: Animal feeding stuffs – Determination of ash insoluble in hydrochloric acid

ISO 2479 - Sodium chloride for industrial use

3 Terms and definitions

For the purposes of this standard, the following terms and definitions shall apply:-

3.1
sea cucumber
any echinoderm of the Class Holothuroidea, generally having elongated body and bearing tentacles at the oral end

3.2
cleaning
removal of gut contents, dirt (and other extraneous matter adhering to the raw material through washing with clean water

3.3
foreign matter
matter/object present in the sample unit which is not derived from dried sea cucumber product (excluding packing material), which is readily recognized even without magnification

3.4
food grade container
container that safeguards the hygienic, nutritional, technological and organoleptic qualities of the products

3.5 dried sea cucumber
Sea cucumber obtained by removal of water through sun/solar dried or artificial

4 Requirements

4.1 General requirements

4.1.1 Raw materials

4.1.1.1 Sea cucumber
live, fresh, chilled or frozen sea cucumber shall be used for processing dried sea cucumber.

4.1.1.2 Water
Water for washing, cleaning, cooking or soaking shall be clean potable water.

4.1.2 Optional ingredients
All other ingredients used shall be of food grade quality and conform to applicable standards.

4.1.3 Finished product

The final product shall:-

i. have color characteristic of the species used and processing technique;
ii. have shape characteristic of the species used;
iii. be clean and free from visible dirt and other foreign matter; and
iv. be stone hard if dried (i.e. cannot be bent or broken by hand).

4.2 Specific requirement

Dried sea cucumber shall conform to the requirements shown in Table 1.

Table 1 — Specific requirements for dried sea cucumber

S/No	Parameter	Requirement	Test method
i.	Moisture content, % by weight, max	15	Annex A
ii.	Sodium chloride, % by weight, max	40	Annex B
iii.	Acid insoluble ash, % by weight, max	2.5	TZS 2044

5 Hygiene

Dried sea cucumber shall be produced and handled in a hygienic manner in accordance with TZS 109 and CXC 52 and shall comply with the microbiological limits given in Table 2.

Table 2— Microbiological limits for dried sea cucumber

S/No.	Type of microorganism	Maximum limit	Test method
i.	*Salmonella* in 25 g	Absent	TZS 122
ii.	*Escherichia coli,* MPN/g	Absent	TZS 731
iii.	*Staphylococcus aureus,CFU/g*	Absent	TZS 125-1
iv.	Total viable count, CFU/g	10^5	TZS 118
v.	*Vibrio* spp.	Absent	TZS 127-1
vi.	*Yeast and moulds,CFU/g*	10^3	TZS 2426

6 Contaminants

6.1 Heavy metals

Sea cucumber shall comply with those maximum limits for heavy metals and other contaminants specified in Codex Stan 193.

6.2 Pesticide and veterinary drugs residues

Sea cucumber shall comply with those maximum pesticide and veterinary drug residue limits established by the Codex Alimentarius Commission for similar commodity.

7. Sampling and Tests

7.1 Sampling

Sampling shall be done in accordance with CXG 50.

7.2 Testing

Tests shall be done in accordance with methods prescribed in Tables 1 and 2.

8 Packaging, Labelling and Marking

8.1 Packaging

Sea cucumber shall be well packaged in a food grade container.

8.2 Marking or labelling

8.2.1 In addition to the requirements of TZS 538 the following specific labelling requirements shall apply and shall be legibly and indelibly marked;

a) name of the product shall be “sea cucumber”;

b) form of presentation “either dried or semi dried”

c) source of production "wild or farmed"

d) name and physical address of processor;

e) net weight ;

f) production date;

g) batch number;

h) expiry date;

i) storage conditions;

j) instruction for use; and

k) country of origin.

8.2.2 Certification mark

Each container may also be marked with TBS certification mark.

NOTE: The use of TBS certification mark is governed by provisions of the standards Act 2009. Details of the conditions under which a license for the use of TBS certification mark may be granted to manufacturers or producers, may be obtained from TBS.

Annex A
(normative):
Determination of moisture content

A.1 Principle
The sample is dried to constant weight in an oven.

A.2 Apparatus
A.2.1 Moisture dishes, made of nickel, stainless steel, aluminium or porcelain, with well-fitting lids
A.2.2 Oven
A.2.3 Desiccator

A.3 Procedure
Weigh accurately about 10 g of the sample in a suitable moisture dish, previously dried in an oven and weighed. Place the dish in an oven maintained at 105 °C ± 2 °C for five hours. Cool the dish in a desiccator and weigh with the lid on. Repeat the process of heating, cooling and weighing at half-hour intervals until the loss in mass between two successive weightings is less than 1 mL. Record the lowest mass obtained. Preserve the dish containing this dried material in a desiccator for the determination of total ash (see B.2.3).

A.4 Calculation
The moisture content shall be expressed as follows:

$$\text{Moisture, \% by mass} = \frac{m_1 - m_2}{M_1 - m} \times 100$$

Where;
m_1 is the mass, in grams, of the moisture dish with material before drying;
m_2 is the mass, in grams, of the moisture dish with the material after drying; and
m is the mass, in grams, of the empty moisture dish

Annex B
(normative)

Determination of the chloride content, calculated as sodium chloride

B.1 Apparatus

Normally available laboratory glassware.

B.2 Reagents

B.2.1 Potassium chromate solution.

Dissolve 5 g of potassium chromate (K_2CrO_4) in 100 ml of water.

B.2.2 Standard 0.1 N silver nitrate solution

B.2.2.1 Preparation

Dissolve 17.0 g of silver nitrate ($AgNO_3$) in 1 000 ml of water. Store the solution in the dark.

B.2.2.2 Standardization

Carry out the standardization in triplicate.

Weigh out accurately 5.8 g of analytical reagent grade sodium chloride (NaCl) (previously dried at 200 °C ± 50 °C for 2 h and cooled to room temperature in a desiccator) into a 1 L volumetric flask and dissolve it in approximately 200 ml of water. Adjust the temperature of this solution to 20 °C and dilute it to 1 000 ml with water at the same temperature. Pipette 25 ml of the sodium chloride solution at 20 °C into a 250 ml conical flask, add 1 ml of potassium chromate solution, and titrate with the 0.1 N silver nitrate solution until a faint reddish-brown colour persists after brisk shaking. Carry out a blank titration using the same procedure but replacing the 25 ml sodium chloride solution with 25 ml water.

Calculate the mean normality of the silver nitrate solution from the triplicate determinations.

$$N = \frac{A \times 0.4277}{b - c}$$

where

N is the normality of silver nitrate solution;

A is the mass of sodium chloride, in grams, in 1 000 ml solution;

b is the volume of silver nitrate solution, in millilitres, required to titrate 25 ml of sodium chloride solution;

c is the volume of silver nitrate solution, in millilitres, required to titrate the blank.

NOTE A commercially prepared volumetric solution may be used instead.

B.3 Procedure

Carry out the determination in triplicate on each of the test samples.
Pipette 50 ml of the principal solution prepared in accordance with ISO 2479 at 20 °C, into a 250 ml volumetric flask and dilute to 250 ml with water at the same temperature. Mix well and pipette 25 ml of this solution at 20 °C into a 250 ml conical flask. If the solution is acid to litmus, neutralize with sodium bicarbonate solution; if the solution is alkaline, add dilute nitric acid (1:10) drop by drop until the solution is acid to litmus and then neutralize with sodium bicarbonate solution. Add 1 ml of potassium chromate solution and titrate with the standard 0.1 N silver nitrate solution until a faint reddish-brown colour persists after brisk shaking.

B.4 Calculation

Calculate the chloride content as NaCl, on a moisture-free basis (and free-flowing agent-free basis, where relevant), as a percentage, as follows:

$$C = \frac{a \times N \times 1169}{B}$$

where

C is the chloride content, as NaCl, expressed as a percentage (by mass);

a is the volume of silver nitrate solution, in millilitres, used in the titration;

N is the normality of the silver nitrate solution;

B is the mass of sample, in grams, in 1 000 ml principal solution, corrected for moisture content and, where relevant, the drier content.

B.5 Report

Report the chloride content of each test sample as the mean of its triplicate determinations.