

DRAFT ZANZIBAR STANDARD

Dried raw seaweed -Specification

DRAFT FOR STAKEHOLDERS COMMENT

ZANZIBAR BUREAU OF STANDARDS

Foreword

This draft Zanzibar National Standard has been developed Fish and fisheries, meat, poultry and their products Standard Technical committee (TCFA6). In accordance with ZBS general procedures, this draft standard is presented to the public in order to receive any technical and editorial comment concerns.

The Zanzibar Bureau of Standard (ZBS) was established under Standard Act No. 1 of 2011.

In the preparation of this Standard, the reference was derived from: PNS/BAFPS 85:2012 Dried Raw Seaweed – Specification

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Dried raw seaweed - Specification

1 Scope

This draft standard specifies requirements, method of sampling and test of dried raw seaweeds of the class Rhodophyceae (red seaweed) such as, but not limited to Cottonii (*Kappaphycus* spp.) and Spinosum (*Euचेuma* spp) intended for human consumption or for industrial use.

2 Normative references

The following referenced documents are indispensable for the application of this draft Zanzibar National Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

AOAC 952.13, Arsenic in food — Silver diethylidibocarbamate method

AOAC 972.23, Lead in fish — Atomic absorption spectrophotometric method

AOAC 973.34, Cadmium in food — Atomic absorption spectrophotometric method

AOAC 983.20, Mercury (methyl) in fish and shellfish — Gas chromatographic method

CODEX STAN 193, *Codex general standard for contaminants and toxins in food and feed*

ZNS 61, *Packaging and labeling of food*

ZNS 94, *Rounding off numerical values*

TCD 437 *Code of aquaculture practices for seaweed*

CXC 52, *Code of practice for fish and fishery products*

3 Terms and definitions

For the purposes of this Standard, the following (terms and) definitions shall apply.

3.1

seaweed

cluster of macroscopic, multicellular, benthic marine algae; includes some members of the red, brown and green algae

3.2

dried raw seaweed

seaweed obtained by the removal of water through sun/solar dried or artificial means

3.3

rhodophyceae

class of red seaweed such as but not limited to Cottonii (*Kappaphycus* spp.) and Spinosum (*Euचेuma* spp)

3.4

cottonii

seaweed of the *Kappaphycus* spp. of class Rhodophyceae

3.5

spinosum

seaweed of the *Euचेuma* spp. of class Rhodophyceae

3.6

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clean anhydrous seaweed (CAS)

seaweed removed of moisture, salt, sand and impurities.

3.7

contaminants

any biological or chemical agent, foreign matter, or other substances not intentionally added to dried raw seaweed which may compromise food safety and suitability

3.8

impurities/debris

other type of seaweed, plastic, wood, shells, dirt and other foreign matters other than sand and salt.

3.9

adulteration

addition of any other substances to dried raw seaweed in order to increase the quantity, in raw form or prepared form, which results in the loss of actual quality of dried raw seaweed

3.10

food grade material

material which shall safeguard the hygienic, safety, nutritional, technological, and organoleptic qualities of the product

4 Requirements

4.1 General requirements

Dried raw seaweed shall

- a) be of one species only;
- b) be mature, having a culture period of at least forty-five (45) days;
- c) be visibly free from diseases such as epiphytism and 'ice ice'; and
- d) having variation in colour; of either red, purple, green, and brown

4.2 Specific requirements

Dried raw seaweed shall be classified into three grades on the basis of the specific requirements given in Table 1 when tested in accordance with test methods specified therein.

Table 1: Specific requirements for *dried raw seaweed*

| S/No | Characteristics | Requirement | | | Test methods | | | |
|------|--|-------------|---------|---------|--------------|----|--|--|
| | | Grade A | Grade B | Grade C | | | | |
| i. | Clean anhydrous seaweed (CAS), (%) min | 90 | 80 | 70 | Annex A | | | |
| ii. | Sand, (%) max | 1 | | | Annex B | | | |
| iii. | Impurities, (%) max | 3 | | | Annex C | | | |
| iv. | Moisture content (MC), (%) max | | | | Annex D | | | |
| | Cottonii | | | | | 35 | | |
| | Spinosum | | | | | 30 | | |
| v. | Salt as KCl, (%) max | | | | Annex B | | | |
| | Cottonii | | | | | 25 | | |
| | Spinosum | | | | | 20 | | |

5 Additives

Dried raw seaweed shall be free from any additives.

6 Adulteration

Dried raw seaweed shall be free from any adulterants such as sand, water and chemicals.

7 Contaminants

7.1 Heavy Metal contamination

Dried raw seaweed shall comply with those maximum heavy metal limits given in Table 2 when tested in accordance with test methods specified therein.

Table 2: Maximum limits for heavy metal contaminants in dry raw seaweed

| S/N | Parameter | Maximum limit | Test method |
|------|--------------|---------------|-------------|
| | | mg/kg | |
| i. | Arsenic (As) | 3 | AOAC 952.13 |
| ii. | Lead (Pb) | 5 | AOAC 972.23 |
| iii. | Mercury | 1 | AOAC 983.20 |
| iv. | Cadmium (Cd) | 1 | AOAC 973.34 |

7.2 Pesticide residues

Dried raw seaweed shall comply with those pesticide maximum residues limits established in the Codex pesticide residues in food online data base and/or competent authority for this commodity.

8 Hygiene

Dried raw seaweed shall be produced, transported and /or distributed in accordance with requirements set according to TCD 437 and CXC 52

9 Weights and measures

Dried raw seaweed shall be packed in accordance with the weights and measures regulations of Zanzibar.

10 Packaging and Labelling

10.1 Packaging

Dried raw seaweed shall be packaged in food grade material that secures the integrity and the safety of the product.

10.2 Labelling

10.2.1 In addition to the labelling requirements specified in ZNS 61, the containers shall be also legibly and indelibly labelled with the following: -

- a) name of the product as 'Dried raw seaweed';
- b) species name;
- c) brand name/trade name if any;
- d) name and address of producer/packer/distributor;

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- e) storage condition and transportation;
- f) date of packing;
- g) best before date;
- h) lot identification or batch or code number;
- i) country of origin;
- j) net weight in metric unit; and
- k) instruction for disposal of used packaged material.

10.2.2 The language on the label shall be 'Kiswahili' and/or English. Additional language may be used depending on the designated market.

11 Sampling

Sampling of dried raw seaweed shall be done according Annex E.

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Annex A
(Normative)

Determination of clean anhydrous seaweed (CAS)

Percent Clean Anhydrous Seaweed is obtained by the formula:

$$\%CAS = \frac{CAS}{W_o} \times 100$$

where:

CAS is the mass of clean anhydrous seaweed in grams

W_o is the original mass of seaweed taken for analysis in grams

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Annex B
(normative)

Determination of salt (as KCl) and sand

D.1 Determination of salt as KCl

D.1.1 Get a one (1) kilogram representative sample of the dried raw seaweed material;

D.1.2 Weigh 250 g into a 2-L beaker;

D.1.3 Add about 900 ml of distilled water, soak the seaweed overnight to remove the sand and salt. Remove the seaweed, stir the solution very well to completely dissolve the salt;

D.1.4 Decant the solution into a 1-L volumetric flask and dilute to volume distilled water. Save the sand for further analysis;

D.1.5 Mix the solution well and measure a 50 ml aliquot into a 250-ml volumetric flask;

D.1.6 Dilute to volume with distilled water. Mix well and measure a 10 ml aliquot into an Erlenmeyer flask;

D.1.7 Add 5 drops of K_2CrO_4 and titrate with standard 0.100 N $AgNO_3$ to end point (tinge of orange brown);

D.1.8 Calculate % salt (as KCl) using the following formula:

$$\% \text{ salt (as KCl)} = \frac{V_{AgNO_3} \times N_{AgNO_3} \times \frac{74.50}{1000}}{250 \times \frac{50}{1000} \times \frac{10}{250}} \times 100$$

D.2 Determination of sand

D.2.1 Wash the sand from step D.1.4 with distilled water 3 times;

D.2.2 Put the sand into a pre-weighed porcelain crucible;

D.2.3 Dry in the oven at 105°C to constant mass. Record weight as W_d ; and

D.2.4 Calculate % sand using the following formula:

$$\% \text{ sand} = \frac{W_d}{250} \times 100$$

where:

W_d is the weight of the dried sand in grams

Annex C
(normative)

Determination of impurities/debris

- C.1** Weigh 250 grams laboratory sample. Record weight as W_o ;
- C.2** Remove debris and other foreign material by hand.
- C.3** Weigh the impurities/ debris and other foreign materials. Record weight as W_D ; and
- C.4** Calculate Percent Impurities/Debris by the formula:

$$\% \text{ Impurities/debris} = \frac{W_D}{W_o} \times 100$$

where:

W_D is the mass of debris/impurities and other foreign materials in grams

W_o is the mass of laboratory sample taken for analysis in grams

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Annex D
(normative)

Determination of moisture of seaweed

A.1 Method A – Determine moisture of seaweed by direct reading using the moisture meter.

A.2 Method B – Oven Drying

A.2.1 Apparatus: Thermally controlled drying oven

A.2.2 Procedure:

- a) Weigh one hundred grams of seaweed laboratory sample in a pre-weighed moisture dish. Record weight as W_o ;
- b) Dry dish plus sample to constant mass at a temperature of 60°C-65°C for *Eucheuma* spp. and 80°C-85°C for *Kappaphycus* spp. in 12 to 16 hours. Record weight as W_f ; and
- c) Calculate Percent Moisture using the following formula:

$$\% \text{ Moisture} = \frac{W_o - W_f}{W_o} \times 100$$

where:

W_f is the weight of the seaweed after drying

W_o is the weight of the seaweed before drying

Annex E

(normative)

Sampling

E.1 Definition of terms

E.1.1

bulk sample

quantity of dried raw seaweed obtained by combining and mixing the primary sample taken from a specific lot.

E.1.2

consignment

quantity of dried raw seaweed dispatched or received at one time and covered by a particular contract or shipping document. It may be composed of one or more lot.

E.1.3

laboratory sample

quantity of dried raw seaweed removed from the bulk sample and is intended for analyses or other examination.

E.1.4

lot

composed of dried raw seaweed belonging to the same species intended to be uniform in characteristics regarding post harvest treatment.

E.1.5

primary sample

a small quantity of dried raw seaweed taken from a bag/bale from a lot.

E.2 Sample size

Sampling shall be done in accordance with the plan specified in Table E.1.

Table E.1: Sampling plan for dried raw seaweed

| Lot size (N) | Size of the sample (n) |
|------------------------|--|
| 1 to 5 bags/bales | All bags/bales |
| 6 to 49 bags/bales | 5 bags/bales |
| 50 to 199 bags/bales | 10% of the bags/bales |
| 200 bags/bales or more | $\sqrt{n} + 1$ Where n = number of bags/bales |

E.3 Sampling procedure

The sample shall be taken at random from the lot and in order to achieve this, a random number table agreed upon between the buyer and seller should be used. If such table is not available, the following procedure shall be adopted:

- a) Starting from any bag/bale, count the bags/bales as 1, 2, 3... etc. up to r and so on. Withdraw from the lot every rth bag/bale thus counted for sampling, the value of r is equal to

$$r = \frac{N}{n}$$

where:

N is the total number of bags/bales in the lot;

n is the number of bags/bales to be taken (see Table E.1)

- b) If r is a fractional number, its value shall be taken as equal to the integral part of it.

E.3.1 When the product is in movement, samples may be taken at the time of loading or unloading of the bags/bales. For this purpose, the number of bags/bales to be taken shall also be in accordance with Table 2. The value of r shall be calculated as indicated above, and every rth bags/bales counted during loading or unloading shall be removed for sampling.

E.3.2 Take primary samples, by means of an appropriate sampling instrument, from different parts of each bags/bales selected.

E.3.3 A series of primary samples should be taken from different positions in the lot.

E.4 Bulk sample

E.4.1 Thoroughly mix all the primary samples taken as described above to form the bulk sample.

E.4.2 The size of the bulk sample shall be more than three (3) times the quantity of sample required to carry out all the tests required in the specification.

E.5 Laboratory samples

E.5.1 Divide the bulk sample into three (3) or more equal parts. Each part thus obtained constitutes a laboratory sample; one (1) of these samples is intended for the buyer and another for the seller. The third sample, bearing the seals of the buyer and of the seller (or of their representatives) if they were present at the time of sampling or of the person who sampled the lot, shall constitute the reference sample to be used in case of dispute between buyer and seller; it shall be kept at a place acceptable to both parties.

E.5.2 Samples for test shall be one (1) kilogram.