

## DRAFT ZANZIBAR NATIONAL STANDARD

### Kimchi — Specification

ZANZIBAR BUREAU OF STANDARDS

## Foreword

This Draft Zanzibar National Standard has been prepared by Food Standard Technical committee (TCFA1). In accordance with the Zanzibar Bureau of Standards general procedures, this draft is here by presented to the public in order to receive any technical comment concerns.

## Technical Committee Representatives

This draft Zanzibar National Standard was prepared by Food Technical Standard committee which consists of representatives from the following organizations:

Chief Government Chemist Laboratory Agency (CGCLA)  
Ministry of Agriculture, Irrigation, Natural Resources and Livestock (MANRL)  
Ministry of Health Zanzibar (MoH)  
Said Salim Bakhresa & Company LTD  
The State University of Zanzibar (SUZA)  
Umoja wa Wazalishaji Wadogo Wadogo Zanzibar (UWAZI)  
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# Kimchi — Specification

## 1 Scope

This draft Zanzibar National Standard specifies requirements, sampling and test methods for kimchi intended for direct human consumption.

## 2 Normative references

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

CXS 192, *General Standard for Food Additives*

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

EAS 39, *General principles of food hygiene — Code of practice*

EAS 803, *Nutrition labelling — Requirements*

EAS 805, *Use of nutrition and health claims — Requirements*

ISO 750, *Fruit and vegetable products — Determination of titratable acidity*

ISO 762, *Fruit and vegetable products — Determination of mineral impurities content*

ISO 4833-1:2, *Microbiology of the food chain — Horizontal method for the enumeration of microorganisms*

ISO 6579-1, *Microbiology of the food chain — Horizontal method for the detection, enumeration and serotyping of Salmonella*

ISO 16649-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli*

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*

ZNS 61, *Labelling of pre-packaged foods — General requirements*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **kimchi**

product prepared from varieties of Chinese cabbage, *Brassica pekinensis* Rupr.; which is fermented before or after being packaged into appropriate containers.

### 3.2

#### **seasoning mixture**

consisting of red pepper (*Capsicum annuum* L.) powder, garlic, ginger, edible allium varieties other than garlic, and radish. These ingredients may be chopped, sliced and broken into pieces.

### 3.3

#### **whole**

whole Chinese cabbage.

**3.4****halves**

chinese cabbages divided lengthwise into halves

**3.5****quarters**

chinese cabbage divided lengthwise into quarters

**3.6****Slices or chips**

chinese cabbage leaves cut into pieces of 1 to 6 cm in length and width

**4 Requirements****4.1 Raw material****4.1.1 ingredients**

The following essential ingredients shall be used in making kimchi product and shall comply with relevant Zanzibar Standards;

- a) chinese cabbages *Brassica pekinensis* Rupr
- b) seasoning mixture; and
- c) edible salt (sodium chloride).

**4.1.2 Optional ingredients**

In addition to the essential ingredients the following optional ingredients complying with relevant Zanzibar standards may also be added.

- a) Fruits;
- b) glutinous rice paste;
- c) nuts;
- d) salted and fermented seafood;
- e) sesames seed;
- f) sugars (carbohydrate sweeteners);
- g) vegetables other than cabbages and;
- h) wheat flour paste.

**4.2 Style**

Kimchi product should be presented in either one of the following styles;

- a) whole;
- b) halves;
- c) quarters; and
- d) slices or chips.

**4.2 General requirements**

kimchi product shall

- a) be free from off-odours and off- flavours;
- b) have a uniform colour;
- c) possess a texture characteristic of the product;
- d) have a uniform appearance and consistency;

- e) have not undergone any kind of deterioration or spoilage; and
- f) be clean and free from foreign matter.

### 4.3 Specific requirements

Kimchi product shall comply with the specific requirements given in Table 1 when tested in accordance with the test methods specified therein.

**Table 1 — Specific requirements for Kimchi**

S/N	Characteristic	limit	Test method
i.	Mineral impurities, %, m/m	$\leq 0.03$	ISO 762
ii.	Salt (sodium chloride) content m/m	1.0- 4.0	Annex A
iii.	Total acidity (as lactic acid)	$\leq 1.0$	ISO 750

## 5 Food additives

Food additives when used shall comply with CXS 192.

## 6 Contaminants

### 6.1 Heavy metal

kimchi shall comply with the maximum heavy metal limits established by the Codex Stan 193.

### 6.2 Pesticide residues

kimchi shall comply with the maximum pesticide residues limits established in the Codex pesticide residues in food online data base. Pesticide residues.

## 7 Hygiene

Kimchi shall be produced and handled under hygienic conditions in accordance with EAS 39 and shall comply with microbiological limits as specified in Table 2 when tested in accordance with the methods specified therein.

**Table 2: Microbiological limits for kimchi**

S/No	Microorganism	Limit	Test method
i.	Total plate count, cfu/g, max.	$10^5$	ISO 4833-1/2
ii.	Yeasts and moulds, cfu/g, max.	$10^2$	ISO 21527-1
iii.	<i>Salmonella spp</i> , per 25 g	Absent	ISO 6579-1
iv.	<i>Escherichia coli</i> , cfu/g	Absent	ISO 16649-2

## 8 Weights and measures

Kimchi shall be packed in accordance with the weights and measures regulations of Zanzibar.

## 9 Packaging and Labelling

### 9.1 Packaging

Kimchi product shall be produced and packaged in food grade containers in accordance to which will safeguard the hygienic, safety, nutritional, technological, and organoleptic qualities of the product.

### 9.2 Labelling

**9.2.1** In addition to the requirements of ZNS 61, kimchi package shall be legibly and indelibly marked with the following information:

- a) name of the product as “Kimchi”;
- b) brand name if any;
- c) net volume in SI units;
- d) alcohol content;
- e) name and physical address of manufacturer;
- f) batch number;
- g) date of manufacture and expiry of the product;
- h) instructions for storage product; and
- i) list of ingredients.

**9.2.2** The language on the label shall be ‘Kiswahili’ and/or English. Additional language may be used, depending on the designated market.

**9.2.3** Nutritional and health claims shall be made in accordance to EAS 803 and EAS 805.

## 10 Sampling

Sampling shall carry out in accordance with Annex B.

## Annex A (normative)

### Determination of the chloride content calculated as sodium chloride

#### A.1 Apparatus

Normally available laboratory glassware

#### A.2 Reagents

##### A.2.1 Potassium chromate solution

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

##### A.2.2 Standard 0.1 N silver nitrate solution

###### A.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.

###### A.2.2.2 Standardization

###### A.2.2.2.1 Carry out the standardization in triplicate.

**A.2.2.2.2** Weigh out accurately 5.8 g of analytical reagent grade sodium chloride ( $NaCl$ ) (previously dried at  $200\text{ }^{\circ}C \pm 50\text{ }^{\circ}C$  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  $20\text{ }^{\circ}C$  and dilute it to 1 000 mL with water at the same temperature. Pipette 25 mL of the sodium chloride solution at  $20\text{ }^{\circ}C$  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.

**A.2.2.2.3** Carry out a blank titration using the same procedure but replacing the 25 mL sodium chloride solution with 25 mL water.

**A.2.2.2.4** Calculate the mean normality of the silver nitrate solution from the triplicate determinations.

$$N = \frac{Ax0.4277}{b-c}$$

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, and

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

NOTE A commercially prepared volumetric solution may be used instead.

### A.3 Procedure

**A.3.1** Carry out the determination in triplicate on each of the test samples.

**A.3.2** Pipette 50 mL of the principal solution reserved 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.

### A.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.

### A.5 Report

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



## Annex B (normative)

### Sampling

#### B.1 Definitions

##### B.1.1

###### **lot**

collection of primary containers or units of the same size, type and style manufactured or packed under similar conditions and handled as a single unit of trade

##### B.1.2

###### **lot size**

number of primary containers or units in the lot

##### B.1.3

###### **sample size**

total number of sample units drawn for examination from the lot

##### B.1.4

###### **sample unit**

container, a portion of the contents of a container, or a composite mixture of product from small containers that is sufficient for the examination or testing as a single unit. The sample unit shall be the entire contents of the container

#### B.2 Sampling plans

Sampling shall be in accordance with the plan specified in Table B.2.

**Table B.2 :Sampling plan**

<b>Lot size (primary containers)</b>	<b>Size of container, <math>n^a</math></b>
Net weight equal to or less than 1 kg (2.2 lb)	
4 800 or less	13
4 801 to 24 000	21
24 001 to 48 000	29
48 001 to 84 000	48
84 001 to 144 000	84
144 001 to 240 000	126
Over 240 000	200
Net weight greater than 1 kg (2.2 lb) but not more than 4.5 kg (10 lb)	
2 400 or less	13

Table 1 concluded

2 401 to 15 000	21
15 001 to 24 000	29
24 001 to 42 000	48
42 001 to 72, 000	84
72 001 to 120 000	126
Over 120 000	200
Net weight greater than 4.5 kg (10 lb)	
600 or less	13
601 to 2 000	21
2 001 to 7 200	29
7 201 to 15 000	48
15 001 to 24 000	84
24 001 to 42 000	126
Over 42 000	200
a $n$ is the number of primary containers in sample.	