



PCD 442: 2023  
ICS 67.180.10

## DRAFT ZANZIBAR STANDARD

### Halwa - Specification

DRAFT FOR STAKEHOLDERS COMMENT

**ZANZIBAR BUREAU OF STANDARDS**

## Foreword

This draft Zanzibar National Standard has been developed Food Standard Technical committee (TCFA1). 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: OS 1635:2004 Omani Halwa and IS 2650:1975 Reaffirmed 2020 Bombay Halwa.

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## Introduction

Halwa is a favourite item of Zanzibari sweetmeats. It is made from starch, ghee, sugar and nuts. Colouring matter and flavouring essences are also added. Its common uses in different occasion such as wedding and funerals. In order to preserve the Halwa for a long time without deterioration, specially when exported to foreign countries, it is packed in hermetically sealed containers

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# Halwa - Specification

## 1 Scope

This draft standard specifies requirements, method of sampling and test for halwa intended for human consumption.

## 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 896.02, *Sucrose in sugars and syrups. Double dilution*

AOAC 952.13, *Arsenic in food — Silver diethyldibocarbamate method*

AOAC 996.06 *Fat (total, Saturated, and Unsaturated) in foods*

AOAC 999.1 *Lead, Cadmium, Zinc, Copper, and iron in foods. Atomic absorption spectrophotometry after microwave digestion*

CODEX STAN 192, *General Standard for Food Additives*

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

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

ISO 4833-2, *Microbiology of the food chain — Horizontal method for the enumeration of microorganisms — Part 2: Colony count at 30 °C by the surface plating technique*

ISO 5985, *Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid*

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

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 21527-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 2: Colony count technique in products with water activity less than or equal to 0,95*

ZNS 61, *Packaging and labeling of food*

ZNS 94, *Rounding off numerical values*

## 3 Terms and definitions

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

### 3.1

#### **halwa**

thick jelly like sweetmeats made from macerated starch, sugar, ghee or vegetable oil/fat and other suitable ingredients such as nut, spices/flavouring essence and colouring matter

### 3.2

#### food grade packaging material

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

## 4 Requirements

### 4.1 Raw material

#### 4.1.1 Essential ingredients

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

- a) starch;
- b) sugar;
- c) water and
- d) ghee or edible fat and oil.

#### 4.1.2 Optional ingredients

In addition to the essential ingredients, the following optional ingredients complying with relevant Zanzibar standards may be used

- a) spices and saffron;
- b) nuts and oilseed;
- c) permitted sweeteners;
- d) eggs;
- e) milk and milk product;
- f) date;
- g) syrup;
- h) colouring and flavouring agents and essences; and
- i) any other suitable food ingredients

### 4.2 General requirements

Halwa shall

- a) be sweet well set, soft and smooth in texture
- b) be homogenous gelatinous texture and colour;
- c) be free from bitter or burn taste and foreign odour; and
- d) not be hard and free from any sugar and starch lump.

### 4.3 Specific requirements

4.3.1 Halwa 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 halwa**

S/No	Characteristics	Requirement	Test methods
i.	Fat percent by mass,	6 - 28	AOAC 996.06
ii.	Moisture content max	12	Annex A
iii.	Acidity of extracted fat (as oleic acid), % bymass, max.	3	Annex B
iv.	Sugars, expressed as sucrose, percent by mass max	55	AOAC 896.02
v.	Acid insoluble ash, % m/m, max	0.2	ISO 5985

**4.3.2** The quantity of nuts when added in halwa, shall be not less than 2.0 percent by mass when determined by the method given in Annex C.

## 5 Additives

Food additives when used shall comply with CODEX STAN 192.

## 6 Metal contaminant

Halwa shall comply with those maximum metal limits given in Table 2 when tested in accordance with test methods specified therein.

**Table 2: Maximum limits for metal contaminants in halwa**

S/N	Parameter	Maximum limit mg/kg	Test method
i.	Arsenic (As)	1	AOAC 952.13
ii.	Lead (Pb)	0.5	AOAC 999.1
iii.	Copper	20	

## 7 Hygiene

Halwa shall be produced and handled under hygienic conditions in accordance with EAS 39 and shall comply with microbiological limits given in Table 3 when tested in accordance with the methods specified therein.

**Table 3: Microbiological limits for halwa**

SN	Microorganism	Limit	Test method
i.	Total plate count, cfu/g, max.	10 <sup>5</sup>	ISO 4833-1 & 2
ii.	<i>E. coli</i> , MPN/g,	absent	ISO 7251
iii.	Yeasts and moulds, cfu/g, max.	10 <sup>2</sup>	ISO 21527-2
iv.	<i>Salmonella spp</i> , per 25 g	absent	ISO 6579-1
v.	<i>Staphylococcus aureus</i> cfu/g	absent	ISO 6888-3

## 8 Weights and measures

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

## 9 Packaging and Labelling

### 9.1 Packaging

Halwa shall be packaged in food grade packaging material that secures the integrity and the safety of the product.

## **9.2 Labelling**

**9.2.1** 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 'halwa;
- b) declaration of type of nuts used if any;
- c) list of ingredients including additive used
- d) brand name/trade name if any;
- e) name and address of producer/packer/distributor;
- f) storage condition and transportation;
- g) date of manufacturing;
- h) best before date;
- i) lot identification or batch or code number;
- j) country of origin;
- k) net weight in metric unit; and
- l) instruction for disposal of used packaged material.

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

## **10 Sampling**

Sampling of halwa shall be done according Annex C.



## Annex A (normative)

### Determination of moisture

#### A.1 Apparatus

A.1.1 **Electric oven**, maintained at  $105^{\circ}\text{C} \pm 1^{\circ}\text{C}$

A.1.2 **Moisture dish**, made of porcelain, silica, glass or aluminium

A.1.3 **Desiccator**

#### A.2 Procedure

Weigh accurately about 5 g of the prepared sample in the previously weighed dried moisture dish,

Place the dish in the oven maintained at  $105^{\circ}\text{C} \pm 1^{\circ}\text{C}$  for 4 hours.

Cool in the desiccator and weigh.

Repeat the process of drying, cooling and weighing at 30-min intervals until a constant mass,  $m$ , is obtained.

#### A.3 Calculation

$$\text{Moisture, percent by mass,} = \frac{100(M - m_1)}{(M - m_2)}$$

where

$M$  is the mass, in grams, of the dish with the sample before drying;

$m_1$  is the mass, in grams, of the dish with the sample after drying to constant mass; and

$m_2$  is the mass, in grams, of the empty dish.

**Annex B**  
**(normative)**

**Determination of acidity of extracted fat**

**B.1 Apparatus**

Soxhlet Extraction Apparatus - with a 250-ml flat-bottom flask.

**B.2 Reagents**

**B.2.1 Petroleum Ether** - distilling below 60°C.

**B.2.2 Ethyl Alcohol**- 95 percent by volume, or rectified spirit neutral to phenolphthalein indicator.

**B.2.3 Phenolphthalein Indicator Solution** - one percent (m/v) solution in ethyl alcohol or rectified spirit.

**B.2.4 Standard Potassium Hydroxide Solution – 0.1 N**

**B.3 Procedure**

**B.3.1 Extraction of Fat**

Take approximately about 50 g of the sample and remove the pieces of nub contained in it. Dry in an air-oven at  $105 \pm 2^\circ\text{C}$  for 4 hours. Mix thoroughly the halwa freed from nuts with about 20 g of dried sand and transfer to the thimble of the Soxhlet apparatus and extract with petroleum ether for 2 hours. Evaporate the ether slowly in a water-oven. Dry the flask at  $100 \pm 5^\circ\text{C}$ , for five hours and cool.

**B.3.2 Determination of Acidity**

Weigh by transference accurately 2.5 to 3.0 g of the extracted fat (see B.3.1) into a 200-ml conical flask. Add approximately 25 ml of hot ethyl alcohol and about one millilitre of the phenolphthalein indicator solution, and titrate the mixture while hot with the standard potassium hydroxide solution. Take the first pink colouration, persisting for 30 seconds during shaking as the end point.

**B.4 Calculation**

Acidity of the extracted fat (as oleic acid), percent by mass =  $\frac{28.2 V N}{M}$

where

$V$  = volume in ml of the standard potassium hydroxide solution used,

$N$  = normality of the standard potassium hydroxide solution, and

$M$  = mass in g of the extracted fat taken for the test (see B.3.2).

**Annex C**  
**(normative)**

**Determination of quantity of nuts**

**Procedure**

Weigh the entire content of the container (approx 250 g) accurately.

Pick out pieces of nut and wipe them with filter paper or clean cloth. Weigh the nuts so collected and calculate the percentage of nuts from the mass of the nuts, picked out

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**Annex D**  
**(normative)**  
**Sampling Method**

**D.1 General requirements of sampling**

**D.1.1** In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed.

**D.1.2** Samples shall be taken in a protected place not exposed to damp air, dust or soot.

**D.1.3** The sampling instrument shall be clean and dry when used.

**D.1.4** The samples, the material being sampled, the sampling instrument and the containers for collecting and storing the samples shall be protected from adventitious contamination.

**D.1.5** The samples shall be placed in clean and dry glass containers. The sample containers shall be of such a size that they are almost completely filled by the sample.

**D.1.6** Each container shall be sealed air-tight after filling and marked with full details of sampling, batch or code number, name of the manufacturer and other important particulars of the consignment.

**D.1.7** Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature and that they are protected from light.

**D.1.8** Sampling shall be done by a person agreed to between the purchaser and the vendor and in the presence of the purchaser (or his representative) and the vendor (or his representative).

**D.2 Scale of sampling**

**D.2.1** Lot: All the containers in a single consignment of the material drawn from a single batch of manufacture shall constitute a lot. If the consignment consists of different batches of manufacture, the containers belonging to the same batch of manufacture shall be separated and shall constitute separate lots.

**D.2.2** For ascertaining the conformity of the lot to the requirements of the specification, tests shall be carried out for each lot separately. The number of containers to be selected for the purpose shall depend on the size of the lot ( $N$ ) and shall be in accordance with Table D.1.

**D.2.3** The containers to be selected for sampling shall be chosen at random from the lot and for this purpose random number tables shall be used. In case such tables are not available, the following procedure may be adopted.

**D.2.4** Starting from any container, count them as 1, 2, 3, ..... up to  $r$ . Every  $r^{\text{th}}$  container thus counted shall be withdrawn;  $r$  being the integral part of  $N/n$  where  $N$  and  $n$  are the lot size and the sample size respectively.

**D.2.5** Samples for Determination of quantity of 'Nuts - Three containers shall be selected from each lot apart from the containers chosen as per Table D.1. One of these containers is for the purchaser, the other for the vendor and the third for the referee.

Table D.1: Number of containers to be selected for sampling

Lot Size (N)	Number of containers to be selected (n)
≤15	3
16-40	4
41-110	5
111-300	6
301-800	7
800-1 300	8
≥1 300	9

### D.3 Test samples and referee samples

**D.3.1** Draw with an appropriate sampling instrument, about 300 g of the material from different parts of each container selected (see D.2.3).

**D.3.2 Preparation of Individual Samples** - Thoroughly mince and mix all the portions of the material drawn from the same container. Take out about 100 g of the material and divide it into three equal parts. Each part so obtained shall constitute an individual sample representing the container and shall be transferred to sample container which shall be sealed air-tight and labelled with the particulars given in D.1.5 The individual samples so obtained shall be divided into three sets in such a way that each set has a sample representing each selected container. One of these sets shall be marked for the purchaser, another for the vendor and the third for the referee.

**D.3.3 Preparation of Composite Sample**-From the mixed material from each selected container remaining after the individual samples have been taken, equal quantities of the material from each container shall be taken and mixed up together so as to form a composite sample weighing not less than 450 g. This composite sample shall be divided into three equal parts and transferred to clean dried containers made of glass or tinfoil and labelled with the particulars given in D.1.5. One of these composite samples shall be for the purchaser, another for the vendor and the third for the referee.

**D.3.4 Referee Samples** - Referee samples shall consist of a set of individual samples (see D.3.2) and a composite sample (see D.3.3) marked for this purpose and shall bear the seals of the purchaser and the vendor. These shall be kept at a place agreed to between the two.

### D.4 Number of tests

**D.4.1** Tests for moisture, percent by mass, shall be conducted individually on each of the samples constituting a set of individual samples (see D.3.2).

**D.4.2** Tests for the remaining characteristics, namely, fat, acidity of extract fat and sugars, shall be conducted on the composite sample (see D.3.3).

**D.4.3** Test for Determination of Quantity of Nuts - shall be conducted in the container chosen as per D.2.4.

### D.5 Criteria for conformity

**D.5.1** For Individual Samples - The lot shall be declared to have satisfied the requirements of moisture if each of the test results (see D.4.1) satisfies the relevant specification requirements.

**D.5.2** For Composite Sample - The lot shall be declared to have satisfied the requirements of the remaining characteristics (see D.4.2) if the test results of the composite sample satisfy the corresponding relevant specification requirements.

**D.5.3** For Quantity of Nuts - The lot shall be declared to have satisfied the requirements for quantity of nuts if the test result of quantity of nuts (see D.4.3) satisfies the relevant requirements.