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**Chuko - Specification**

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## **Foreword**

This Ethiopian Standard has been prepared under the direction of Technical Committee for Starch and derived products (TC 24) and published by the Institute of Ethiopian Standards (IES).

In the preparation of this standard reference has been made to the following:

EPHI research finding.

EPHI, Food Composition Table Data.

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

CODEX STAN 192, *General standard for food additives.*

Acknowledgement is made for the use of the information from the above publications.

# Chuko - Specification

## 1. Scope

This Ethiopian Standard specifies the requirements for Chuko intended for human consumption.

## 2. Normative References

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

CES 58, Drinking Water (Other than any packaged water) - Specifications

CES 70, Iodized edible salt - Specification

CES 73, General standard for prepackaged foods - Labeling.

ES 577, Recommended code of practice - General principle of food hygiene.

ES 929, Code of practice for hygiene in the food and drink manufacturing industry

ES ISO 712, Cereals and cereal products - Determination of moisture content - Reference method

ES 1066, Durum wheat, durum wheat semolina flour, bread, biscuits and pasta products - Determination of acid insoluble ash

ES ISO 2171, Cereals, pulses and by-products - Determination of ash yield by incineration

ES 3461, Butter – Specification

ES ISO 4833-1, Microbiology of the food chain - Horizontal method for the enumeration of microorganisms - Part 1: Colony count at 30 °C

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

ES ISO 5498, Agricultural food products - Determination of crude fiber content - General method by the pour plate technique.

ES ISO 6492, Animal feeding stuffs – Determination of fat content

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

ES ISO 6579-2, Microbiology of food and animal feed - Horizontal method for the detection, enumeration and serotyping of Salmonella - Part 2: Enumeration by a miniaturized most probable number technique

ES ISO 6579-3, Microbiology of the food chain — Horizontal method for the detection, enumeration and serotyping of salmonella Part 3 Guidelines for serotyping of *salmonella* spp.

ES 6839, Besso- Specification

ES ISO 6888-1, Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coagulase-positive staphylococci (*Staphylococcus aureus* and other species) - Part 1: Technique using Baird-Parker agar medium.

ES ISO 6888-2, Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coagulase-positive staphylococci (*Staphylococcus aureus* and other species) - Part 2: Technique using rabbit plasma fibrinogen agar medium.

ES ISO 6888-3, Microbiology of the food chain — Horizontal method for the enumeration of coagulase-positive staphylococci (*Staphylococcus aureus* and other species) - Part 3: Detection and MPN technique for low numbers.

ES ISO 7251, Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of presumptive *Escherichia coli* - Most probable number technique

ES ISO 10520, Native starch - Determination of starch content - Ewers polarimetric method

ES ISO 11212-1, Starch and derived products - Heavy metals content Part 1: Determination of arsenic content by atomic absorption spectrometry

ES ISO 11212-2, Starch and derived products - Heavy metals content - Part 2: Determination of mercury content by atomic absorption spectrometry

ES ISO 11212-3, Starch and derived products - Heavy metals content - Part 3: Determination of lead content by atomic absorption spectrometry with electrothermal atomization

ES ISO 11212-4, Starch and derived products - Heavy metals content - Part 4: Determination of Cadmium content by atomic absorption spectrometry with electrothermal atomization

ES ISO 16050, Food stuffs - Determination of aflatoxin B1 and total content of aflatoxin B1, B2, G1 and G2 in cereals, nuts, and derived products - High performance liquid chromatographic method.

ES ISO 20483, Cereals and pulses - Determination of the nitrogen content and calculation of the crude protein content – Kjeldah method.

ES ISO 21527-1, ES 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.

ES 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.

ES ISO 22002 -1, Prerequisite programmes on food safety - Part 1 Food manufacturing.

ES ISO 24333, Cereals and cereal products — Sampling

### **3. Terms and Definitions**

For the purpose of this standard the following definitions shall apply.

#### **3.1**

##### **Chuko**

a food prepared from a flour of well roasted barley (*Horedum vulgare*) grain and butter.

### **4. Ingredients**

#### **4.1 Main Ingredients**

4.1.1 Flour of roasted barley grain (besso) complying ES 6839.

4.1.2 Butter with the requirements of ES 3461 along with spices/condiments.

#### **4.2 Optional Ingredients**

4.2.1 Potable water complying with the requirements of CES 58.

4.2.2 Food Additives shall be in accordance with Codex Stan 192.

4.2.3 Salt complying with the requirements of CES 70.

### **5. Requirements**

#### **5.1 General Requirements**

Chuko shall:

5.1.1 be free from any contaminants, moldy and unnatural odour demoting deterioration;

5.1.2 be free from any impurities;

5.1.3 have typical characteristic colour, odour and flavour of the product;

5.1.4 be free from any other cereal flours such as maize, sorghum, etc.

## 5.2 Specific Requirements

Chuko shall comply with the physic-chemical requirements specified in Table 1 below.

**Table 1 Chemical requirements for Chuko**

Characteristics	Limit	Test Methods
Moisture, % by mass, max	5.0	ES ISO 712
Total ash, % by mass, max	2.0	ES ISO 2171
Acid insoluble ash, % by mass, max	0.5	ES 1066
Crude fiber, % by mass, max.	2.0	ES ISO 5498
Crude fat, % by mass, max.	37.0	ES ISO 11085
Carbohydrate, % by mass, min	46.0	By calculation
Protein (N x 6.25), % by mass, min	7.0	ES ISO 1871

## 6. Contaminants

### 6.1 Pesticide residue

The product shall comply with those maximum residue limits established by the Codex General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193).

### 6.2 Metal contaminants

Chuko shall be free from metal contaminants in amounts which may present a hazard to health. If present, they shall not exceed the limits specified in Table 2 below.

**Table 2 Metal contaminants limit**

Characteristics	Limits(ppm max)	Test Methods
Arsenic (As)	0.2	ES ISO 11212-1
Mercury (Hg)	0.1	ES ISO 11212-2
Lead (Pb)	0.1	ES ISO 11212-3
Cadmium (Cd)	0.1	ES ISO 11212-4

### 6.3 Mycotoxins

Chuko shall comply with those maximum mycotoxin limits as established by the Codex Alimentarius Commission for food and feed stuffs, In particular total aflatoxin in Chuko shall not exceed 10 µg/kg and 5µg/kg for aflatoxin B1 when tested in accordance with ES ISO 16050.

## 7. Hygiene

**7.1** Chuko shall be prepared under hygienic conditions in accordance with ES 577, ES 929 and ES ISO 22002 -1.

**7.2** Chuko shall be free from pathogenic microorganisms and shall comply with the microbiological limits indicated in Table 3 below.

**Table 3. Microbiological limits for Chuko**

<b>Characteristics</b>	<b>Limit</b>	<b>Test Methods</b>
Total plate count, cfu/g, Max.	10 <sup>2</sup>	ES ISO 4833-1, ES ISO 4833-2
Yeasts and molds, cfu/g, Max.	10 <sup>2</sup>	ES ISO 21527-1 ES ISO 21527-2
<i>S. aureus</i> , cfu/ g	Absent	ES ISO 6888-1 ES ISO 6888-2 ES ISO 6888-3
<i>E. coli</i> , cfu/g	Absent	ES ISO 7251
<i>Salmonella</i> , cfu per 25 g	Absent	ES ISO 6579-1 ES ISO 6579-2 ES ISO 6579-3

## 8. Packaging and labelling

### 8.1 Packaging

- 8.1.1** Chuko shall be packed with clean, sound, free from insect and fungal infestation and the packing material shall be of food grade quality and shall be securely sealed.
- 8.1.2** Chuko shall also be packed with air tight bags.
- 8.1.3** Chuko shall be packed in containers which will safeguard the hygienic, nutritional, and organoleptic qualities of the products.
- 8.1.4** The containers, including packaging material, shall be made of substances which are safe and suitable for their intended use. They shall not impart any toxic substance or undesirable odor or flavor to the product.

### 8.2 Labelling

The labeling shall comply with the requirements of CES 73, and shall be legibly and indelibly marked with the following:

- a) Name of the product as 'Chuko';
- b) Name and physical address of the manufacturer;
- c) Net weight of the contents in grams or kilograms;
- d) Date of manufacture;
- e) Nutritional information
- f) Batch number;
- g) List of ingredients in descending order;
- h) Expiry date;
- i) Country of origin;
- j) Storage instructions;
- k) Instructions for use;
- l) Instructions for disposal of used package.

## 9. Method of sampling

Sampling shall be done in accordance with the ES ISO 24333.

## Organization and Objectives

The Institute of Ethiopian Standards (IES) is the national standards body of Ethiopia. IES is re-named by the proclamation number 1263/2021, from Ethiopian Standards Agency (ESA) to Institute of Ethiopian standards, with the mandate given by the regulation Number, 193/2010 and proclamation number, 1263/2021.

### IES's objectives are:

- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and service are in compliance with the required standards,
- ❖ Facilitate the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.
- ❖ Conduct standards related research and provide training and technical support.

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