



DRAFT EAST AFRICAN STANDARD

Biscuits — Specification

EAST AFRICAN COMMUNITY

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 014, Cereals, pulses and derived products.

This third edition cancels and replaces the second edition (EAS 781: 2012), which has been technically revised.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

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ii

DRAFT FOR PUBLIC REVIEW

1. Scope

This Draft East African Standard specifies the requirements sampling and test methods for biscuits intended for human consumption. This standard also covers wafer and cookies

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.

Codex Stan 192, *General standard for food additives*

CODEX STAN 193, *Codex General Standard for Contaminants and Toxins in Food and Feed*

EAS 38, *General standard for the labelling of pre-packaged foods*

EAS 39, *Hygiene in the food and drink manufacturing industry – Code of practice*

ISO 6579-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Salmonella spp.*

ISO 16649-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli — Part 2: Colony-count technique at 44 degrees C using 5-bromo-4-chloro-3-indolyl beta-D-glucuronide*

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*

3. Terms and definitions

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

3.1

biscuit

shaped baked flour confectionery product characterized by a crispy texture

3.2

cream

Homogenous preparation of hydrogenated fat or bakery shortening, icing sugar, permitted flavours and food colours with or without addition of other ingredients.

3.3

plain biscuits

biscuits which are not filled or coated

3.4

coated biscuits

biscuits glazed with chocolate, caramel or any other similar ingredients

3.5

filled biscuits

biscuits sandwiched with a filling of either cream, jam, jelly, caramel, dried fruits or any other filling materials singly or in combination

3.6

crackers

biscuits which in general show a typical flaky inner layers; may be fermented or non-fermented; oil-dipped or not and may be or may not be sprinkled with salt

3.7

wafer

very thin, light, crisp, sweet cookie or cracker, especially one of a kind eaten with ice cream

4 Types of Biscuits;

- (i) Plain
- (ii) Filled
- (iii) Coated
- (iv) Cream

Categories of Biscuits

- (i) Crackers
- (ii) Wafers
- (iii) Cookies

5.0 Requirements

5.1 Ingredients

5.1.1 Essential Ingredients

The following essential ingredients shall be used and shall comply with relevant East African standards

- a) flour;
- b) shortening, edible oil or fat; and

- c) potable water

5.1.2 Optional ingredients

In addition to the essential ingredients in 5.1.1, the following ingredients but not limited to the following may be used in the making of biscuits and shall comply with relevant East African standards ;

- a) cereals and cereal products;
- b) starch;
- c) oilseeds and oilseed products;
- d) milk and milk products;
- e) nutritive sweeteners;
- f) fruit, vegetable and related products;
- g) spices and condiments;
- h) cocoa and cocoa products;
- i) coffee and coffee products;
- j) tea and tea products;
- k) eggs;
- l) salt;
- m) leavening agent

5.2 General requirements

Biscuits shall:

- a) be properly baked so that they are crisp, have uniform texture and are free from a burnt taste and appearance;
- b) have a typical flavour of well-baked biscuits”
- c) be free from any soapy or bitter after-taste; and
- d) be free from fungal and insect infestation, rancid taste and odour.

5.3 Specific requirements for biscuits

Biscuits shall conform to the requirements as given in Table 1.

Table 1 — Specific requirements for biscuits

| S/N | Parameter | Requirement | Method test |
|-----|---|-------------|-------------|
| 1 | Moisture, % by mass, max. | 6.0 | Annex A |
| 2 | Acid insoluble ash on dry basis, % by mass, max. | 0.1 | Annex B |
| 3 | Acidity of extracted fat (as oleic acid), % by mass, max. | 1.0 | Annex D |

6.0 Food additives

Food additives may be used in the preparation of biscuits in accordance with Codex Stan 192.

7.0 Hygiene

Biscuits shall be manufactured and handled in accordance with EAS 39. Biscuits shall conform to the limits of microorganisms in Table 2.

DRAFT FOR PUBLIC REVIEW

Table 2 Limits for microorganisms in biscuits

| S/N | Microorganisms | Limit | Test method |
|-----|---------------------------------|---------------------------------------|-------------|
| 1 | <i>Escherichia coli</i> , cfu/g | absent | ISO 16649-2 |
| 2 | <i>Salmonella</i> spp, per 25g, | Absent | ISO 6579-1 |
| 3 | Yeast and Moulds, per g, max | 10 ³ [10 ²] | ISO 21527-2 |

8.0 Contaminants

Biscuits shall conform to those maximum levels of the Codex General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193).

9 Packaging

Biscuits shall be packaged in food grade materials to safeguard the safety, hygienic, nutritional, organoleptic and technological qualities of the product.

10 Labelling

10.1 The following specific labelling requirements shall apply and shall be legibly and indelibly marked in accordance with the requirements of EAS 38.

- a) common name of the product, "Biscuits and type/description of biscuits";
- b) name and physical address of the manufacturer/ distributor and /or trade name/ brand name;
- c) date of manufacture;
- d) list of ingredients;
- e) lot identification;
- f) expiry date;
- g) country of origin;
- h) net weight in metric units;
- i) storage instructions;
- j) allergen declaration if any;
- k) instructions on disposal of used package.

10.2 When labelling non-retail packages, information for non-retail packages shall either be given on the packages or in accompanying documents, except that the name of the product, lot identification and the name and address of the manufacturer or packer shall appear on the packages.

11 Sampling

The method of drawing representative samples of biscuits and the criteria for conformity shall be as prescribed in Annex C.

DRAFT FOR PUBLIC REVIEW

DRAFT FOR PUBLIC REVIEW

Annex A (normative)

Determination of moisture

A.1 Apparatus

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

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

A.1.3 **Desiccator**

A.1.4 **Analytical balance**

A.2 Procedure

Weigh accurately about 5 g of the prepared sample (see C.3.3) in the moisture dish, previously dried in the oven and weighed.

Place the dish in the oven maintained at $105\text{ °C} \pm 1\text{ °C}$ for 4 h.

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 acid insoluble ash

B.1 Apparatus

- B.1.1 Dish, silica or porcelain
- B.1.2 Muffle furnace, maintained at $600\text{ }^{\circ}\text{C} \pm 20\text{ }^{\circ}\text{C}$
- B.1.3 Water bath
- B.1.4 Desiccator
- B.1.5 Analytical balance

B.2 Reagent

Dilute hydrochloric acid, approximately 5mol/l, prepared from concentrated hydrochloric acid

B.3 Procedure

Weigh accurately about 10 g of biscuit powder (C.3.3.2) and transfer to a furnace at $600\text{ }^{\circ}\text{C} \pm 20\text{ }^{\circ}\text{C}$ until light grey ash is obtained.

Remove the dish from the furnace and allow it to cool to room temperature. Add 25 mL of hydrochloric acid to the dish, cover with a watch glass and heat on a water bath for 10 minutes. Mix the contents with the tip of a glass rod and filter through Whatman filter paper No 42 or its equivalent wash the filter paper with water until the washings are free from acid when tested with blue litmus paper. Return the washed filter paper to the dish for ashing in the muffle furnace as above.

Cool the dish in a desiccator and weigh. Again ignite the dish for half an hour in the furnace, cool and weigh. Repeat this operation until the dish has a constant mass. Filter 25 mL of hydrochloric acid through a blank filter paper wash, ash and weigh it as in the case of acid insoluble ash. Subtract its mass from the mass of insoluble ash in the sample.

B.4 Calculation

- B.4.1 Acid insoluble ash, percent by mass (A)

$$\frac{100(m_1 - m)}{m_2}$$

where

m is the mass, in grams, of the dish containing acid insoluble ash (see note);

m_1 is the mass, in grams, of empty dish in which the sample is taken for ashing; and

m_2 is the mass, in grams, of the sample

NOTE The acid insoluble ash mass should be corrected for the blank of filter paper, if any.

B.4.2 Acid insoluble ash, percent by mass (on dry weight basis)

$$\frac{A \times 100}{100 - M}$$

where

A is the acid insoluble ash, percent by mass (B.4.1), and

M is the percent of moisture in the biscuit sample.

DRAFT FOR PUBLIC REVIEW

Annex C (normative)

Sampling of biscuits

C.1 General requirements of sampling

In drawing, preparing, storing and handling samples the following precautions and directions shall be observed:

- a) samples shall be taken in a protected place not exposed to damp air dust or soot;
- b) precautions shall be taken to protect samples, the lots being sampled, sampling instrument and containers for samples from adventitious contamination;
- c) loose biscuit samples or representative small packs, shall be placed in airtight, clean and dry glass, tin or aluminium containers of appropriate size;
- d) samples shall be stored at room temperature; and
- e) each container containing samples shall be sealed airtight and marked with full details of sampling, such as batch or code number, name of manufacturer and other relevant particulars.

C.2 Scale of sampling

C.2.1 Lot

All biscuit containers in a single consignment drawn from the same batch of manufacture shall constitute a lot. If the consignment is declared to consist of different batches of manufacture, the batches shall be marked separately and groups of containers in each batch shall constitute separate lots. Samples shall be tested from each lot for ascertaining the conformity of biscuits to the requirements of specification.

C.2.2 Sample size

The number of containers to be sampled from each lot shall depend on the size of the lot and be in accordance with Table 2.

C.2.3 Drawing of sample

Containers shall be selected at random from each lot and for this purpose, random number tables shall be used.

Starting from any container, count them as 1, 2 up to r and so on in one order, where r is equal to the integral part of value N/n . N being the total number of containers in the lot and r^{th} number of container thus counted shall be separated until the required number of containers is obtained from the lot.

Table 2 — Number of containers to be selected for sampling

| Lot size, <i>N</i> | Sample size, <i>n</i> |
|-----------------------|--------------------------|
| Up to 50 | 2 |
| 51-150 | 3 |
| 151-300 | 4 |
| 301-500 | 5 |
| 501 and above | 7 |

C.3 Test samples and referee samples

C.3.1 Drawing samples

Draw from each selected container, the required number of biscuit packets. These packets shall be opened and mixed. If the container is packed with loose biscuits, samples of required quantity shall be taken from different parts of the selected container.

C.3.2 Preparation of individual sample

From the selected containers, about 600 g of biscuits shall be taken from different parts of the container. From this about 300 g of biscuits shall be taken for testing general requirements. This 300g of biscuits shall be divided into three equal parts, one for the purchaser, another for the vendor and the third for the referee. These biscuit samples shall be packed in airtight dry containers and labelled with particulars given in C.1.

C.3.3 Preparation of composite sample

C.3.3.1 The composite sample shall be prepared from the remaining 300 g of biscuits from each selected container, after the sample for general requirements is taken out as given in C.3.3.1.1 to C.3.3.1.3.

C.3.3.1.1 Plain biscuits — Grind the sample as quickly as possible.

C.3.3.1.2 Coated and filled biscuits — The cream, caramel, chocolate, marshmallow, jam, jelly or any other filling between biscuits should be removed by gentle scraping, before powdering the sample.

C.3.3.1.3 The removed fillers and coating materials should be ground to form homogenous mixture

NOTE1 Powdered part of the biscuits should be thoroughly mixed with scraped fillers or coating that were removed during powdering

NOTE2 Biscuits are highly hygroscopic. Therefore preparation samples should be done very quickly, preferably in a dry place.

C.3.3.2 A small but approximately equal quantity of the material (see C.3.3.1) shall be taken from the powdered sample of each selected container and mixed thoroughly so as to form a composite sample weighing not less than 200 g. This sample shall be divided approximately into three equal parts, one for the purchaser, another for the vendor and the third for the referee. These parts shall be transferred to clean, dry and airtight containers, which are then sealed with all the particulars as given in C.1. The sample in each such sealed container shall constitute an individual test sample. These

individual samples shall be separated into three identical sets of test samples in such a way

DRAFT FOR PUBLIC REVIEW

that each set has a sample representing each selected container (see Table 2). One of these sets shall be marked for the purchaser, another for the vendor and the third for the referee.

C.3.4 Referee sample

Referee samples shall consist of a set of individual biscuit samples (see C.3.2) marked for general requirements, a composite sample (see C.3.3.2) and a set of individual test samples shall bear the seals of the purchaser and the vendor. These shall be kept at a place agreed to between the two.

C.4 Number of tests

C.4.1 Biscuits selected according to C.3.2 shall be tested for general requirements.

C.4.2 The test for moisture shall be conducted individually on each of the samples constituting a set of individual test samples (see C.3.3.2).

C.4.3 Tests for the determination of acid insoluble ash and acidity of extracted fat shall be conducted on the composite sample (see C.3.3.2).

C.5 Criteria for conformity

A lot shall be declared as conforming to the requirements of the specification for biscuit when the following criteria are satisfied:

- a) in the case of general requirements, biscuits shall satisfy the requirements as given in 4.1;
- b) in the case of moisture, each of the test results as obtained from individual dual test samples (see C.4.2) shall be less than or equal to 6.0 % (see Table 1).
- c) for acid insoluble ash and acidity of extracted fat. the test results obtained from the composite sample (see C.4.3) shall be less than or equal to 0.05 % and 1.0 % respectively (see Table 1).

Annex D (normative) Determination of acidity of extracted fat

D.1 Apparatus

Soxhlet apparatus, with a 250 mL flat bottom flask

Analytical balance

D.2 Reagents

D.2.1 Petroleum ether, boiling point 40 °C – 80 °C

D.2.2 Benzene-alcohol-phenolphthalein stock solution — To 1 L of distilled benzene add 1 L of alcohol or rectified spirit and 0.4 g of phenolphthalein. Mix the contents well.

D.2.3 Standard potassium hydroxide solution, 0.05 mol/L

D.3 Procedure

Weigh accurately about 10 g of biscuit powder (D.3.3.2) and transfer it to a thimble and plug it from the top with extracted cotton and filter paper. Dry the thimble with contents for 15 min to 30 min at 100 °C in an oven. Take the mass of empty Soxhlet flask. Extract the fat in the Soxhlet apparatus for 3 h to 4 h and evaporate off the solvent in the flask on a water bath. Remove the traces of the residual solvent by keeping the flask in a hot air oven for about half an hour and weigh. Cool the flask and add 50 mL of mixed benzene-alcohol-phenolphthalein reagent and titrate hydroxide solution taken in a 10 mL microburette.

If the contents of the flask become cloudy, during titration, add another 50 mL of benzene-alcohol-phenolphthalein reagent and continue titration. Make a blank titration of the 50 mL reagent. Subtract from the titre of the fat, the blank titre.

D.4 Calculation

Acidity of extracted fat, (as oleic acid) percent by mass = $\frac{mv}{m} \times 4$.

where

v is the volume of potassium hydroxide solution used in titration after subtracting the blank;

m is the mass in grams of Soxhlet flask containing fat; and

m is the mass in grams of empty Soxhlet flask.

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