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DRAFT EAST AFRICAN STANDARD

Fruits chips and crisps — Specification

EAST AFRICAN COMMUNITY

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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 025, *Processed fruits, vegetables and tubers*.

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DRAFT EAST AFRICAN STANDARD

Fruits chips and crisps— Specification**1 Scope**

This East African Standard specifies the requirements, sampling and test methods for fruit chips and crisps prepared by either deep frying or baking offered for direct consumption or for further processing. It does not apply to dried fruits or crisps which have been produced by drying processes for which other standards apply.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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*

EAS 38, *Labelling of pre-packaged foods — General requirements*

EAS 39, *Code of practice for hygiene in the food and drink manufacturing industry*

EAS 803, *Nutrition labelling — Requirements*

EAS 804, *Claims on food — Requirements*

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

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 763, *Fruit and Vegetable Products - Determination of ash insoluble in hydrochloric acid*

ISO 6633, *Fruits, vegetables and derived products — Determination of lead content — Flameless atomic absorption spectrometric method*

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*

3 Terms and definitions

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 fruit chips

product obtained by slicing or chipping fruit followed by deep frying or baking.

3.2 fruit crisps

thin slices of fruits deep-fried or baked until crispy or crunchy.

4 Requirements

4.1 Basic ingredients

Fruit to be used shall be fresh, sound, clean and at an appropriate level of maturity from any cultivated variety conforming to the characteristics of the fruits and of a quality suitable for human consumption.

Edible oil or fat used for deep frying shall conform to the relevant East African Standards.

4.2 Optional ingredients

These consist of other edible material as may be appropriate to stuffing the product provided it is suitable for human consumption and conform to the relevant standards.

4.3 General requirements

4.3.1 Colour, odour and flavour

Fruit chips and crisps shall have the colour, odour and flavour characteristics of the fruit. They shall be free from off-odour, off-flavour and foreign taste including rancidity and mustiness.

4.3.2 Moulds and insects

Fruit chips and crisps shall be free from moulds and insect infestation when inspected visually.

4.3.3 Extraneous matter

Fruit chips and crisps shall be practically free from all extraneous materials

4.4 Specific requirements

Fruit chips and crisps shall comply with the specific requirements in Table 1 when tested in accordance with the methods specified therein

Table 1 — Specific requirement for fruit chips and crisps

Characteristic	Requirement		Method of test
	Chips	Crisps	
Moisture, % (m/m), max	[5] [10]	5	Annex A
Acid insoluble ash, % (m/m), (on dry basis), max.	0.1	0.1	ISO 763
Free fatty acids, %, by mass on dry weight basis, max.	0.5	0.5	[ISO 660] [Annex B]
Peroxide value, meq/oxygen per gram	0.5	0.5	AOAC 965.33

5 Food additives

Fruit chips and crisps may contain only permitted additives in accordance with CXS 192.

6 Contaminants

6.1 Pesticide residues

Fruit chips and crisps shall comply with the pesticide maximum residue limits provided by the Codex Alimentarius Commission.

6.2 Heavy metals

Lead (Pb) in fruit chips and crisps, when tested in accordance with ISO 6633 shall not exceed 0.1 mg/kg.

6.3 Mycotoxins

When determined in accordance with ISO 16050, the maximum content of aflatoxins in fruit chips and crisps shall not exceed 10 µg/kg for total aflatoxins and 5 µg/kg for aflatoxin B₁

7 Hygiene

7.1 Fruit chips and crisps shall be produced and handled under hygienic conditions in accordance with EAS 39.

7.2 Fruit chips and crisps shall comply with the microbiological limits given in Table 2 when tested in accordance with the test methods specified therein.

Table 2 – Microbiological limits for fruit chips and crisps

Microorganism	Limit	Test method
Total plate count, cfu/g, max.	10 ³	ISO 4833-1
Yeast and moulds, cfu/g, max.	10 ²	ISO 21527-2
<i>Escherichia coli</i> , MPN/g.	Absent	ISO 7251
Salmonella, /25 g	Absent	ISO 6579-1

8 Packaging

Fruit chips and crisps shall be packaged in food grade material that ensures the integrity and safety of the product.

9 Labelling

9.1 In addition to the labelling requirements of EAS 38, the following information shall be legibly and indelibly marked or labeled:

- a) name of the product as "X chips or X crisps", where "X" is the name of the fruit used.
- a) date of manufacture;

- b) best before;
- c) country of origin;
- d) name and address of manufacturer;
- e) net content in metric units;
- f) lot identification;
- g) list of ingredients in descending order

9.2 Nutritional labelling, nutrition and health claims may be made in accordance with EAS 803, EAS 804 and EAS 805.

10. Sampling

Sampling shall be done in accordance with ISO 874

Annex A (normative)

Determination of the moisture content

A.1 Procedure

A.1.1 Weigh accurately 10 g of the material in a suitable moisture dish previously dried in an electric oven and weighed. Place the dish in an electric oven maintained at $105\text{ °C} \pm 1\text{ °C}$ for 5 h. Cool the dish in a desiccator and weigh with the lid on. Repeat the process of heating, cooling and weighing at half-hour intervals until the loss in weight between two successive weighing is less than 1 mg.

A.1.2 Record the lowest weight obtained

A.2 Calculation and expression of results

The moisture, expressed as percent by mass, shall be calculated as follows:

$$\frac{(M_1 - M_2) \times 100}{M_1 - M_3}$$

where,

M_1 is the mass, in grams, of the dish and sample before drying;

M_2 is the mass, in grams, of the dish and sample after drying;

M_3 is the mass, in grams, of the dish only.

Annex B (normative)

Determination of acidity of extracted fat

B.1 Reagents

B.1.1 Apparatus

Soxhlet apparatus, with a 250 mL flat bottom flask

B.1.2 Reagents

- a. Petroleum ether, boiling point 40 °C – 80
- b. 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.
- c. Standard potassium hydroxide solution, 0.05 mol/L

B.2 Procedure

Weigh accurately about 10 g of sample (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.

B.3 Calculation

Acidity of extracted fat, (as oleic acid) percent by mass = $\frac{mv}{M} \times 100$

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.

