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DRIED SWEET POTATO CHIPS – SPECIFICATION

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B.P.: 14966 Yaoundé – CAMEROUN – Tél: 6992 257 777 / Fax.: (237) 222 22 64 96
E-mail : enquetepublique@anor.cm – www.anor.cm/enquetes-publiques

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Dried sweet potato chips — Specification



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ARSO Central Secretariat
International House 3rd Floor
P. O. Box 57363 — 00200 City Square
NAIROBI, KENYA

Tel. +254-20-2224561, +254-20-3311641, +254-20-3311608

E-mail: arso@arso-oran.org
Web: www.arso-oran.org

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ARSO Central Secretariat
International House 3rd Floor
P.O. Box 57363 — 00200 City Square
NAIROBI, KENYA

Tel: +254-20-2224561, +254-20-3311641, +254-20-3311608

E-mail: arso@arso-oran.org
Web: www.arso-oran.org

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Introduction

During bumper harvests, farmers often sell sweet potatoes at throw-away prices. Losses after harvesting are high due to perishing. In some communities, sweet potatoes are preserved for the dry season by sun-drying to make *amukeke* – dried sweet potato chips. The following rationale is used for dried sweet potato chips:

- (i) Any sweet potato variety can be dried to make chips, which can then be milled into flour.
- (ii) Dried sweet potato chips can be stored for up to six months when packaged in airtight, strong, black plastic bags.
- (iii) Sweet potato flour is used to make doughnuts and pancakes.
- (iv) Flour made from the chips can also be used to make high-value flours by mixing with millet, maize or soybean flour. These mixed flours are used to make porridge and baby foods, which are easily digestible.
- (v) Some bakeries are already using new flour mixes to make bread and cakes.
- (vi) The poultry feed industry is showing interest in using orange-fleshed chips in their feeds to improve yolk colour and vitamin A content of eggs.

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Dried sweet potato chips — Specification

1 Scope

This African Standard specifies the requirements and methods of sampling and test for dried sweet potato chips intended for human consumption.

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.

ARS 53, *General principles of food hygiene — Code of practice*

ARS 56, *Prepackaged foods — Labelling*

ARS 826, *Fresh sweet potatoes — Specification*

CODEX Stan 192, *General standard for food additives*

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

ISO 712, *Cereals and cereal products — Determination of moisture content — Reference method*

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

ISO 5498, *Agricultural food products — Determination of crude fibre content — General method*

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

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 feedstuffs — 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*

ISO 24333, *Cereals and cereal products — Sampling*

3 Definitions

For the purpose of this standard the following definitions apply.

3.1

dried sweet potato chips

pieces of sweet potatoes obtained by slicing or chipping peeled sweet potatoes followed by drying them with or without additional processing

3.2

food grade material

materials that are free from substances that are hazardous to human health

3.3

foreign matter

organic and inorganic materials (such as sand, soil, glass) other than extraneous matter in the dried chips

3.4

extraneous matter

organic matter of sweet potato origin other than dried sweet potato chips

4 Essential quality and composition requirements

4.1 Raw materials

The raw material shall be fresh sweet potatoes that comply with the requirements of ARS 826. The fresh sweet potatoes from which the dried sweet potato chips are prepared shall be of the following conditions in addition to the requirements specified in ARS 826:

- a) mature;
- b) free from diseases and pests;
- c) not highly fibrous; and
- d) not spongy.

4.2 Finished product

Dried sweet potato chips shall be safe and suitable for human consumption and shall conform to the following requirements:

- a) The taste and odour of dried sweet potato chips shall be typical of the product;
- b) The colour of the chips shall be characteristic of the variety;
- c) Dried sweet potato chips shall be free from extraneous and foreign matter; and
- d) The dried sweet potato chips shall not be mouldy.

4.3 Composition requirements for dried sweet potato chips

Dried sweet potato chips shall conform to the compositional requirements in Table 1.

Table 1 — Compositional requirements for dried sweet potato chips

S/N	Parameter	Requirement	Method of test
1	Moisture content, by mass, %, max.	12.0	ISO 712
2	Total ash on dry matter basis %, max.	3.0	ISO 2171
3	Acid insoluble ash, on dry matter basis, %, max.	0.15	Annex A
4	Crude fibre on dry matter basis %, max.	2.0	ISO 5498

5 Food additives

Food additives may be used in the preparation of dried sweet potato chips in accordance with CODEX Stan 192.

6 Contaminants

6.1 Pesticide residues

Dried sweet potato chips shall conform to those maximum residue limits for pesticides established by the Codex Alimentarius Commission for this product.

6.2 Other contaminants

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

7 Hygiene

7.1 The product covered by the provisions of this standard shall be processed, packaged, stored and transported under hygienic conditions conforming to ARS 53.

7.2 Dried sweet potato chips shall conform to the requirements for microbiological limits in Table 2.

Table 2 — Microbiological limits for dried sweet potato chips

S/N	Micro organisms	Requirement	Method of test
1	<i>Escherichia coli</i> cfu/g, max.	<1	ISO 7251
2	<i>Salmonella</i> , 25 g, max.	absent	ISO 6579
3	Yeasts and moulds, cfu/g, max.	10 ⁴	ISO 21527-1

8 Packaging

8.1 Dried sweet potato chips shall be packaged in food grade materials that will safeguard the hygienic, nutritional and organoleptic qualities of the product.

8.2 The net weight of the packages for dried sweet potato chips may be required to meet the relevant regulations of the destination country.

9 Labelling

9.1 In addition to the requirements of ARS 56, the following specific requirements shall apply and shall be **legibly** and **indelibly** marked:

- name of the product to be shown on the label shall be "dried sweet potato chips";
- name and location address of the manufacturer or packer shall be declared;
- country of origin of the product;
- lot identification (batch number);
- net weight in metric units;
- expiry date;
- date of manufacture;
- the words "Human food";
- storage conditions such "store in cool dry place"; away from contaminants; and
- Declaration stating "salted" or "unsalted".

9.2 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 package.

10 Sampling

Sampling of dried sweet potato chips shall be done in accordance with ISO 24333.

11 Criteria for conformity

A lot shall be declared as conforming to this standard if samples inspected or analysed for quality requirements conform to the provisions of this standard.

Annex A (normative)

Determination of acid insoluble ash

A.1 Reagent

A.1.1 Dilute Hydrochloric Acid — 1:1, prepared from concentrated hydrochloric acid.

A.2 Procedure

A.2.1 Weigh accurately about 2 g of the dried material in a tared porcelain, silica or platinum dish. Ignite with a meker burner for about 1 hour. Complete the Ignition by keeping in a muffle furnace at 500 °C to 570 °C until grey ash results.

Cool and filter through whatman filter paper No. 42 or its equivalent. Wash the residue with hot water until the washings are free from chlorides as tested with silver nitrate solution and return the filter paper and residue to the dish. Keep it in an electric air oven maintained at 135 ± 2 °C for about 3 hrs. Ignite the dish again for about 30 minutes, cool and weigh. Repeat this process till the difference between two successive weighings is less than 1 mg. Note the lowest weight.

A.3 Calculation

A.3.1 Acid insoluble ash, per cent by weight

$$= \frac{100(M_2 - M)}{M_1 - M}$$

where,

M_2 = the lowest weight, in g, of the dish with the acid insoluble ash;

M = weight, in g, of the empty dish; and

M_1 = weight, in g, of the dish with the dried product taken for the test.

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