

DRAFT UGANDA STANDARD

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Dried cassava chips — Specification



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The Executive Director
Uganda National Bureau of Standards
P.O. Box 6329
Kampala
Uganda
Tel: +256 417 333 250/1/2
Fax: +256 414 286 123
E-mail: info@unbs.go.ug
Web: www.unbs.go.ug

National foreword

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- (a) a member of International Organisation for Standardisation (ISO),
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The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of representatives of consumers, traders, academicians, manufacturers, government and other stakeholders.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

This Draft Uganda Standard, DUS DARS 839: 2024, *Dried cassava chips — Specification*, is identical with and has been reproduced from an African Standard, DARS 839: 2024, *Dried cassava chips — Specification*, and adopted as a Uganda Standard.

The committee responsible for this document is Technical Committee UNBS/TC 204, *Fruits, vegetables, tubers and processed products*.

This standard will cancel and replace US EAS 739: 2010, *Dried cassava chips — Specification*.

Wherever the words, "African Standard" appear, they should be replaced by "Uganda Standard".

Dried cassava chips — Specification



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Foreword

The African Organization for Standardization (ARS) is an African intergovernmental organization made up of the United Nations Economic Commission for Africa (UNECA) and the Organization of African Unity (AU). One of the fundamental mandates of ARSO is to develop and harmonize African Standards (ARS) for the purpose of enhancing Africa's internal trading capacity, increase Africa's product and service competitiveness globally and uplift the welfare of African communities. The work of preparing African Standards is normally carried out through ARSO technical committees. Each Member State interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, Regional Economic Communities (RECs), governmental and non-governmental organizations, in liaison with ARSO, also take part in the work.

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This African Standard was prepared by the ARSO Project Committee, Cassava value chain products (ARSO/PC 02).

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

Tel. +254-20-2224561, +254-20-311641, +254-20-311608

Fax: +254-20-218792

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, +254-20-311641, +254-20-311608
Fax: +254-20-218792

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

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Introduction

The potential disadvantages of cassava roots are their bulk and rapid perishability, their low protein content and the presence of cyanide in all root tissues. Through simple processing, the disadvantages of bulk and perishability can be overcome: a stable product is reached when moisture content falls below 14%. Natural drying is widely used to achieve this objective. Drying also permits the elimination of most of the cyanide from root tissues. The dried cassava product thus has only one disadvantage with respect to other carbohydrate feed sources: low protein content. This can be overcome through price competitiveness.

For export markets, where transportation over thousands of kilometres is necessary, further processing to produce high density pellets is carried out to minimize transport costs.

African Standard under Review

Dried cassava chips — Specification

1 Scope

This Draft African Standard specifies requirements, sampling and test methods for dried cassava chips intended for human consumption.

2 Normative references

The following referenced documents 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.

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

ARS 56, *Prepackaged foods — Labelling*

ARS 835, *Fresh sweet cassava — Specification*

ARS 844, *Cassava and cassava products — Determination of total cyanogens — Enzymatic assay method*

CXS 192, *General standard for food additives*

CXS 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 874, *Fresh fruits and vegetables — Sampling*

ISO 4833, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of microorganisms — Colony-count technique at 30 degrees C*

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 6633, *Fruit and vegetable products — Determination of lead content — Flameless AAS method*

ISO 6634, *Fruit and vegetable Products — Determination of arsenic content — Silver diethyldithiocarbamate spectrophotometric 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 10520, *Native starch — Determination of starch content — Ewers polarimetric method*

ISO 16050, *Foodstuffs — Determination of aflatoxin B₁, and the total content of aflatoxin B₁, B₂, G₁ and G₂ in cereals, nuts and derived products — High performance liquid chromatographic method*

ISO 21527-2 *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*

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1

dried cassava chips

pieces of fresh cassava roots obtained by slicing or chipping peeled cassava root and drying them with or without additional processing

3.2

filth

impurities of animal origin, including dead insects

3.3

food grade material

material which safeguard the hygienic, nutritional, technological and organoleptic qualities of the products

3.4

foreign matter

all organic and inorganic materials (such as sand, soil, glass)

4 Requirements

4.1 Raw materials

The raw material shall be fresh sweet cassava roots complying with ARS 835. The cassava storage roots from which the dried cassava chips are prepared shall be of the following conditions:

- a) Mature;
- b) free from diseases and pests;
- c) not be woody; and
- d) not be spongy.

4.2 General requirements

Dried cassava chips shall be safe and suitable for human consumption and shall comply with the following requirements:

- a) The taste and odour of dried cassava chips shall be typical of the variety.
- b) The colour of the chips shall be characteristic of the variety.

NOTE The colour of cassava is usually white, creamy or yellow. The yellow-coloured varieties are normally rich in carotenes.

- c) Dried cassava chips shall be free from filth, foreign matter and extraneous matter.
- d) The cassava chips shall not appear mouldy.

4.3 Specific requirements

Dried cassava chips 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 dried cassava chips

S/N	Parameter	Requirement	Test method
i.	Moisture content, % m/m, max.	12.0	ISO 712
ii.	Acid insoluble ash, on dry matter basis, %, max.	0.15	Annex A
iii.	Crude fibre on dry matter basis %, max.	3.0	ISO 5498
iv.	Hydrogen cyanide mg/kg, dry matter basis, max.	10.0	ARS 844:2013
v.	Starch content, % m/m, min.	75.0	ISO 10520

5 Food additives

Food additives may be used in the preparation of dried cassava chips in accordance with CXS 192.

6 Contaminants

6.1 Pesticide residues

Dried cassava chips shall conform to maximum residue limits for pesticide residues established by the Codex Alimentarius Commission for this commodity.

6.2 Other contaminants

6.2.1 Dried cassava chips shall comply with the maximum levels of CXS 193.

6.2.2 The dried cassava chips shall not contain more than 10 micrograms per kilogram aflatoxin of which not more than 5 micrograms per kilogram may be aflatoxin B1 when tested in accordance with ISO 16050.

6.2.3 The product shall be free from microorganisms which present a hazard to health (see Table 4).

6.2.4 Metal contaminants shall have limits as specified by the Codex Alimentarius Commission in addition to the limits given in Table 3 when tested in accordance with the test methods specified therein.

Table 3 — Maximum limits for metallic contaminants for dried cassava chips

S/N	Contaminant	Maximum level (mg/kg)	Test method
i.	Arsenic	0.1	ISO 6634
ii.	Lead	1.0	ISO 6633

7 Hygiene

7.1 The product covered by the provisions of this standard shall be prepared and handled in accordance with ARS 53 and shall comply with the microbiological limits specified in Table 2 when tested in accordance with the test methods specified therein.

Table 4 — Microbiological limits for dried cassava chips

S/N	Micro-organism	Requirement	Test method
i.	Total plate count, cfu/g	10 ⁵	ISO 4833
ii.	<i>Escherichia coli</i> , cfu/g, max.	Absent	ISO 7251

iii.	<i>Salmonella</i> , 25g, max.	Absent	ISO 6579
iv.	Yeasts and moulds, cfu/g, max.	10 ³	ISO 21527-2

7.2 To the extent possible in good manufacturing practice, the product shall be free from objectionable matter.

7.3 When tested by appropriate methods of sampling and examination, the product:

- a) shall be free from microorganisms in amounts which may present a hazard to health; and
- b) shall not contain any substance originating from microorganisms in amounts which may represent a hazard to health.

7.4 During handling, storage and transportation, effective measures must be taken to prevent cross contamination with chemicals, microbial or physical contaminants.

8 Packaging

8.1 Dried cassava chips shall be packaged in food grade material which will safeguard the hygienic, physical, nutritional and organoleptic qualities of the product.

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

9 Marking and labelling

9.1 In addition to the requirements of ARS 56, dried cassava chips shall be legibly and indelibly labelled with the following information:

- a) Common name of the product 'Dried Cassava Chips';
- b) Name, and physical address of the manufacturer/ distributor and /or trade name/ brand name;
- c) Declaration of preservative by common name or international number if any;
- d) Date of manufacture and expiry date;
- e) The words "Human food, store in cool dry place"; away from contaminants;
- f) Lot / batch identification in code or clear;
- g) Country of origin;
- h) The net weight in metric units; and
- i) Instructions on disposal of used package.

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 packages.

10 Sampling

Sampling shall be done in accordance with ISO 874.

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 h. 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 h. Ignite the dish again for about 30 min, 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 is the lowest weight, in g, of the dish with the acid insoluble ash;

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

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

Bibliography

EAS 739:2022, *Dried cassava chips — Specification*

Nigerian Industrial Standard, NIS 343:2004, *Standard for cassava chips*

African Standard under Review

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