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High quality cassava flour — Specification



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National foreword

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This Draft Uganda Standard, DUS DARS 840: 2024, *High quality cassava flour — Specification*, is identical with and has been reproduced from an African Standard, DARS 840: 2024, *High quality cassava flour — 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 779: 2012, *High quality cassava flour — Specification*.

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

High quality cassava flour — 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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Introduction

High quality cassava flour (HQCF) can be used as an alternative for starch and other imported materials like wheat flour in a number of industrial undertakings. High quality cassava flour can be used in the production of adhesives for paperboard manufacture, as an extender for plywood glues, as a source of starch in textile sizing and as a raw material for the production of glucose syrups, industrial alcohol and bakery products.

The processing of cassava into high quality cassava flour involves peeling, washing, grating/slicing/chipping, pressing, disintegration, sifting, drying, milling, screening, packaging and storage.

High quality cassava flour can be prepared from both sweet and bitter varieties.

High quality cassava flour — Specification

1 Scope

This Draft African Standard specifies requirements, sampling and test methods for high quality cassava flour, which is obtained from the processing of cassava (*Manihot esculenta* Crantz), 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 471, *Food grade salt — 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 1666, *Starch — Determination of moisture content — Oven-drying method*

ISO 1842, *Fruit and vegetable products — Determination of pH*

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 21527-1, *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*

3 Terms and definitions

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

3.1

High quality cassava flour (HQCF)

unfermented cassava flour prepared from fresh mature cassava roots through a process of sorting, peeling, chipping or grating followed by dewatering, drying, milling, sifting and packaging

3.2

food grade material

material that is free from substances that are hazardous to human health

3.3

specks

tiny marks, spots or piece of any other object present in the flour

3.4

extraneous matter

organic matter of cassava origin other than high quality cassava flour

3.5

foreign matter

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

4 Requirements

4.1 Raw materials

HQCF shall be produced from selected fresh mature cassava roots or from high quality intermediate products such as chips and grits shall be processed within 24 h.

4.2 General requirements

High quality cassava flour shall be:

- a) practically free from extraneous matter;
- b) free of off flavours and odours;
- c) practically free from any living insects and foreign matter;
- d) safe and suitable for human consumption; and
- e) of colour characteristic of the variety.

4.3 Physical properties

Testing for particle size shall be done in accordance with ISO 3588. High quality cassava flour shall have the following physical properties:

- a) Not less than 95 % by mass of high-quality cassava flour shall pass through a sieve of 250 µm mesh screen; and
- b) Extraneous matter shall not be more than 10 specks/100 cm².

4.4 Specific requirements

High quality cassava flour 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 high quality cassava flour

S/N	Parameter	Requirement	Test method
i.	Total acidity, %, by mass, max.	0.25	AOAC 942.15
ii.	pH	5.5 – 7.0	ISO 1842
iii.	Acid insoluble ash, % m/m on dry matter basis, max.	0.35	Annex A
iv.	Cyanide content, mg/kg, max.	10.0	ARS 844:2013
v.	Starch content by mass, %, by mass, min.	60.0	ISO 10520
vi.	Moisture content, %, by mass, max.	12	ISO 1666
vii.	Crude fiber, %, by mass on dry weight basis, max.	0.2	ISO 5498
viii.	Aflatoxin, Total, ppb	10	ISO 16050
	Aflatoxin, B1, ppb	5	

4.5 Chemical properties

High quality cassava flour shall:

- give a blue-black colouration when tested with iodine; and
- have a pasting temperature less than 75 °C.

5 Food additives

Food additives may be used in the preparation of high-quality cassava flour in accordance with CODEX STAN 192.

6 Contaminants

6.1 Pesticide residues

High quality cassava flour shall comply with the maximum residue limits for pesticide residues established by the Codex Alimentarius Commission for this commodity.

6.2 Other contaminants

High quality cassava flour shall comply with the maximum levels given in CODEX STAN 193 and limits given in Table 3 when tested in accordance with the test methods specified therein.

Table 3 — Maximum limits for metallic contaminants for high quality cassava flour

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 2 — Microbiological limits for high quality cassava flour

S/N	Micro-organism	Requirement	Test method
i.	Total plate count, cfu/g, max.	10 ⁴	ISO 4833
ii.	<i>Escherichia coli</i> , cfu/g, max.	Absent	ISO 7251
iii.	<i>Salmonella</i> , 25 g, max.	Absent	ISO 6579
iv.	Yeasts and moulds, cfu/g, max.	10 ²	ISO 21527-1

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

8 Packaging

8.1 High quality cassava flour 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 high quality cassava flour 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, high quality cassava flour shall be legibly and indelibly labelled with the following information:

- a) Common name of the product "High quality cassava flour";
- 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;
- e) The words " Food for human consumption";
- f) Lot / batch identification in code or clear;
- g) Expiry date;
- h) Country of origin;
- i) The net weight in metric units; and
- j) 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 24333.

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 779:2012, *High quality cassava flour — Specification*

