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## Cassava flour — Specification

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## National foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 210, of the Laws of Uganda, as amended. UNBS is mandated to co-ordinate the elaboration of standards and is

- (a) a member of International Organisation for Standardisation (ISO),
- (b) a contact point for the WHO/FAO Codex Alimentarius Commission on Food Standards, and
- (c) the National Enquiry Point on TBT Agreement of the World Trade Organisation (WTO).

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 838: 2024, *Cassava flour — Specification*, is identical with and has been reproduced from an African Standard, DARS 838: 2024, *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 740: 2010, *Cassava flour — Specification*.

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

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**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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This African Standard was prepared by the ARSO Technical Harmonization Committee on Agriculture and Food Products (ARSO/THC 02).

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## **Introduction**

The development of this standard has been necessitated by the increasing role of cassava and cassava products for food security and commercial concerns in Africa. The standard intends to safeguard the interests of the stakeholders and also guarantee enhanced safety of the consumers.



## Cassava flour — Specification

### 1 Scope

This Draft African Standard specifies requirements, sampling and test methods for 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 844:2016, *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 3588, *Spices and condiments — Determination of degree of fineness of grinding — Hand sieving method (Reference 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 15914, *Animal feeding stuffs — Enzymatic determination of total starch content*

ISO 24333, *Cereals and cereal products — Sampling*

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*

ISO 4833, *Microbiology of the food chain -- Horizontal method for the enumeration of microorganisms -- Part 1: Colony count at 30 degrees C by the pour plate technique*

ISO 7251, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of presumptive Escherichia coli — Most probable number technique*

### 3 Terms and definitions

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

#### 3.1

## **cassava flour**

product prepared from dried cassava chips or paste by pounding, grinding or milling followed by sifting to separate the fibre from the flour

### **3.2**

#### **detoxification**

process of reducing cyanide on a fresh weight basis to acceptable level described under 4.2

### **3.3**

#### **filth**

impurities of animal origin (including dead insects)

### **3.4**

#### **food grade material**

material which will safeguard the hygienic, nutritional, technological and organoleptic qualities of the product. Material that will not transfer non-food chemicals into the food and contains no chemicals which would be hazardous to human health.

Packaging material made of substances which are safe and suitable for the intended use and which will not impart any toxic substance or undesirable odour to the product.

### **3.5**

#### **foreign matter**

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

### **3.6**

#### **practically free**

product without defects in excess of those that can be expected to result from, and be consistent with good cultural and handling practices employed in the production and marketing of the fresh cassava

## **4 Requirements**

### **4.1 Raw materials**

The raw material shall be dried cassava chips, paste, crumbs or cassava roots conforming to the relevant African standards.

### **4.2 General requirements**

Cassava flour shall be:

- a) practically free from filth;
- 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) have colour characteristic of the variety.

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

### **4.3 Specific requirements**

Cassava flour shall comply with the specific requirements given in Table 1 when tested in accordance with the test methods specified therein.

Table 1 — Compositional requirements for cassava flour

S/N	Parameter	Requirement	Test method
i.	Moisture content, % by mass, max.	13.0	ISO 712
ii.	Acid insoluble ash, % m/m, dry matter basis max.	0.60	Annex A
iii.	Starch (on dry basis), % by mass, Min	60.0	ISO 15914
iv.	Hydrogen cyanide, mg/kg or ppm	10.0	ARS 844:2016
v.	Total acidity, % m/m, max	1.0	Annex B

#### 4.4 Specific quality factors

##### 4.4.1 Particle size

Not less than 90 % shall pass through a 600 µm sieve for “fine cassava flour” and not less than 90 % shall pass through a 1200 µm sieve for “coarse cassava flour”. Testing for particle size shall be done in accordance with ISO 3588.

Cassava flour intended for baking purposes shall have particle size of which not less than 90 % shall pass through a 250 µm sieve.

##### 4.4.2 Hydrocyanic acid content

When tested in accordance with ARS 844:2016, the total hydrocyanic acid content of cassava flour shall not exceed 10 mg/kg.

### 5 Food additives

Food additives may be used in the preparation of cassava flour in accordance with CXS 192. Cassava flour may be fortified with vitamins or micronutrients if so permitted.

### 6 Contaminants

#### 6.1 Pesticide residues

Cassava flour shall conform to maximum residue limits for pesticide residues established by the Codex Alimentarius Commission for this commodity.

#### 6.2 Heavy metals

Cassava flour shall comply with those maximum levels for heavy metal contaminants established by the Codex Alimentarius Commission for this commodity.

#### 6.3 Other contaminants

Cassava flour shall comply with those maximum limits for other contaminants established in CXS 193.

### 7 Hygiene

Cassava flour shall be prepared and handled in a hygienic manner in accordance with ARS 53 and shall comply with the microbiological limits given in Table 2.

**Table 2 — Microbiological limits for cassava flour**

S/N	Micro-organism	Requirement	Test method
i.	Total viable count, cfu/g, max.	10 <sup>5</sup>	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 <sup>3</sup>	ISO 21527-2

## **8 Packaging**

**8.1** Cassava flour shall be packaged in food grade material

**8.2** The net weight of the packages for 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, cassava flour shall be legibly and indelibly labelled with the following information:

- (a) Name of the product shall be “Cassava flour” and the terms “Fine” or “Coarse”, in accordance with 4.4, shall appear in close proximity to the name of the product;
- (b) Name, location and address of the manufacturer and/or packer shall be declared and/or brand name / trade name.;
- (c) Date of manufacture;
- (d) Lot identification;
- (e) Best before date;
- (f) Country of origin shall be declared;
- (g) Net contents shall be declared by weight in metric (‘Système International’) units;
- (h) The statement ‘food for human consumption’;
- (i) Storage instructions; 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  $135 \pm 2$  °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.

**Annex B**  
(normative)

**Determination of total acidity (water extract method)**

Shake 18 g of the sample with 200 ml of CO<sub>2</sub> free water in a conical flask and place in a water bath at 40 C for 1 h (with the flask loosely stoppered). Filter and titrate 100 ml of the clear filtrate with 0.05 M NaOH solution with phenolphthalein indicator. The acidity of the water extract increases during storage. 1 ml of 0.1 M NaOH = 0.009 g CH<sub>2</sub>H<sub>6</sub>O<sub>3</sub> (lactic acid).

### **Bibliography**

CODEX STAN 176:1989 (Rev. 1995), *Standard for Edible Cassava Flour*

EAS 740:2010, *Cassava flour — Specification*

Nigerian Industrial Standard, NIS 344:2004, *Standard for edible cassava flour*

Malawi Standard, MS 349:2002, *Edible cassava flour*



