**Fufu flour — Specification**

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This African Standard was prepared by ARSO PC 02 Cassava value chain products

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## AFRICAN STANDARD

**Fufu flour — Specification**

# 1 Scope

This Draft African Standard specifies the requirements, sampling and test methods for cassava, plantain, cocoyam and yam fufu flours produced from fresh, matured and sound edible cassava (Manihot esculenta Crantz), plantain (Musa paradisiaca AAB), cocoyam (Xanthosoma species) and yam (Discorea species) respectively. It is intended to be used for the preparation of fufu.

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 1, *General Standard for the Labelling of Prepackaged Foods*

CODEX STAN 192, *General Standard for Food Additives*

CODEX STAN 193, *General Standard for Contaminants and Toxins in Food and Feed*

ARS 53 2016, *General principles of food hygiene – Code of practice*

ISO 776, Pulps - *Determination of acid-insoluble ash*

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

ISO 3588, *Spices and condiments - Determination of degree of fineness of grinding – Hand sieving method (Reference method)*

[ISO 5498, *Agricultural food products - Determination of crude fibre content - General method*](https://www.iso.org/contents/data/standard/01/15/11544.html)

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

3 Terms and definitions

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

**3.1**

**adulteration**

addition of substance(s) to the product which may render it unsafe for consumption or the quality being compromised

**3.2**

**cassava fufu flour**

product prepared from predominantly fresh peeled edible cassava pieces that is precooked, disintegrated and dried. The dried product is milled, sifted to separate the fibre and blended with cassava starch if necessary. This flour is reconstituted into paste as fufu

**3.3**

**cocoyam fufu flour**

product prepared from predominantly fresh peeled edible cocoyam pieces that is precooked, disintegrated and dried. The dried product is milled, sifted to separate the fibre and blended with cassava and/or potato starch if necessary. This flour is reconstituted into paste as fufu

**3.4**

**foreign matter**

all matter other than wholesome cassava, plantain, cocoyam or yam flour and it includes sand, stones, dirt, impurities of animal origin including dead insects; glass, metallic and plastic pieces and other vegetative materials such as grass and wood

**3.5**

**fufu**

product prepared from cooked, cassava, plantain, cocoyam or yam individually, or mixtures of cassava with plantain/cocoyam/yam by pounding (or other means of processing) into a smooth thick glutinous paste. It is usually served with soup

**3.6**

**insect infestation**

presence of live adult insects, or their eggs and/or other developmental stages

**3.8**

**plantain fufu flour**

product prepared from predominantly fresh peeled edible plantain pieces that is precooked, disintegrated and dried. The dried product is milled, sifted to separate the fibre and blended with cassava and/or potato starch if necessary. This flour is reconstituted into paste as fufu.

**3.9**

**yam fufu flour**

product prepared from predominantly fresh peeled edible yam pieces that is precooked, disintegrated and dried. The dried product is milled, sifted to separate the fibre and blended with cassava and/or potato starch if necessary. This flour is reconstituted into paste as fufu.

4 Requirements

**4.1** **Raw materials**

The raw material shall be fresh, mature, sound, and clean fleshed/peeled cassava, plantain, cocoyam or yam pieces. The raw material shall be free from rot, pest infestation, other diseases, and any foreign or extraneous materials.

**4.2 General requirements**

Fufu flours shall be well dried. The colour shall be characteristic of the product and shall have an agreeable flavour typical of well-dried fufu flour. It shall be free from bitter after taste, burnt aroma and objectionable odour. It shall be free from adulteration, insect infestation and any foreign matter. It shall be free from pathogenic organisms.

**4.3 Blends for fufu flour**

The blends for fufu flour may be as indicated in Table 1 when tested in accordance with the test methods specified therein.

**Table 1 — Blends for fufu flour**

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of fufu flour** | **Typical composition** | **Predominant ingredient** | **Test method** |
| Cassava | Cassava flour, potato starch | Cassava flour | Annex A |
| Plantain | Plantain flour, cassava or potato starch | Plantain flour | Annex A |
| Cocoyam | Cocoyam flour, cassava or potato starch | Cocoyam flour | Annex A |
| Yam | Yam flour, cassava or potato starch | Yam flour | Annex A |

**4.4** **Specific requirements**

Fufu flour shall comply with the specific requirements specified in Table 2 when tested in accordance with the test methods specified therein.

**Table 2 — Specific requirements for fufu flour**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Parameter** | **Requirement** | | | | **Test method** |
| **Cassava** | **Plantain** | **Cocoyam** | **Yam** |
|  | Moisture content, % m/m max. | 8.0 | 8.0 | 8.0 | 8.0 | AOAC 925.10 |
|  | Crude fibre content, on dry basis, % m/m max. | 2.0 | 2.0 | 2.0 | 2.0 | ISO 5498 |
|  | Acid insoluble ash on dry matter basis, % m/m max. | 0.15 | 0.05 | 0.15 | 0.15 | ISO 776 |
|  | Hydrocyanic acid content, mg/kg max. | 2.0 | 2.0 | 2.0 | 2.0 | AOAC 915.03 |
|  | Particle size | Not less than 90 % of fufu flour shall pass through a 0.60 mm sieve. | | | | ISO 3588 |

**4.5 Food additives**

Food additives maybe used in the preparation of Fufu flour in accordance with food category 06.2.1 CXS 192**.**

**5 Contaminants**

**5.1 Mycotoxins**

Fufu flour shall be free from mycotoxins at levels that are hazardous to health. Fufu flour shall not contain more than 10 μg/kg total aflatoxin of which not more than 5 μg/kg may be aflatoxin B1 when tested in accordance with ISO 16050.

**5.2 Heavy metals**

Fufu flour shall not contain heavy metals in amounts that may present a hazard to human health and shall not exceed the limits specified in Table 3. Presence of other heavy metals shall comply with the limits set in the appropriate sections of CODEX STAN 193.

**Table 3 — Limits for heavy metals in fufu flour**

|  |  |  |  |
| --- | --- | --- | --- |
| **S/N** | **Element** | **Limit** | **Test method** |
|  | Cadmium (Cd), mg/kg, max. | 0.1 | AOAC 973.34 |
|  | Lead (Pb), mg/kg, max. | 0.1 | AOAC 972.25 |

**5.3 Pesticide residues**

Pesticide residue limits shall be in accordance with limits set by the Codex Alimentarius Commission for the product.

**6 Hygiene**

The fufu flour covered by the provisions of this standard shall be prepared and handled in accordance with ARS 53 and shall comply with the microbiological limits given in Table 4 when tested in accordance with the test methods specified therein.

**Table 4 — Microbiological limits of fufu flour**

|  |  |  |  |
| --- | --- | --- | --- |
| **S/N** | **Microorganism** | **Requirement** | **Test method** |
|  | Total plate count, CFU/g | 104 | ISO 4833-1  ISO 4833-2 |
|  | *Staphylococcus aureus,* CFU/g | 103 | ISO 6888-1  ISO 6888-2  ISO 6888-3 |
|  | *Escherichia coli,* CFU/g | Absent | ISO 16649-2 |
|  | *Salmonella*/25g | Absent | ISO 6579-1 |
|  | Yeast and molds | 103 | ISO 21527 |

7 Packaging

Fufu flour shall be packaged in containers which will safeguard the hygienic, nutritional, technological, and organoleptic qualities of the product. The container shall not permit the absorption of moisture and be airtight.

The packaging material shall be made of substances which are safe and suitable for their intended use.

8 Labelling

The packaged product shall bear a label, with the relevant information specified in the applicable clauses of ARS 56. The following information shall be marked legibly and indelibly on the product:

a) name of product;

b) list of ingredients;

c) net content in SI. units;

d) name and address of manufacturer;

e) country of origin;

f) ‘best before date’ (dd/mm/yy) and storage instructions;

g) batch number or lot identification; and

h) instructions for use.

9 Sampling

Sampling shall be done in accordance with the appropriate sections of ISO 24333.

**Annex A**

(informative)

**Determination of the Predominant Ingredient in Fufu Flours**

**A.1 Preparation of sample**

The fufu shall be prepared from the various fufu flours in accordance with the manufacturer’s instructions for use (as indicated on the product label).

**A.2 Determination**

Sensory analysis of the prepared fufu for the determination of the predominant ingredient shall be done in accordance with the appropriate sensory tests as indicated below and other appropriate sensory methods:

1. ISO 8589 – Sensory analysis – General guidance for the design of test rooms
2. ISO 6658 – Sensory analysis – Methodology – General guidance
3. ISO 8586 – Sensory analysis – General guidelines for the selection, training and monitoring of assessors and expert sensory assessors
4. ISO 8587 – Sensory analysis – Methodology – Ranking

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