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Third edition

DRAFT MALAWI STANDARD

Edible cassava flour – Specification

NOTE: This is a draft Malawi standard and it shall neither be used nor regarded as a Malawi standard

Edible cassava flour – Specification

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FOREWORD

This draft Malawi standard was prepared by the MBS/TC 53, the Technical Committee on *Root and tuber crops and their products*, to provide requirements for edible cassava flour for human consumption.

This draft Malawi standard is a result of the second review of MS 349:2002. The revision of this standard was done in order to align it with the changes which have been made to the base documents.

In preparing this draft standard, reference was made to the following standards:

Codex Standard, CXS 176:1989 Rev. 1995, Amended 2019, *Codex standard for edible cassava flour*, and

African standard, ARS 830: 2014, *Cassava flour – Specification*.

Acknowledgement is made for the use of the information.

TECHNICAL COMMITTEE

This draft Malawi standard was prepared by the MBS/TC 53, the Technical Committee on *Root and tuber crops and their products*, and the following companies, organizations and institutions were represented:

Blantyre City Council;

International Potato Center Malawi;

Lilongwe University of Agriculture and Natural Resources;

Malawi Bureau of Standards;

Ministry of Agriculture, Irrigation and Water Development – Bvumbwe Agricultural Research Station;

Ministry of Industry – Department of Small and Medium Enterprises and Cooperatives

Peoples Trading Centre;

Shoprite Trading Limited;

Tehilah Bakery; and

University of Malawi – The Polytechnic.

NOTICE

This standard shall be reviewed every five years, or earlier when it is necessary, in order to keep abreast of progress. Comments are welcome and shall be considered when the standard is being reviewed.

DRAFT MALAWI STANDARD

Edible cassava flour – Specification

1 SCOPE

This draft Malawi standard specifies the requirements and methods of sampling and test for edible cassava flour which is obtained from the processing of cassava roots (*Manihot esculenta* Crantz) intended for human consumption.

2 NORMATIVE REFERENCES

The following standard contains provisions, which through reference in this text, constitute provisions of this draft Malawi standard. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition of that standard, parties to agreements based on this draft Malawi standard are encouraged to take steps to ensure the use of the most recent edition of the standards indicated below. Information on current valid national and international standards can be obtained from the Malawi Bureau of Standards.

MS 19: *Labelling of prepacked foods – General standard;*

MS 21: *Food and food processing units – Code of hygienic conditions;*

MS 144: *Agricultural food products – Determination of crude fibre content – General method;*

MS 149: *Cereals and milled cereal products – Determination of total ash;*

MS 237: *Food additives – General standard;*

MS 302: *Contaminants and toxins in foods – General standard;*

MS 610: *Cereal and cereal products – Determination of moisture content (Basic reference method);*

MS 624: *Nutritional labelling – Guidelines;*

MS 1330: *Code of practice for the reduction of hydrocyanic acid (HCN) in cassava and cassava products*

MS 1386: *Cassava and cassava products – Determination of total cyanogens – Enzymatic assay method;*

ISO 4832: *Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of coliforms – Colony-count technique*

ISO 4833: *Microbiology of the food chain – Horizontal method for the enumeration of microorganisms;*

ISO 6579: *Methods for the microbiological examination of foods – Part 6: Examination for 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 10520: *Native starch – Determination of starch content – Ewers polarimetric method*

ISO 21527-2: *Methods for the microbiological examination of foods – Part 2: Enumeration of yeast and moulds in foods; and*

ISO 13690: *Cereals, pulses and milled cereal products – Sampling of static batches.*

3 TERMS AND DEFINITIONS

For the purpose of this draft Malawi standard, the following definitions shall apply:

3.1

edible cassava flour

product prepared from dried cassava chips or paste by a pounding, grinding or milling process, followed by sifting to separate the fibre from the flour. In case of edible cassava flour prepared from bitter cassava (*Manihot utilissima Pohl*), detoxification shall be carried out according to MS 1330.

3.2

detoxification

process of reducing cyanide on fresh weight basis to acceptable level as stated in Table 1

3.3

filth

impurities of animal origin (including dead insects)

3.4

food grade material

one that will not transfer non-food chemicals into the food and contains no chemicals which would be hazardous to human health

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 ESSENTIAL COMPOSITION AND QUALITY FACTORS

4.1 Raw materials

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

NOTE: The raw materials may also be roasted.

4.2 General quality factors

4.2.1 Edible cassava flour shall be safe and suitable for human consumption.

4.2.2 Edible cassava flour shall be free from abnormal flavours, odours, and living insects.

4.2.3 Edible cassava flour shall be free from filth (impurities of animal origin, including dead insects) in amounts which may represent a hazard to human health.

4.2.4 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.

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

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

4.2.6.1 Shall be free from micro-organisms in amounts which may represent a hazard to health; and

4.2.6.2 Shall not contain any substance originating from micro-organisms in amounts which may represent a hazard to health.

4.3 Specific quality factors

4.3.1 Particle size

4.3.1.1 Not less than 90 % shall pass through a 0.60 mm sieve for fine flour and not less than 90 % shall pass through a 1.20 mm sieve for coarse flour.

4.3.1.2 Edible cassava flour intended for baking purposes shall have particle size of which not less than 90 % shall pass through a 0.25 mm sieve.

4.3.2 Compositional requirements

Edible cassava flour shall conform to the compositional requirements in Table 1.

Table 1 – Compositional requirements for edible cassava flour

S/N	Parameter	Requirement	Method of test
1	Moisture content, % m/m, max.	13	MS 610
2	Crude ash content, % m/m, max.	3.0	MS 149
3	Crude fibre content, % m/m, max.	2.0	MS 144
4	Acid insoluble ash, %, m/m, max.	0.35	Annex A
5	Starch % m/m, min.	60	ISO 10520
6	Hydrogen cyanide, mg/Kg, max.	10	MS 1386
7	Total acidity, % m/m, max.	1.0	Annex B

4.4 Microbiological limits

Edible cassava flour shall conform to the microbiological limits in Table 2 when tested according to the methods specified therein.

Table 2 – Limits for edible cassava flour

S/N	Microorganism	Limit	Test method
1	Total viable count, cfu/g, max.	10 ⁵	ISO 4833
2	Coliforms cfu/100 g, max.	Absent	ISO 4832
3	<i>Escherichia coli</i> , cfu/g	Absent	ISO 7251
4	<i>Salmonella</i> , 25 g	Absent	ISO 6579
5	Yeasts and moulds, cfu/g, max.	10 ³	ISO 21527-2

5 FOOD ADDITIVES

Only those food additives listed under this product in MS 237, may be used and only within the limits specified.

6 CONTAMINANTS

6.1 Pesticide residues

Edible cassava flour shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission for this commodity.

6.2 Other contaminants

6.2.1 Edible cassava flour shall comply with the maximum levels contaminants and toxins in accordance with MS 302.

7 HYGIENE

Edible cassava flour shall be prepared and handled in a hygienic manner in accordance with MS 21.

8 PACKAGING AND LABELLING

8.1 Packaging

8.1.1 Edible cassava flour shall be packaged in containers which will safeguard the hygienic, nutritional, technological, and organoleptic qualities of the product.

8.1.2 The containers, including packaging material, shall be made of substances which are safe and suitable for their intended use. They should not impart any toxic substance or undesirable odour or flavour to the product.

8.1.3 When the product is packaged in sacks, these must be clean, sturdy and strongly sewn or sealed.

8.2 Labelling

8.2.1 In addition to the requirements of MS 19, the following specific labelling requirements shall apply and shall be legibly and indelibly marked:

8.2.1.1 Common name of the product shall be "edible cassava flour" and the terms "Fine" or "Coarse", in accordance with clause 4.4, shall appear in close proximity to the name of the food;

8.2.1.2 Net contents shall be declared by weight in metric (*'Système International'*) units;

8.2.1.3 Name, location and address of the manufacturer shall be declared and/or brand name / trade name;

8.2.1.4 Country of origin shall be declared;

8.2.1.5 Lot identification number;

8.2.1.6 Best before date;

8.2.1.7 Storage instructions; and

8.2.1.8 The statement 'Human Food'.

8.2.2 Labelling of nutritional composition is optional and it should be done in accordance with MS 624.

8.2.3 When labelling non-retail containers, information for non-retail containers shall either be given on the container 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 container. However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

9 METHODS OF SAMPLING AND TESTING

Sampling shall be done in accordance with ISO 13690. Testing shall be done in accordance with the methods indicated against each requirement in Table 1 and 2 or other equivalent methods.

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 to 570 °C until grey ash results.

A.2.2 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.

A.2.3 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 = the lowest weight, in g, of the dish with the acid insoluble ash;

M_1 = weight, in g, of the empty dish; and

M = 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 CO₂ 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 CH₂H₆O₃ (lactic acid).

THE MALAWI BUREAU OF STANDARDS

The Malawi Bureau of Standards (MBS) is the standardizing body in Malawi under the aegis of the Ministry of Industry, Trade and Tourism. Set up in 1972 by the Malawi Bureau of Standards Act (Cap: 51:02), the MBS is a parastatal body whose activities aim at formulating and promoting the general adoption of standards relating to structures, commodities, materials, practices, operations and from time to time revise, alter and amend the same to incorporate advanced technology.

CERTIFICATION MARK SCHEME

To bring the advantages of standardization within the reach of the common consumer, the MBS operates a Certification Mark Scheme. Under this scheme, manufacturers who produce goods that conform to national standards are granted permits to use the MBS's "Mark of Quality" depicted below on their products. This Mark gives confidence to the consumer of the commodity's reliability.

