



DRAFT TANZANIA STANDARD

Amaranth flour — Specification

Draft for stakeholders comments

TANZANIA BUREAU OF STANDARDS

Amaranth flour — Specification

0 Foreword

Amaranth (*Amaranthus spp.*) flour is obtained from amaranth grains. Amaranth flour is one of the increasing important food products in the country. The preparation of this Tanzania Standard is meant to ensure that amaranth flour produced and/or traded in the country is of good quality and safe for human consumption.

In the preparation of this Tanzania Standard assistance was obtained from amaranth flour processors.

This Tanzania Standard is a revision of the second version finalized in 2022. This third edition cancels and replaces the second edition (TZS 557:2022) which has been technically revised.

In reporting the results of a test or analysis made in accordance with this Tanzania Standard, if the final value observed or calculated is to be rounded off, it shall be done in accordance with TZS 4 (see Clause 2).

1 Scope

This Tanzania Standard specifies the requirements, methods of sampling and testing for amaranth flour milled from grains of the amaranth intended for human consumption.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. The latest edition of the referenced document (including any amendments) applies.

CXS 192, General standard for food additives

CXS 193, General standard for contaminants in food

TZS 4, Rounding off numerical values

TZS 109, Code of hygiene for food processing units — General

TZS 118, Method of plate count of bacteria in foodstuffs

TZS 122, Foodstuffs — Microbiological examination for salmonellae

TZS 131, Foodstuffs — Method for yeast and moulds count

TZS 268, General atomic absorption spectrophotometric method for determination of lead in food stuffs

TZS 330, Cereals — Sampling of milled products

TZS 331, Cereals — Methods of test for milled products

TZS 538, *Packaging and labeling of foods*

TZS 730-2/ISO 16649-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of -b-glucuronidase-positive Escheria coli — Part 2: Colony-count technique at 44 °C using 5-bromo-4-chloro-3-indolyl-b-D-glucuronide*

TZS 799, *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*

TZS 963 -2 :2007, *Starch and derived products – Heavy metals content – Part 2 – Determination of mercury content by atomic absorption spectrophotometric method*

TZS 1492, *Fruits and vegetables — Determination of tin content*

TZS 1502, *Fruits and vegetables — Determination of arsenic content.*

3 Terms and definitions

For the purpose of this Tanzania Standard the following definition shall apply:

3.1 amaranth flour

amaranth grains ground into flour

4 Requirements

4.1 General requirements

4.1.1 The amaranth grain from which the flour is milled shall be safe for human consumption.

4.1.2 Amaranth flour shall be of natural colour conforming to the colour of amaranth grain from which it was prepared.

4.1.3 Amaranth flour shall be safe and of good quality. The product shall have the characteristic flavour of good amaranth flour, free from signs of spoilage and from sour or bitter flavours.

4.1.4 All processing of the amaranth including drying, milling and other treatment of the amaranth intermediate milling products and the amaranth flour shall be carried out in a manner that:

- a) minimizes loss of nutritive values particularly protein quality; and
- b) avoids undesirable changes in technological properties of the amaranth flour.

4.1.5 Amaranth flour shall be free from insects, larvae, fungal infestation, rodent contaminations, dirt and other extraneous matter.

4.2 Specific requirements

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

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Table 1 — Specific requirements for amaranth flour

S/No.	Characteristic	Requirement	Test method
i.	Moisture, % m/m, max.	13	TZS 331
ii.	Crude fibre, % m/m, max.	0.7	
iii.	Total ash, % m/m, max.	1.6	
iv.	Acid insoluble ash, % m/m, max.	0.15	
v.	Crude protein (N x 6.25) %, min.	15	
vi.	Total iron, mg/kg, min.	76	

4.3 Particle size

Not less than 90% shall pass through a 0.6-mm sieve for fine flour and not less than 90% shall pass through a 1.2-mm sieve for coarse flour.

5 Food additives

Food additives may be used in amaranth flour and it shall be in accordance with CXS 192.

6 Hygiene

6.1 Amaranth flour shall be prepared under good hygienic practices in accordance with TZS 109.

6.2 Microbiological limits

Amaranth flour shall not exceed the microbiological limits given in Table 2, when tested in accordance with the test methods specified therein.

Table 2 — Microbiological limits for amaranth flour

S/No.	Microorganism	Maximum limit	Test method
i.	Total plate count CFU/g	10 ⁵	TZS 118
ii.	<i>E.coli</i> , CFU/g	Absent	TZS 730- 2
iii.	<i>Salmonella</i> per 25 g	Absent	TZS 122
iv.	Yeasts and moulds, CFU/g	10 ³	TZS 131

7 Contaminants

7.1 Heavy metals

In addition to the limits specified in CXS 193, amaranth flour shall not exceed the heavy metal limits given in Table 3, when tested in accordance with the test methods specified therein.

Table 3 — Maximum Limit for heavy metal contaminants in amaranth flour

S/No.	Heavy metal	Maximum mg/kg	Test method
i.	Arsenic (as As)	0.2	TZS 1502
ii.	Tin (as Sn)*	250	TZS 1492
iii.	Lead (as Pb)	0.1	TZS 268
iv.	Mercury (Hg)	0.1	TZS 963-2
*Applies to canned packaged products			

7.2 Pesticide residues

The maximum allowable pesticide residue limits in amaranth flour shall be as specified in the relevant Codex Alimentarius online data base for pesticide residues.

7.3 Aflatoxins

Amaranth flour shall not exceed the maximum aflatoxin limits given in Table 4 when tested in accordance with the test methods specified therein.

Table 4 — Maximum Limit for aflatoxin contaminants in amaranth flour

S/No.	Aflatoxin	Maximum µg/kg(ppb)	Test method
i.	Aflatoxin B ₁	5	TZS 799
ii.	Total aflatoxins	10	

8 Sampling and test methods

8.1 Sampling

Amaranth flour shall be sampled in accordance with TZS 330.

8.2 Test methods

Test methods for amaranth flour shall be as specified in this Tanzania Standard

9 Packaging, marking and labelling

9.1 Packaging

Amaranth flour shall be packed in suitable food grade bags made of paper, polypropylene or any other suitable material capable of protecting safety and quality of the product. The mouth of each package shall be properly sealed.

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9.2 Marking and labelling

9.2.1 Amaranth flour shall be labeled in accordance with TZS 538. In addition to the requirements given in TZS 538, each bag/container shall be legibly and indelibly labelled with the following information:

- a) product name as “Amaranth flour”;
- b) name and physical address and/or location of the manufacturer;
- c) batch or code number;
- d) date of manufacture/packing;
- e) net weight in SI units;
- f) country of origin;
- g) statement “Chakula cha binadamu” and/or “Human food”;
- h) statement “Hifadhi mahali pakavu” and/or “Store in cool dry place”;
- i) statement “Usitumie vichomeo”; and/or “Use no hooks”; and
- j) best before date.

9.2.2 The containers may also be marked with the TBS standards mark of quality.

NOTE — The TBS standards mark of quality may be used by manufacturers only under licence from TBS. Particulars of conditions under which licences are granted can be obtained from TBS.