
Teff flour — Specification



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This African Standard was prepared by the *ARSO Technical Committee on Cereals, Pulsses and Derived Products* (ARSO/TC 12).

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African Standard under Review

Teff flour — Specification

1 Scope

This African standard specifies the requirements and methods of sampling and test for teff flour prepared from teff grains (*Eragrostis tef*) that include all the classifications magna (very white), nech (white), quey (brown) and sergegna (mixed) for human consumption

2 Normative references

The following referenced documents are indispensable for the application of this African standard. Only the latest edition of the documents (including any amendments) shall be applicable.

ARS 56, *Prepackaged foods — Labelling*

ARS 1349, *Teff—Specification*

CXS 192, *General standard for food additives*

ISO 5985, *Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid*

ISO 27085, *Animal feeding stuffs — Determination of calcium, sodium, phosphorus, magnesium, potassium, iron, zinc, copper, manganese, cobalt, molybdenum, arsenic, lead and cadmium by ICP-AES*

ARS 53, *General principles of food hygiene — Code of practice*

ISO 711, *Cereals and cereals products determination of moisture content (Basic reference method)*

ISO 712, *Cereals and cereals products determination of moisture content (Routine reference method)*

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

ISO 20483 *Cereals and pulses - Determination of the nitrogen content and calculation of the crude protein content - Kjeldahl method*

ISO 6579-1, *Microbiology of food and animal feed — Horizontal method for the detection, enumeration and serotyping of salmonella — Part 1: Detection of Salmonella spp*

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

ISO 5223, *Test sieves for cereals*

ISO 24333, *Cereals and cereal products-Sampling*

ISO 5498, *Agricultural and food products - Determination of crude fiber content (General method).*

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*

ISO 6541, *Agricultural food products - Determination of crude fiber content - General method content (milled grain and whole grain.)*

ISO 6579-2, *Microbiology of food and animal feed — Horizontal method for the detection, enumeration and serotyping of salmonella — Part 2. Enumeration by a miniaturized most probable number 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*

ISO 2152 7-1, *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*

AOAC 920. Determination of Total crude fiber

AOAC 920.87, *Determination of Protein*

AOAC 923. 03. *Determination of Total ash*

AOAC 925.10, *Determination of Moisture*

AOAC 920.39, *Determination of Fat,*

AOAC 966. 24, *Determination of Coliform and E. coli*

AOAC 977. 02. *Determination of Mould and yeast*

AOAC 967. 25, *Determination of Salmonella*

3 Terms and definitions

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

3.1

teff

dry grains obtained from family of *Poaceae*, sub family *Eragtostoidea*, genus *Eragrostis* and species *Eragrostis tef* which is harvested for grain and milled into flour

3.2

teff flour

flour which is obtained by milling teff grain

3.3

magna /very white teff flour

flour which is obtained by milling very white /magna/ teff grain

3.4

nech /white teff flour

flour which is obtained by milling white /nech/ teff grain

3.5

quey /red teff flour

flour which is obtained by milling red /quey/ teff grain

3.6

sergegna /mixed/ teff flour

flour which is obtained by milling mixed /sergegna/ teff grain

4 Requirements

4.1 General requirements

Teff flour shall:

- a) be free from any harmful ingredients, substances, injurious to health or any foreign matter;
- b) be free from any added artificial colouring matter,
- c) have the characteristic teff flour appearance,
- d) be free from rancidity,
- e) be free from insect and rodent contamination.
- f) not be fermented and be free from fungal infestation musts. or objectionable odours and adulterants.

4.2 Specific requirements

Teff flour shall comply with the specific requirements specified in Table 1.

Table 1- Specific requirements for teff flour

S/No.	Characteristic	Requirement				Test methods
		Magna (Very white)	Nech (White)	Quey(Red)	Sergegna (mixed)	
4.2.2	Total crude fiber, % m/m, max	3.2	3.2	3.2	3.2	ISO 5498, ISO 6541, AOAC 920
4.2.5	Protein, % m/m, min	8.0	8.0	8.0	8.0	ISO1871, ISO 20483 AOAC 920.87
4.2.6	Total ash, % m/m, max	3.0	3.0	4.0	3.0	ISO 2171, AOAC 923.03
4.2.7	Acid insoluble ash, % m/m	0.25	0.25	0.33	0.25	ISO 5985
4.2.9	Moisture, % m/m, max	12.5	12.5	12.5	12.5	ISO 6540, ISO 711, ISO 712 AOAC 925.10
4.2.10	Fat, % m/m, max.	6.0	6.0	6.0	6.0	AOAC 920.39
4.2.11	Phytate, mg/100g, max	1500	1500	1500	1500	By difference
4.2.12	Particle size, Passed through 250µm	54.0-90.0	54.0-90.0	54.0 – 90.0	54.0-90.0	ISO 5223

5 Food additives

Teff flour shall contain only permitted additives complying with CODEX STAN 192.

6 Contaminants

6.1 Heavy metals

Teff flour shall not contain heavy metals at levels exceeding the limits indicated in Table 2.

Table 2 – Heavy metals limits for teff flour

S/No.	Heavy metal	Limit (mg/kg, max.)	Test method
6.1.1	Arsenic (as As)	0.1	ISO 27085
6.1.2	Lead (as Pb)	0.2	ISO 27085
6.1.3	Cadmium	0.1	ISO 27085

6.2 Aflatoxin limits

Teff flour shall comply with levels for aflatoxins given in Table 3 when tested in accordance with the test methods specified therein.

Table 3 — Mycotoxin limits for Teff flour

S/N	Aflatoxin	Maximum limit (µg/kg)	Test method
i.	Total aflatoxins (AFB1+AFB2+AFG1+AFG2)	10	ISO 16050
ii.	Aflatoxin B1	5	

7 Hygiene

Teff flour shall be produced and handled under hygienic conditions in accordance with ARS 53 and shall comply with the microbial limits given in Table 3 when tested in accordance with the test methods prescribed therein.

Table 4 – Microbiological limit for teff flour

S/N o.	Microorganism	Maximum limit	Test method
i.	<i>E. coli</i> , cfu per g, max.	Absent	ISO 7251, ISO 16649-2 AOAC 966.24
ii.	Mold and yeast, cfu per g, max.	10.0x10 ³	ISO 21527-1, AOAC 977.02
iii.	Salmonella, cfu per g, max.	Absent	ISO 6579-1 ISO 6579-2, AOAC 967.25

8 Packaging

Teff flour shall be packed in food grade packaging material, which will safeguard the hygienic, nutritional and organoleptic qualities of the products.

9 Labelling

In addition to ARS 56, the following specific labelling requirements shall apply and shall be legibly and indelibly marked (labelled) with the following information:

- Country of origin
- Name and physical and postal address of manufacturer
- Name of the product as "Teff flour": including its classification.
- Net weight in kg
- Date of manufacture and batch number;
- Best before date;
- Storage instruction;
- List of ingredients
- Nutritional value content (protein, fat, carbohydrate and calorie value etc).

10 Sampling

Sampling of teff flour shall be done in accordance with ISO 24333.