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BHUTAN STANDARD

Millet flour

DRAFT BHUTAN STANDARDS FOR PUBLIC COMMENTS

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FOREWORD

This Bhutan Standard for Millet Flour was adopted by Bhutan Standards Bureau after the draft finalized by the Food and Agriculture Technical Committee TC 02 and approved by the Bhutan Standards Bureau Board (BSB Board) on Date Month Year.

This standard is subjected to systematic review after five years to keep pace with the market trends, industrial and technological developments. Any suggestions and further information may be directed to the concerned Technical Committee.

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Introduction

Millets (*Eleusine Spp.*) are a group of cereals belonging to the Poaceae family, widely grown and consumed in hilly regions of Africa and Asia. Millets are considered as nutrient dense food. There are many types of millets found in the world but most commonly cultivated in Bhutan is finger millets (*Eleusine coracana*) where foxtail millet (*Setaria italica*), pearl millets (*Pennisetum glaucum*) and little millets (*Panicum sumatrense*) are found in the minor pockets. Finger millets can be found in two different grain colors; red and white.

The use of standard remains voluntary and when referenced by regulatory authorities as a basis for legislation, the standards become mandatory.

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BHUTAN STANDARD

Millet Flour

1 Scope

This Bhutan Standard prescribes requirements for millet flour obtained from millet grain (*Eleusine Spp.*) for human consumption which is prepackaged, ready for sale to the consumer or destined for use in other food products.

This Bhutan Standard does not apply to any product prepared from millet flour.

2 Normative References

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

ISO 24333: 2009 *Cereals and cereal products — sampling*

BTS 139: 2019 SARS 00014: 2018 *Bhutan Standard for Food Hygiene-General Principles-Code of Practice.*

BTS 268: 2020 CXS 1-1985 *Bhutan Standard for the labelling of Prepackaged Foods.*

3 Terms and Definitions

For the purpose of this standard, the following terms and definitions shall apply;

3.1 Appearances

The characteristics of the flour when inspected visually

3.2 Contaminant

Contaminant means any biological or chemical agent, foreign matter not intentionally added to the flour which may compromise food safety or suitability.

3.2 Extraneous Matters

All organic and inorganic matter other than the flour unintentionally added.

3.3 Millet Flour

The product obtained from millet grains (*Eleusine Spp.*) through a process of milling during which the grain is cleaned, destoned and dehulled and the endosperm is reduced to a sufficiently fine powder. Herein referred to as 'flour'.

4 Quality Factors

4.1 Quality Factors - General

Flour shall meet the following general requirements as listed below:

4.1.1 Shall have characteristics colour of the millet from which it is milled.

4.1.2 Shall be free from objectionable flavours, odor, and appearances.

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4.1.3 Shall be free from extraneous matter.

4.1.4 Shall not contain flour from other cereals.

4.1.5 98% or more flour shall pass through 0.25mm to 0.425mm sieve.

4.2 Quality Factors - Specific

4.2.1 The flour shall conform to the following chemical compositional requirements as specified under **table 1**;

Table 1 – Quality Factors-Specific

S/N	Parameter	Limit
1	Moisture, <i>Max</i>	12%
2	Total Ash, <i>Max</i>	4.2%
3	Protein (on dry mass basis), <i>Min</i>	7%
4	Dietary Fibre content (on dry mass basis), <i>Min</i>	12%

Laboratories may use any validated method of analysis.

5 Contaminants

The analyses of contaminants shall be done from laboratories using any validated method.

5.1 Heavy Metal

The flour shall be free from heavy metals in amounts which may represent a hazard to health. If present, they shall not exceed the limits specified in **table 2**;

Table 2- Heavy metal limit

S/N	Parameter	Limit, <i>Max</i> (mg/kg)
1	Lead (Pb)	0.2
2	Cadmium (Cd)	0.1
3	Arsenic (As)	0.1

5.2 Pesticide Residues

The flour shall comply with those maximum residue limits established by the available Codex Alimentarius Commission or relevant national regulations on pesticide residues.

5.3 Mycotoxins

The flour shall be free from Mycotoxins in amounts which may represent a hazard to health. If present, it shall not exceed the limits specified in **table 3**;

Table 3 – Mycotoxins

S/N	Parameter	Limit, <i>Max</i> (mg/kg)
1	Total Aflatoxin (B1, B2, G1, G2)	0.02
2	Deoxynivalenol (DON)	1

5.4 Microbiological

The flour shall conform to the following microbiological limits specified in **table 4**;

Table 4 - Microbiological limit

S/N	Type of Microorganisms	Limit
1	<i>E. coli</i> per g	Absent
2	<i>Salmonella Spp.</i> per 25 g	Absent
3	Yeast and Mould, cfu/g, <i>Max</i>	10 ⁴
4	Total plate count per g, <i>Max</i>	10 ⁵

6 Hygienic Requirement

The flour shall be prepared and handled in accordance with the BTS 139: 2019 SARS 0014:2018 Bhutan Standard on Food Hygiene - General Principles- Code of Practice or relevant national regulations.

7 Storage

- 7.1 The received raw material shall be stored in a clean and food grade packing material
- 7.2 The flour shall be stored immediately after being milled in a clean and airtight food grade packing material
- 7.3 The flour when stored shall have clearly defined boundaries and be away from toxic chemicals exposure/odor producing industries.
- 7.4 The packed product shall be stored in a dry, cool and away from the direct sun exposure.
- 7.5 Suitable pest and rodent control program shall be in place and be effective to ensure that there are no signs of pest infestation.
- 7.6 Suitable waste management and waste disposal shall be in place.

8 Sampling

Sampling shall be carried out according to the procedure described in ISO 24333: 2009 or any other internally accepted methods.

9 Packaging

9.1 Packing Material

- 9.1.1 The flour shall be packed in airtight food grade packing materials which will safeguard the hygienic, nutritional, and organoleptic qualities of the product.

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

9.1.3 When the flour is packed in sacks, they shall be thermoplastic lined, clean, sturdy and properly sewn or sealed.

9.2 Labelling

The labelling shall be in accordance to BTS 268: 2020 CXS 1-1985 Bhutan Standard for the labelling of Prepackaged Foods.

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