

BHUTAN STANDARD

Grain Mills – Basic Requirements (Part 1)



ICS

© Copyright 2022

BHUTAN STANDARDS BUREAU

The National Standards Body of Bhutan

THIMPHU 11001

BHUTAN STANDARD

Grain Mills: Basic Requirements (Part 1)

Invitation for Public Review & Comments

PDF disclaimer

This PDF may contain embedded typefaces. In accordance with Adobe's Licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The Bhutan Standards Bureau accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

COPYRIGHT PROTECTED DOCUMENT

© BSB 2022

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from BSB at the address below in the country of the requester.

Director General

Bhutan Standards Bureau

Rijug Lam

Thimphu-11001

Tel: 00975-2-325104/325401

Fax: 00975-2-323712/328298

Web: www.bsb.gov.bt

Published in Thimphu, Bhutan

Invitation for Public Review & Comments

Table of Contents

FOREWORD iv

1 Scope 1

2 Normative Reference 1

3 Terms and Definition 1

 3.1 Grain Mill 1

 3.2 Milling recovery rate 1

 3.3 Machine capacity 1

 3.4 Consumable grit product 1

 3.5 Byproduct 1

 3.6 Flour 1

 3.7 Food grade material 1

4 General Requirement of the Grain Mill 2

 4.1 Safety Requirements 2

 4.2 Structure Requirements 2

 4.3 Operation Requirement 2

 4.4 Test Sample 2

Annex A 3

Bibliography 4

Invitation for Public Review & Comments

FOREWORD

This Bhutan Standard was adopted by Bhutan Standards Bureau after the draft finalization by the Mechanical Engineering Technical Committee, TC 08 and approved by the Bhutan Standards Bureau Board (BSB Board) on Day Month 2021.

This standard is subject 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.

Invitation for Public Review & Comments

Bhutan Standard Grain Mills: Basic Requirements (Part 1)

1 Scope

This standard specifies the basic requirements of Grain Mills.

2 Normative Reference

The following documents are indispensable for 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 22000:2018 *Food safety management systems-Requirements for any organization in the food chain*

ISO 17715:2013 *Flour from wheat (TRITICUM AESTIVUM L.) — Amperometric method for starch damage measurement*

3 Terms and Definition

3.1 Grain Mill

It is a machine for milling of grain into required grit sizes or flour by frictional & crushing forces.

3.2 Milling recovery rate

Milling recovery rate is the percentage mass of sample recovered from the mass input of grain of tested machine or laboratory test.

3.3 Machine capacity

Machine capacity is the mass of sample that the test machine can process over a time period.

3.4 Consumable grit product

The milled product that passes through 2mm and are retained on 0.6mm size of laboratory sieve.

Note 1-Maize will be the raw material for grit product.

3.5 Byproduct

The milled product which is retained on 2mm size of laboratory sieve.

3.6 Flour

The milled product which passes through 0.6mm size of laboratory sieve.

Note 1-Wheat will be use as the raw material for flour.

3.7 Food grade material

Any material when it comes in contact with food does not contaminate the food beyond the limit of prohibited substances given in annex A, Table 1.

4 General Requirement of the Grain Mill

4.1 Safety Requirements

- 4.1.1 There shall be safety guard for moving parts which are prone to injury and guard shall be placed in between the moving parts and operator at appropriate safe distance.
- 4.1.2 The guard shall have enough strength and durability under the normal operational condition and the guard which does not require to be removed should be firmly fixed on the machine.
- 4.1.3 The food grade materials for processing machine shall be as given in Annex A, Table 2.
- 4.1.4 The machine shall be equipped with Instruction and operation manuals. All safety symbols and labels shall be illustrated in English and clearly visible to operator.

4.2 Structure Requirements

- 4.2.1 The main components shall not be abnormal or broken.
- 4.2.2 The operator should not have difficulty in operating and controlling the components.
- 4.2.3 No defects that may easily cause miss-operation to the operator.
- 4.2.4 No defect that may cause much fatigue to the operator.
- 4.2.5 Power of prime mover should not lower than rated specification.

4.3 Operation Requirement

- 4.3.1 Consumable grit product recovery shall be equal to or above 52.00 %.
- 4.3.2 Flour recovery shall be equal to or above 79.00 %.
- 4.3.3 Noise level shall not exceed 100 dB (A) for 2 hrs continuous operation.

4.4 Test Sample

- 4.5.1 The test sample shall be new machines.

Annex A

(normative)

Presence of any traces of contaminants should be within limit prescribed in Table 1.

Table 1 Contaminants in food contact parts.

Sl. No	Elements	Maximum Limit
1	Lead (Pb)	< 0.1%
2	Antimony (Sb)	< 5 %
3	Cadmium (Cd)	0.01 – 0.04 %
4	Mercury (Hg)	< 0.1 %
5	Cyanide	0 %

Table 2 Recommended food grade materials for different operating conditions.

Sl. No	Metal Type	Operating Conditions				Food Contact Parts
		Wet			Dry	
		Acid (PH 0-< 7)	Neutral (PH 7)	Alkaline (PH >7 -14)		
1.	Carbon Steel	Not Recommended	Recommended With Coating/Plating	Recommended With Coating/Plating	Recommended	Hopper, Shaft, Outer body
2.	Stainless Steel (SS)	SS 304, Recommended	SS304 Recommended	SS304 Recommended	SS200, Recommended	Shaft, Screen, Outlet
3.	Cast Iron	Not Recommended	Not Recommended	Not Recommended	Recommended with Coating/Plating	Outer Body

Bibliography

- [1] AMTEC Standard: 1989 Rice Mill–Methods of Test, Draft Standard: Agricultural Machinery Testing and Evaluation Centre, University of the Philippines at Los Banos, Philippines.
- [2] ASAE Standard: ASAES352, 1977 Moisture measurement–Grain and Seeds, American Society of Agricultural Engineers, St. Joseph, Michigan, USA.
- [3] ISO Recommendation R712: 1968 Determinations of Moisture Content Routine Method, International Organization for Standardization.
- [4] Regional Network for Agricultural Machinery (RNAM):1995 Test Codes and Procedures for Farm Machinery, Technical Series No.12.
- [5] International Journal of Agriculture & Biology: 2003Effect of Moisture on the Shelf Life of Wheat Flour, [http:// www.ijab.org](http://www.ijab.org)

Invitation for Public Review & Comments

Mechanical Engineering Technical Sub Committee Members

Organization	Representatives
	Chairman
Agriculture Machinery Centre, DoA Ministry of Agriculture and Forests	Mr. Chetem Wangchen
	Members
Agriculture Machinery Centre, DoA Ministry of Agriculture and Forests	Mr. Sangay Lhendup
Agriculture Machinery Centre, DoA Ministry of Agriculture and Forests	Mr. Kinga Norbu
Agriculture Machinery Centre, DoA Ministry of Agriculture and Forests	Mrs. Kinzang
Agriculture Machinery Centre, DoA Ministry of Agriculture and Forests	Mrs. Ugyen Dorji
Agriculture Machinery Centre, DoA Ministry of Agriculture and Forests	Mr. Jigme
Agriculture Machinery Centre, DoA Ministry of Agriculture and Forests	Miss Pema Lhamo
Agriculture Machinery Centre, DoA Ministry of Agriculture and Forests	Miss Pema Wangmo

Member Secretary
Kesang P Namgay
Standardization Division
Bhutan Standards Bureau

Mechanical Engineering Technical Committee (TC-08)**Organization****Representatives**

Agriculture Machinery Centre, DoA
Ministry of Agriculture and Forests

Chairman

Mr. Chetem Wangchen

Agriculture Machinery Centre, DoA
Ministry of Agriculture and Forests
Farm Machinery Corporation Limited
Ministry of Finance

Members

Mr. Sangay Lhendup

Mr. Karma Thinley

Department of Agriculture
Ministry of Agriculture and Forests

Mr. Lhachola

Agriculture Machinery Centre, DoA
Ministry of Agriculture and Forests

Mr. Kinga Norbu

Road Safety and Transport Authority,
Ministry of Information and communication

Mr. Phuntsho Wangdi

Technical Training Institute, Samthang,
Ministry of Labour and Human Resources

Mr. Sangay Wangchuk

Bhutan Standards Bureau

Mr. Karma Wangdi
Offtg. Director General
(Ex-Officio member)

Member Secretary
Kesang P Namgay
Standardization Division
Bhutan Standards Bureau