

BHUTAN STANDARD

Grain Mills – Test Code (Part 2)



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BHUTAN STANDARDS BUREAU

The National Standards Body of Bhutan

THIMPHU 11001

BHUTAN STANDARD

Grain Mills – Test Code (Part 2)

Invitation for Public Review & Comments

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Published in Thimphu, Bhutan

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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 2022.

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.

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Grain Mills – Test Code (Part 2)

1 Scope

This standard specifies the test method and shall apply for grain mill.

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 17715: 2013 *Flour for wheat*

3 Terms and Definition

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

3.1 Grain mill

It is a machine for milling of grains into required grit sizes or flour.

3.2 Recovery rate

Recovery rate is the percentage mass of the required milled product from the mass input of grains.

3.3 Machine capacity

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

3.4 Food grade material

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

4 General conditions of the tests

- 4.1 The grain mill subjected to the test shall be run as per the manufacture's specifications.
- 4.2 The grain mill subjected to the tests shall be adjusted and prepared as per the manufacturer's specification.
- 4.3 The prime mover used for the test shall be selected from those indicated by the manufacturer.
- 4.4 All measuring instruments shall be calibrated with relevant agencies of certification body.

5 Test items and methods

5.1 Verification of structure.

The objective of this test is to confirm the specifications of grain mill given by a manufacturer. The items shall be verified as per the Annex A.

5.2 Safety test

The objective of this test is to ascertain the safety features of the grain mill. It shall be performed by;

- 1) Verifying safety parts
- 2) Inspection of caution labels.
- 3) Availability of instruction and operation manual.
- 4) Any other safety features

5.3 Operation test

The objective of this test is to assess the recovery rate, milling recovery, capacity and handling. To carry out this test, following conditions shall be maintained:

- 1) The grain mill shall be well equipped as per the manufacturer's specifications.
- 2) The grain mill shall be operated by experienced operators.
- 3) The recommended moisture content of the maize test sample should be $11.66 \pm 0.35\%$.
- 4) The recommended moisture content of the wheat test sample should not be more than 9%.
- a) The items to be measured or investigated:
 - 1) Test grain condition (Moisture Content, quality of grains)
 - 2) Mechanical condition
 - 3) Operating condition
 - 4) Recovery
 - 5) Milling capacity
 - 6) Ease of handling
 - 7) Noise
 - 8) Others

6 Formulae

6.1 Grit / Flour Recovery

$$(G/F)R = \left(\frac{MP}{MS} \right) \times 100 (\%) \text{-----Eq-1}$$

Where:

(G/F)R=Grit/Flour Recovery (%)

MP =Mass of product (Kg)

MS= Mass of input sample (Kg)

6.2 Machine Capacity

$$MC = \frac{W}{T} (kg/h) \text{-----Eq-2}$$

$$T = T_m + T_o$$

Where:

MC = Machine capacity

W = Weight of input sample (kg)

T = Total operation time (hr)

T_m = Milling time (hr)

T_o = Operation time other than milling time (hr)

7 Inspection after disassembling

If any abnormalities are observed during any of the above tests, causes may be investigated by disassembling the specific parts.

a) Inspection method

The grain mill shall be disassembled and checked if necessary.

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Annex A

(normative)

Specification Sheet for Grain Mill**1. GENERAL**

To be filled as per Manufacturer Sheet

- a) Make:
- b) Model:
- c) Serial Number:
- d) Year of manufacture:
- e) Recommended sample specimen for milling:
- f) Machine capacity (Kg/h):

2. POWER UNIT

- a) Type of prime mover:
- b) Power, kW/Hp:
- c) Type of drive:
- d) RPM:

3. OVERALL DIMENSIONS

- a) Length, mm:
- b) Width, mm:
- c) Height, mm:
- d) Total weight, kg:

4. Milling chamber

- a) Diameter, mm:
- b) Length, mm:

Note If any other items are provided, their details should be given

Annex B
(normative)

Data sheet for Grit/Flour recovery test

Date of test	
Location of test	
Type of grain	
Variety of grain	
Moisture content (%)	

	Replication - I	Replication - II	Replication - III
Weight of input sample (kg)			
Weight of consumable Grit/Flour product (kg)			
Grit/Flour Recovery (%)			

a. Data sheet for capacity test

Date of test	
Location of test	
Type of grain	
Variety of input grain	
Moisture content (%)	

	Replication - I	Replication - II	Replication - III
Weight of input sample (kg)			
Total operation time(h)			
Capacity (kg/h)			

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