

ཕུ་འཕག་བརྟག་དཔྱད་སྒྲིག་ལུགས། གོ་རིམ་ ༢ པ།

**BHUTAN STANDARD**  
**Rice Mill- Test Code (Part 2)**



ICS 65.060.10

© Copyright 2018

**BHUTAN STANDARDS BUREAU**

The National Standards Body of Bhutan

THIMPHU 11001

ཕུ་འཐག་ བརྟག་དབྱད་སྒྲིག་ལུགས། གོ་རིམ་ ༢ པ།

**BHUTAN STANDARD**

**Rice Mill- Test Code (Part 2)**

## PDF disclaimer

This PDF file 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 2018

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 either BSB at the address below in the country of the requester.

Director General  
Bhutan Standards Bureau  
Thimphu-11001  
Tel : 00975-2-325104/325401  
Fax: 00975-2-323712/328298  
Web: [www.bsb.gov.bt](http://www.bsb.gov.bt)  
Published in xxxxxxxx 2018

FOREWORD	iv
1. Scope	1
2. Normative Reference	1
3. Classification of Rice Mill	1
3.1 Type of huskers	1
3.2 Type of whitener	1
3.3 Engel berg type	1
4. Test procedures	1
4.1 Test items	1
4.1.1 Verification of structure	1
4.1.2 Safety test	1
4.1.3 Operation test	1
4.1.4 Inspection after disassembling.	2
4.2 General conditions of the tests	2
4.3 Methods of the tests.	2
4.3.1 Verification of structure.	2
4.3.2 Safety test	2
4.3.3 Operation test	2
4.3.4 The items to be measured or investigated	2
4.3.5 Formulas	3
4.3.6 Inspection after disassembling	4
Annex A	5
SPECIFICATION SHEET FOR RICE MILL	5
A Rice mills	5
B Prime Mover	5
C Blade	5
D Adjustable range of blade	5
E Length of cylinder worm shaft	5
F Length of cylinder worm shaft up to straight edge and worm edge	5
G Diameter of cylinder worm shaft	5
H Length of screen	5
I Rice mill for the laboratory test	5
J Polisher for the laboratory test	6

## FOREWORD

This Bhutan Standards for Rice Mill- Test Code (Part 2) was adopted by Bhutan Standards Bureau after the draft prepared by Sub Committee and finalization by the Mechanical Engineering Technical Committee and endorsed by BSB Board.

# ཐུ་འཕྲུག་ བརྟག་དཔྱད་སྒྲིག་ལུགས། གོ་འཕྲིམ་ ༢ བ།

## BHUTAN STANDARD

### Rice Mill- Test Code (Part 2)

#### 1. Scope

This specifies the test code of small-scale *Rice Mill*.

#### 2. Normative Reference

There is no normative reference for this document.

#### 3. Classification of Rice Mill

Rice mills are classified according to their basic functions of removing the husk and bran are as follows:

##### 3.1 Type of huskers

This type is used for de-husking brown rice from paddy.

- a. Rubber roller husker
- b. Steel husker
- c. Others

##### 3.2 Type of whitener

- a. Abrasive – whitening cone, emery coated cylinder
- b. Friction – Metal flute cylinder

##### 3.3 Engel berg type

This type is used for both de-husking and polishing at the same time

- a. Steel huller husker

#### 4. Test procedures

##### 4.1 Test items

###### 4.1.1 Verification of structure

The objective of this test is to confirm the specifications of a rice mill given by a manufacturer.

###### 4.1.2 Safety test

The objective of this test is to ascertain the safety features of the rice mill

###### 4.1.3 Operation test

The main objective of this test is to test the milling recovery, capacity and handling

#### 4.1.4 Inspection after disassembling.

The objective of this inspection is to find out the defect parts in case if there are any mechanical troubles.

## 4.2 General conditions of the tests

4.2.1 The rice mill subjected to the test shall be run as per the manufacture's indication and specifications

4.2.2 The rice mill subjected to the tests shall be well adjusted and prepared as per the requirement and the manufacturer's indication

4.2.3 The prime mover used for the tests shall be selected from those indicated by the manufacturer

4.2.4 Measuring instruments shall have enough accuracy as certified by available certification body

## 4.3 Methods of the tests.

### 4.3.1 Verification of structure.

The items to be verified as per the annex –A are as follows

- 1) Driving system
- 2) Dimensions and weight.
- 3) Components
- 4) Controls
- 5) Other items

### 4.3.2 Safety test

#### 4.3.2.1 Test methods

- 1) Verify of safety devices
- 2) Check the caution labels
- 3) Check the instruction manual.
- 4) Others

### 4.3.3 Operation test

#### 4.3.3.1 Test methods

- 1) The rice mill shall be well equipped with the manufacturer's specifications
- 2) The rice mill shall be loaded with paddy by weight of hopper capacity as per the manufacture instruction.
- 3) The rice mill shall be operated by experience operators in normal way
- 4) Milling operation should be repeated until milling state
- 5) Laboratory husker and laboratory polisher should be operated with paddy and brown rice for finding milling recovery index

### 4.3.4 The items to be measured or investigated

- 1) Test paddy condition
- 2) Mechanical condition
- 3) Operating condition
- 4) Milling recovery
- 5) Milling capacity
- 6) Power consumption
- 7) Ease of handling
- 8) Noise

9) Finishing condition of grain

10) Others

#### 4.3.5 Formulas

##### 4.3.5.1 Milling Recovery Rate

Milling recovery rate is the percentage mass of head rice and broken rice recovered from mass input paddy of tested machine or laboratory test

$$RMR = \frac{WH+WB}{W} \times 100$$

Where:

RMR - Milling recovery rate

W-Weight of input paddy

WH- Weight of head brown rice or milled head rice

WB - Weight of broken brown rice or milled broken rice

##### 4.3.5.2 Head Rice Recovery Rate

Head rice recovery rate is the percentage mass of head rice from mass of input paddy to the tested machine or the machine for laboratory test.

$$RH = \frac{WH}{W} \times 100$$

Where

RH - Head Rice Recovery Rate

WH - Weight of head brown rice or milled head rice

W- Weight of input paddy

##### 4.3.5.3 Milling Recovery Index

Milling recovery index is the ratio of milling recovery rate of tested machine and from the laboratory test

$$RMI = \frac{RMF}{RML}$$

RMI: Milling recovery Index

RMF: Milling recovery rate in the field test

RML: Milling recovery rate in the laboratory test

##### 4.3.5.4 Head rice recovery index

Head rice recovery index is ratio of head rice recovery rate of tested machine and from the laboratory

$$RHI = \frac{RHF}{RHL}$$

RHI: Head rice recovery index

RHF: Head rice recovery rate in the field test

RHL: Head rice recovery rate in the lab test



**4.3.5.5 Milling Capacity**

Milling capacity is the mass of paddy that the tested machine can process over a time period kg per hour

$$CM = \frac{W}{T}$$

$$T = T_m + T_o$$

Where:

CM = Milling Capacity

W = Weight of input paddy

T = Total operation time

T<sub>m</sub> = Milling time

T<sub>o</sub> = Operation time other than milling

**4.3.6 Inspection after disassembling**

a) Inspection method.

The rice mill shall be disassembled and checked if necessary

139

140

141 **Annex A**

142

143 **SPECIFICATION SHEET FOR RICE MILL**144 **A Rice mills**

145 1. Model:

146 2. Make:

147 3. Type:

148 4. Serial number:

149 5. Overall dimensions (mm)

150 a. Length:

151 b. Width:

152 c. Height:

153 **B Prime Mover**

154 1. Kind:

155 2. Type

156 3. Make:

157 4. Model

158 5. Rated power:

159 6. Type of starter:

160 7. Type of fuel

161 8. Others

162 a. Diameter of driving pulley:

163 b. Diameter of Idler pulley:

164 c. Inlet size of gate hopper:

165 d. Outlet size:

166 **C Blade**

167 1. Thickness

168 2. Length

169 3. Breadth

170 **D** Adjustable range of blade171 **E** Length of cylinder worm shaft172 **F** Length of cylinder worm shaft up to straight edge and worm edge173 **G** Diameter of cylinder worm shaft174 **H** Length of screen175 **I Rice mill for the laboratory test**

176 a) Model:

177 b) Type:

178 c) Prime Mover: Single Phase Induction Motor, .... kW/.....rpm

179 **J Polisher for the laboratory test**

180 a) Model:

181 b) Type:

182 c) Prime Mover:

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

200

201

202

203

204

205

206

207

208

209

210

211

212

213

214

215

216

217

218

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

**Organization**

**Representatives**

**Chairman**

Agriculture Machinery Centre,  
Ministry of Agriculture and Forest

Mr. Chetem Wangchen

**Members**

Agriculture Machinery Centre,  
Ministry of Agriculture and Forest

Mr. Kinga Norbu

Agriculture Machinery Centre,  
Ministry of Agriculture and Forest

Mr. Sangay Lhendup

Construction Development Corporation Limited

Mr. Karma Loday

Farm Machinery Corporation Limited, Ministry of Finance

Mr. Karma Thinley

Department of Agriculture,  
Ministry of Agriculture and Forest

Mr. Tirtha Bdr. Katwal

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. Sonam Phuntsho,  
Director General,  
(Ex- Officio member)

**Member Secretary**

Pelden Dendup  
Standardization Division Bhutan  
Standards Bureau