

ཕུ་འཕག་བརྟག་དཔྱད་སྒྲིག་ལུགས། གོ་རིམ་ 2 བ།

BHUTAN STANDARD
Rice Mill- Test Code (Part 2)



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BHUTAN STANDARDS BUREAU
The National Standards Body of Bhutan
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ཁུ་འཐག་བརྟག་དབྱད་སྒྲིག་ལུགས། གོ་རིམ་ ༢ པ།

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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.

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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

35 **4.1.4 Inspection after disassembling.**
 36 The objective of this inspection is to find out the defect parts in case if there are any mechanical troubles.

37 **4.2 General conditions of the tests**
 38 4.2.1 The rice mill subjected to the test shall be run as per the manufacture's indication and specifications
 39 4.2.2 The rice mill subjected to the tests shall be well adjusted and prepared as per the requirement and
 40 the manufacturer's indication
 41 4.2.3 The prime mover used for the tests shall be selected from those indicated by the manufacturer
 42 4.2.4 Measuring instruments shall have enough accuracy as certified by available certification body

43 **4.3 Methods of the tests.**

44 **4.3.1 Verification of structure.**
 45 The items to be verified as per the annex –A are as follows

46 1) Driving system
 47 2) Dimensions and weight.
 48 3) Components
 49 4) Controls
 50 5) Other items

51 **4.3.2 Safety test**

52 **4.3.2.1 Test methods**
 53 1) Verify of safety devices
 54 2) Check the caution labels
 55 3) Check the instruction manual.
 56 4) Others

57 **4.3.3 Operation test**

58 **4.3.3.1 Test methods**
 59 1) The rice mill shall be well equipped with the manufacturer's specifications
 60 2) The rice mill shall be loaded with paddy by weight of hopper capacity as per the manufacture
 61 instruction.
 62 3) The rice mill shall be operated by experience operators in normal way
 63 4) Milling operation should be repeated until milling state
 64 5) Laboratory husker and laboratory polisher should be operated with paddy and brown rice for
 65 finding milling recovery index

66 **4.3.4 The items to be measured or investigated**
 67 1) Test paddy condition
 68 2) Mechanical condition
 69 3) Operating condition
 70 4) Milling recovery
 71 5) Milling capacity
 72 6) Power consumption
 73 7) Ease of handling
 74 8) Noise

75 9) Finishing condition of grain

76 10) Others

77

78 4.3.5 Formulas

79 4.3.5.1 Milling Recovery Rate

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

$$82 \quad \text{RMR} = \frac{WH+WB}{W} \times 100$$

83 Where:

84 RMR - Milling recovery rate

85 W-Weight of input paddy

86 WH- Weight of head brown rice or milled head rice

87 WB - Weight of broken brown rice or milled broken rice

88

89 4.3.5.2 Head Rice Recovery Rate

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

$$92 \quad \text{RH} = \frac{WH}{W} \times 100$$

93 Where

94 RH - Head Rice Recovery Rate

95 WH - Weight of head brown rice or milled head rice

96 W- Weight of input paddy

97 4.3.5.3 Milling Recovery Index

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

$$99 \quad \text{RMI} = \frac{\text{RMF}}{\text{RML}}$$

100 RMI: Milling recovery Index

101 RMF: Milling recovery rate in the field test

102 RML: Milling recovery rate in the laboratory test

103 4.3.5.4 Head rice recovery index

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

$$105 \quad \text{RHI} = \frac{\text{RHF}}{\text{RHL}}$$

106 RHI: Head rice recovery index

107 RHF: Head rice recovery rate in the field test

108 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_m = Milling time

T_o = Operation time other than milling

4.3.6 Inspection after disassembling

a) Inspection method.

The rice mill shall be disassembled and checked if necessary

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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 blade

171 **E** Length of cylinder worm shaft

172 **F** Length of cylinder worm shaft up to straight edge and worm edge

173 **G** Diameter of cylinder worm shaft

174 **H** Length of screen

175 **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:

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