

ལྷ་འཕགས་བརྟུག་དཔྱད་སྒྲིག་ལུགས། གོ་རིམ་ ༢ པ།

BHUTAN STANDARD
Rice Mill- Test Code (Part 2)



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BHUTAN STANDARDS BUREAU

The National Standards Body of Bhutan

THIMPHU 11001

ལྷ་འཐབ་ག བརྟག་དབྱེད་སྒྲིག་ལུགས། གོ་རིམ་ ༢ བ།

BHUTAN STANDARD

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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.

ཚུ་འཐབ་ག་ བརྟམ་དཔྱད་སྒྲིག་ལུགས་། བོ་རིམ་ 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

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

109 4.3.5.5 Milling Capacity

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

$$111 \quad CM = \frac{W}{T}$$

$$112 \quad T = T_m + T_o$$

113 Where:

114 CM = Milling Capacity

115 W = Weight of input paddy

116 T = Total operation time

117 T_m = Milling time

118 T_o = Operation time other than milling

119

120 4.3.6 Inspection after disassembling

121 a) Inspection method.

122 The rice mill shall be disassembled and checked if necessary

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141 **Annex A**

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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:

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