भारतीय मानक

Indian Standard

IS 11787 : 2024

धान के छिलके निकालने का यंत्र — रबड़ रोलर प्रकार — विशिष्टि

(पहला पुनरीक्षण)

Paddy Dehusker — Rubber Roller Type — Specification

(First Revision)

ICS 65.060

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
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January 2024 **Price Group 5**

Agriculture and Food Processing Equipment Sectional Committee, FAD 20

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Agriculture and Food Processing Equipment Sectional Committee had been approved by the Food and Agriculture Division Council.

With the ongoing rapid modernization of rice mills, rubber roll type paddy dehuskers are being extensively used throughout the country. A need was felt to prepare this standard, to help manufacturers to produce quality machines.

This standard was originally published in 1986. In this revision, following modifications have been incorporated keeping in view the technological advancements in the field and the standard has been brought out in the latest style and format of the Indian Standards:

a) The requirements for materials for construction of various components of the equipment have been incorporated/updated as per recent industrial practice;
b) The broken percentages for parboiled and raw paddy have been separately specified;
c) Provisions for quick release of paddy and provision for emergency stop/alarm in electric circuit have been incorporated;
d) The minimum thickness of metal sheet used in the construction of various parts is increased to 1.0 mm; and
e) The minimum load that guards shall withstand without any permanent set has been decreased from 1200 N/0.1 m² to 600 N/0.1 m².

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

PADDY DEHUSKER — RUBBER ROLLER TYPE — SPECIFICATION

(First Revision)

1 SCOPE

This standard specifies material, performance and other requirements for rubber roller type paddy dehusker.

2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

3 TERMINOLOGY

For this standard, the definitions given in **3** of IS 9049 shall apply.

4 MATERIAL

The material for rubber roll shall be as given in IS 8427. The material for other components shall be as given in co1 (3) of Table 1. The material shall conform to the relevant Indian Standards given in co1 (4) of Table 1.

5 PERFORMANCE REQUIREMENTS

5.1 The dehusker shall be operated in accordance with **8** of IS 9049. During the no-load run, the visual observations shall not indicate the following:

a) Presence of any marked vibration during operation;
b) Presence of any undue noise in the dehusker;
c) Any unusual heating of any component;
d) Any slippage of belts;
e) Vibration in fan running;
f) Non-smooth running of shafts in their respective bearings; and
g) Any marked unusual wear or slackness in any components.

5.2 When tested in accordance with **9** of IS 9049, the rated capacity per kWh energy consumed for raw or parboiled paddy shall be not less than 400 kg for parboiled paddy and 300 kg for raw paddy. The manufacturer shall declare various adjustments, clearances and speeds for the rated capacity.

5.2.1 The brokens shall be not more than 5 percent for parboiled and 10 percent for raw paddy at 14 percent moisture content on wet basis (w.b.).

5.2.2 The shelling efficiency shall not be less than 90 percent for raw paddy and 95 percent for parboiled paddy at 14 percent (w.b.) moisture content.

5.2.3 The rice shall not get any visible stain.

5.2.4 During and after the capacity test, the visual observations shall not indicate the following:

a) Observations given in **5.1 (a)** to **(g)**; and
b) Leakage of grain from the dehusker.

5.3 When tested in accordance with **10** of IS 9049, no breakdown and defects shall develop in any unit of the dehusker.

6 OTHER REQUIREMENTS

6.1 The metal sheet used in the construction of various parts shall be of a minimum of 1.0 mm thickness.

6.2 The axle shaft shall be finished to close tolerances at the bearing and shall be properly aligned.

6.3 Provision shall be made for lubrication of bearings, and they shall be dustproof.

6.4 A feed regulating and spreading system shall be provided.

6.5 Adequate arrangements for cooling of rubber rolls during operation shall be provided so that the rubber roll housing temperature shall not exceed 60 °C.

NOTE — This requirement may be tested during long-run-test by putting the thermometer on the outside surface of the housing.

6.6 Various controls shall be easily accessible and capable of being locked in a chosen position.

6.7 In the case of belt drive, the provision shall be made for belt-tightening.

6.8 Provision for inspection window/cover may be made.

6.9 Transmission guards shall be provided to prevent accidental contact of persons or parts of clothing being caught in the transmission system unless the system is so constructed or placed as safe without guards.

6.9.1 The guards shall be so designed as not to hinder in easy adjustment, servicing and operation of the dehusker.

6.9.2 All guards should be either permanently attached or firmly seemed to prevent their removal without the tools aid. The servicing and adjustments should be possible without the complete removal of the guards.

6.9.3 The guards shall have sufficient strength to support a load of 600 N applied at any point over an area of 0.1 m^2 without a permanent set.

NOTE — Depending upon space available, area and load may be correspondingly increased or decreased for testing purpose.

6.10 Provision for the adjustment of roller gap shall be made.

6.11 In a rubber roll dehusker, mechanism for quick release of paddy grains should be provided to clear the jam in case of choking.

6.12 Provision for emergency stop/alarm should be included in the electric circuit.

6.13 The rubber rolls shall conform to the requirements given in IS 8427. The manufacturer shall declare the type and size code. The arrangement shall be made for easy replacement as well as locking of the rollers.

6.14 The dehusker shall be provided with the operator's manual (*see* **4.2.2** of IS 8132). Manual shall also contain the information given in Annex A of IS 9049.

Table 1 Material of Construction

(*Clause* 4)

Sl No.	Component	Material	Conforming to Indian Standard
(1)	(2)	(3)	(4)
i)	Feeding hopper	Mild steel	IS 2062
		Galvenized iron	IS 277
		Stainless steel	IS 6911
ii)	Main frame	Mild steel	IS 2062
iii)	Bearing housing/Plummer block	Cast iron	IS 210
iv)	Pulleys	Cast iron	IS 210
v)	Spring	Spring steel	IS 4454 (Part 1)
vi)	Doors	Mild steel	IS 2062
		Stainless steel	IS 6911
vii)	Roller box	Cast iron	IS 210
viii)	Rubber roller	Rubber	IS 8427
ix)	Brown rice outlet	Stainless steel	IS 6911
x)	Blade holder	Cast iron	IS 210
xi)	Blower	Mild steel	IS 2062
		Cast iron	IS 210
xii)	Blower shaft	Mild steel	IS 2062
xiii)	Handle/hand wheel	Mild steel	IS 2062
		Cast iron	IS 210

7 WORKMANSHIP AND FINISH

7.1 Welding used for jointing different components shall not be porous and shall be smooth (*see* IS 816).

7.2 Any sharp corners and protruding fasteners shall be avoided.

7.3 Components of the dehusker shall be finished smooth and properly painted.

8 MARKING AND PACKING

8.1 Marking

Each dehusker shall be marked with the following particulars:

a) Manufacturer' name and recognized trademark, if any;
b) Model number;
c) Batch, code or serial number;
d) Power rating, kW; and
e) Rated input capacity.

8.2 Packing

The dehusker or its components shall be packed as agreed to between the purchaser and the supplier for safe handling in transit and storage.

8.3 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

ANNEX A

(*Clause 2*)

LIST OF REFERRED STANDARDS

IS No.	*Title*	*IS No.*	*Title*
IS 210 : 2009	Grey iron castings — Specification (*fifth revision*)	IS 8427 : 2023	Agricultural produce milling machinery — rubber roll for paddy dehusker — Specification (*second revision*)
IS 816 : 1969	Code of practice for use of metal arc welding for general construction in mild steel (*first revision*)	IS 8132 : 2023/ ISO 3600 : 2022	Tractors and machinery for agriculture and forestry, powered lawn and garden equipment — Operator's manuals — Content and format (*third revision*)
IS 2062 : 2011	Hot rolled medium and high tensile structural steel — Specification (*seventh revision*)		
IS 4454 (Part 1) : 2001	Steel wire for mechanical springs — Specification: Part 1 Cold drawn unalloyed steel wire (*third revision*)	IS 9049 : 2023	Agricultural produce milling machinery — Paddy dehusker, rubber roll type — Test code (*second revision*)
IS 6911 : 2017	Stainless steel plate, sheet and strip — Specification (*second revision*)		

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Agriculture and Food Processing Equipment Sectional Committee, FAD 20

Organization	*Representative(s)*
Indian Council of Agricultural Research, New Delhi	DR SHYAM NARAYAN JHA **(*Chairperson*)**
Agriculture Machinery Manufacturers Association, Pune	DR SURENDRA SINGH SHRI MITUL PANCHAL (*Alternate*)
CCS Haryana Agricultural University, Hisar	DR RAVI GUPTA
CSIR - Central Food Technological Research Institute, Mysuru	DR UMESH HEBBAR DR NAVIN KUMAR RASTOGI (*Alternate*)
Dr Panjabro Deshmukh Krishi Vidyapeeth, Akola	DR SUCHITA V. GUPTA DR BHAGYASHREE N. PATIL (*Alternate*)
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National Institute of Food Technology, Entrepreneurship and Management, Thanjavur	DR S. BHUVANA
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Punjab Agricultural University, Ludhiana	DR SANDHYA SINGH DR MANINDER KAUR (*Alternate* I) DR ROHIT SHARMA (*Alternate* II)

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Member Secretary
SHRI PRADEEP SHARMA
SCIENTIST 'B'/ASSISTANT DIRECTOR
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To Update Raw Material Specification of Rice Milling Equipment Panel, FAD 20/P17

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