भारतीय मानक

Indian Standard

IS 12396 : 2024

धान क्लीनर — विशिष्टि

(पहला पुनरीक्षण)

Paddy Cleaners — Specification

(First Revision)

ICS 65.060

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

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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.

The freshly harvested paddy often contain inert matter like chaff, stems, stones, mud, deteriorated and damaged grain, and weeds and other crop grain. In order to remove these impurities from the grains, paddy cleaners are being manufacturers and used by different stakeholders related to paddy production and distribution system.

This standard was first published in 1988. 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 material specifications for individual components of the equipment have been added and the referred standards updated; and
b) The minimum load that guards shall withstand without any permanent set has been decreased from 1 200 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 CLEANERS — SPECIFICATION

(First Revision)

1 SCOPE

This standard specifies material, constructional, performance and other requirements of paddy cleaners.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions 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 the purpose of this standard, the definitions given in **3** of IS 8440 shall apply.

4 MATERIALS

4.1 The material of construction for various components of the mini rice mill shall be as given in col (3) of Table 1. The materials shall conform to relevant Indian Standards as given in col (4) of Table 1.

4.2 The wire cloth sieve and perforated type sieve should conform to IS 2405 (Part 1) and IS 2405 (Part 2) respectively.

5 PERFORMANCE REQUIREMENTS

5.1 The cleaner shall be operated at no load as given in **8** of IS 8440. During the no-load run, the visual observations shall not indicate the following:

a) Presence of any marked vibration during operation;
b) Presence of undue knocking or rattling sound;
c) Frequent slippage of belts;
d) Non-smooth running of shafts in their respective bearings;
e) Any marked unusual wear or slackness in any component;
f) Any marked rise in bearing temperature; and
g) Vibration in fan running.

5.2 The rated input capacity in quintals per kWh energy consumed, with 5 percent and 10 percent foreign matter in the paddy mass, shall be declared by the manufacturer. The various adjustments, clearances and speeds for that capacity shall also be declared. When tested in accordance with the method given in **9.1.9** of IS 8440, the declared capacity shall not differ by ± 5 percent.

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

a) Observations given under **5.1 (a)** to **(g)**;
b) Frequent clogging of screen perforations;
c) Non-smooth flowing of material through different components;
d) Frequent clogging of aspiration unit;
e) Any marked wear, deformation and breakdown;
f) Frequent loosening of fasteners; and
g) Leakage of grains from the cleaner, while in operation.

5.3 When tested in accordance with **9.2** of IS 8440, no breakdown shall occur in any unit of the cleaner.

6 CONSTRUCTIONAL REQUIREMENTS

6.1 Frame shall be made of suitable size mild steel angle section or wood and shall be provided with proper bracings.

6.2 Hopper shall be provided with a feed regulating device capable of distributing the feed evenly to the cleaner.

6.3 One or two oscillating and/or rotary screens, depending on the size of the cleaners, shall be used.

6.4 Blower shall be provided with a control to regulate air flow rate.

6.5 Suitable system for transmitting the power shall be provided. It may consist of V-belt and pulley, gears or sprocket and chain.

6.5.1 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 to be safe without guards.

6.5.2 The guards shall be so designed as not to hinder in easy adjustment, servicing and operation of cleaner.

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

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

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

6.6 The shafts and eccentrics shall be supported on ball or roller bearings at both the ends.

Table 1 Material of Construction

(*Clause* 4.1)

Sl No.	Component	Material	Reference to IS
(1)	(2)	(3)	(4)
i)	Belt guard	Mild steel	IS 2062
ii)	Blower/aspirator	Mild steel	IS 2062
iii)	Cam/eccentric	Cast iron	IS 210
		Mild steel	IS 2062
iv)	Feed hopper	Mild steel	IS 2062
		Galvenized iron	IS 277
		Stainless steel	IS 6911
v)	Hand wheel	Cast iron	IS 210
vi)	Husk outlet/aspirator	Mild steel	IS 2062
vii)	Main frame	Mild steel	IS 2062
viii)	Outlet for cleaned paddy	Mild steel	IS 2062
		Stainless steel	IS 6911
ix)	Outlet for impurities	Mild steel	IS 2062
x)	Plummer block	Cast iron	IS 210
xi)	Pully	Cast iron	IS 210
xii)	Reciprocating box	Wood	IS 399
		Mild steel	IS 2062
xiii)	Rotor/rotary sieve	Mild steel	IS 2062
xiv)	Shaft	Mild steel	IS 2062
xv)	Sieve frame	Wood	IS 399
		Mild steel	IS 2062
xvi)	Sieves/wire mesh/screen	Mild steel	IS 2062
		Stainless steel	IS 6911

7 OTHER REQUIREMENTS

7.1 Provision for the adjustments of the following shall be made:

a) Feed rate; and

b) Air displacement.

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

7.3 In case of belt drive, provision for belt tightening shall be made.

7.4 Magnets shall be provided to arrest iron contaminants.

7.5 Provision for cleaning the screen and to avoid clogging shall be provided.

7.6 Suitable inspection window may be provided to inspect the process of cleaning.

7.7 The cleaner shall be provided with the operator's manual (*see* **4.2** of IS 8132). Manual shall also contain the information given in Annex A of IS 8440.

8 WORKMANSHIP AND FINISH

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

8.2 The components of the cleaner shall be free from cracks, pits and other visual defects which may be detrimental for their use. The rust preventive coating to the steel components and varnish to the wooden components shall be provided.

9 MARKING AND PACKING

9.1 Marking

Each cleaner shall be marked with the following particulars on the main body:

a) Manufacturers name and recognized trademark, if any;
b) Model number;
c) Batch, code or serial number;
d) Power rating, kW;
e) Rated input capacity; and
f) Direction of rotation of rotating parts.

A minimum cautionary notice worded as follows shall be written in vernacular language legibly and prominently on the main body of the cleaner:

a) Do not wear loose dress, bangles, watch, etc while working;
b) Do not work under the influence of intoxicants like liquor, opium, etc;
c) Children and aged persons should be discouraged for working on cleaner;
d) Do not cross over moving belts;
e) Do not operate cleaner without guards and safety devices;
f) Do not make adjustment when cleaner is working; and
g) Do not put or take-off belt while pulley is running.

9.2 Packing

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

9.3 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 210 : 2009	Grey iron castings — Specification (*fifth revision*)
IS 277 : 2018	Galvanized steel strips and sheets (plain and corrugated) — Specification (*seventh revision*)
IS 399 : 1963	Classification of commercial timbers and their zonal distribution (*first revision*)
IS 816 : 1969	Code of practice for use of metal arc welding for general construction in mild steel (*first revision*)
IS 2062 : 2011	Hot rolled medium and high tensile structural steel — Specification (*seventh revision*)
IS 2405	Industrial sieves — Specification:
(Part 1) : 2023	Wire cloth sieves (*second revision*)
(Part 2) : 2023	Wire sieves (*second revision*)
IS 6911 : 2017	Stainless steel plate, sheet and strip — Specification (*second revision*)
IS 8132 : 2023/ ISO 3600 : 2022	Tractors machinery for agriculture and forestry powered lawn and garden equipment — Operators manuals — Content and format (*third revision*)
IS 8440 : 2023	Paddy cleaners — Test code (*first 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
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In Personal Capacity (*CD 223, Ansal Golf Link 1, Greater Noida - 201315*)	DR PITAM CHANDRA
In Personal Capacity (*MIG - 154, E-7 Sector Aerea Colony, Bhopal - 462061*)	DR S. D. DESHPANDE
In Personal Capacity (*12/36 Sowbhagya Nagar A Block Civil Aerodrome Post, Coimbatore - 641014*)	DR R. VISVANATHAN
BIS Directorate General	SHRIMATI SUNEETI TOTEJA, SCIENTIST 'E'/ DIRECTOR AND HEAD (FOOD AND AGRICULTURE) [REPRESENTING DIRECTOR GENERAL (*Ex-officio*)]

Member Secretary
SHRI PRADEEP SHARMA
SCIENTIST 'B'/ASSISTANT DIRECTOR
(FOOD AND AGRICULTURE), BIS

To Update Raw Material Specification of Rice Milling Equipment Panel, FAD 20/P17

Organization	*Representative*
In Individual Capacity	DR R. VISVANATHAN **(*Convener*)**
ICAR - Central Institute of Agricultural Engineering, Regional Centre, Coimbatore	DR RAVINDRA NAIK
Indosaw Industrial Products Private Limited, Ambala Cantt.	DR VINOD H. KALBANDE
Indian Stainless Steel Development Association, Gurugram	SHRI ROHIT KUMAR

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices:		*Telephones*
Central	: 601/A, Konnectus Tower -1, 6th Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002	2323 7617
Eastern	: 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091	2367 0012 2320 9474
Northern	: Plot No. 4-A, Sector 27-B, Madhya Marg, Chandigarh 160019	265 9930
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