भारतीय मानक

Indian Standard

IS 4417 : 2023

वस्त्रादि — पर्न-चेंजिंग स्वचालित कपास, वूलन और वर्स्टेड करघों के लिए शटल्स के लिए वेफ्ट पर्न्स — विशिष्टि

(दूसरा पुनरीक्षण)

Textiles — Weft Pirns for Shuttles for Pirn-Changing Automatic Cotton, Woollen and Worsted Looms — Specification

(Second Revision)

ICS 59.120.30

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October 2023 **Price Group 5**

Textile Machinery and Accessories Sectional Committee, TXD 14

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Textile Machinery and Accessories Sectional Committee had been approved by the Textiles Division Council.

A pirn is a weft bobbin that is placed inside a shuttle in shuttle weaving. As the shuttle travels back and forth across the width of the shuttle loom, the weft yarn is unwound from the pirn through the eye (for ordinary shuttle) or slot (for automatic shuttle) of the shuttle and lay in the shed. The yarn on the pirn is tapered at one end such that the yarn with drawl takes place continuously without entanglement.

This standard was originally published in 1967. This standard was revised in 1971. The standard has again been revised to incorporate the following changes:

a) References to Indian Standards have been updated; and
b) Marking clause has been modified.

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

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

TEXTILES — WEFT PIRNS FOR SHUTTLES FOR PIRN-CHANGING AUTOMATIC COTTON, WOOLLEN AND WORSTED LOOMS — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes the requirements of weft pirns for use in shuttles for pirn-changing automatic cotton, woollen and worsted looms.

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 editions of these standards.

3 MANUFACTURE

3.1 General Design

The pirns should generally be as shown in Fig. 1.

3.2 Timber

The pirns should be manufactured from fully-seasoned timber (*see* IS 1141) of any of the species listed below as agreed to between the buyer and the seller:

Sl No.	*Trade Name*	*Botanical Name*
(1)	(2)	(3)
i)	Birch	*Betulla* sp.
ii)	Haldu	*Adina cordifolia* Hook. f.
iii)	Kaim (Kalam)	*Mitragyna parvifolia* Korth.
iv)	Maple	*Acer* sp.
v)	Mullilam	*Zanthoxylum rhetsa* DC. or *Zanthoxylum budrunga* DC.
vi)	White cedar	*Dysoxylum malabaricum* Bedd.

3.3 Steps and Grooves

The pirns shall have steps or grooves or both on the body; the shape and number of these shall be as agreed to between the buyer and the seller. In case of step-marked pirns, the edges of the steps shall be rounded off.

3.4 Shields

3.4.1 Shields, if prescribed by the buyer, shall be rigidly fixed.

3.4.2 The shields should be made of the material as agreed to between the buyer and the seller.

3.5 Rings

3.5.1 Depending on the agreement between the buyer and the seller, pirns shall be fitted with 3 or 4 rings made of spring steel of a suitable quality conforming to IS 4454 (Part 1).

3.5.2 The rings shall be given an anti-rust finish before being fitted to the pirns.

3.6 Finish

The pirns should be varnished, sand-papered or enameled or be given any other finish if prescribed by the buyer. Such a finish shall be smooth.

3.7 Freedom from Defects

The pirns should be visually free from bark pockets, checks or cracks, gum ducts, honeycombing, knots, splits and any other defect which is likely to affect the life or usefulness of the pirns [for the description of various types of defects, *see* IS 707 and IS 3364 (Part 1).

4 REQUIREMENTS

4.1 Dimensions

The dimensions of pirns shall conform to the requirements of Table 1 when read with Fig. 1.

NOTE — In case of pirns for direct spinning, the bore dimensions shall be as agreed to between the buyer and the seller.

4.2 Tackiness

The pirns shall not be tacky (*see* **B-1**).

4.3 Resistance to Moisture (Applicable only to Pirns with Bore)

The pirns shall be moisture-resistant. When tested by the method prescribed in **B-2**, enamelled pirns shall not absorb more than 1.5 percent moisture and varnished pirns not more than 5 percent.

4.4 Weight

Collective weight of 400 pirns shall be as agreed to between the buyer and the seller. A tolerance of ± 4 percent in the specified weight shall, however, be permissible.

5 SAMPLING

5.1 Unless otherwise agreed to between the buyer and the seller, the procedure given in IS 2500 (Part 1) shall be followed for sampling inspection. The level of inspection and the sampling plan as given in **5.1.1** and **5.1.2** shall be followed for various characteristics.

5.1.1 *Non-destructive Testing*

The scale of sampling shall be corresponding to Inspection Level IV given in Table 1 of IS 2500 (Part 1) for dimensions. The sampling plan to be followed shall be corresponding to Acceptable Quality Level (AQL) 1.0 percent given in Table 2 of IS 2500 (Part 1).

5.1.1.1 In case of weight, the number of sets of pirns to be tested shall be five if the number of cases of pirns in the lot is less than 10, but otherwise ten. The lot shall be considered satisfactory in respect of weight if all the sets tested satisfy the relevant requirement.

5.1.2 *Destructive Testing*

For the characteristics of tackiness and resistance to moisture, the scale of sampling shall be corresponding to Inspection Level I given in Table 1 of IS 2500 (Part 1). The sampling plan to be followed shall be corresponding to AQL of 1.0 percent given in Table 2 of IS 2500 (Part 1).

6 MARKING

6.1 Each pirn shall be marked at a suitable place with its variety number and the brand or trade-mark of the manufacturer.

6.2 Each pirn shall also be marked with the following information:

a) Dimensions of pirn;
b) Indication of the source of manufacture;
c) Batch or code number;
d) Gross and net mass;
e) Lot/batch number;
f) Country of origin; and
g) Any other information required by the law in force and/or by the buyer.

6.3 BIS Certification Marking

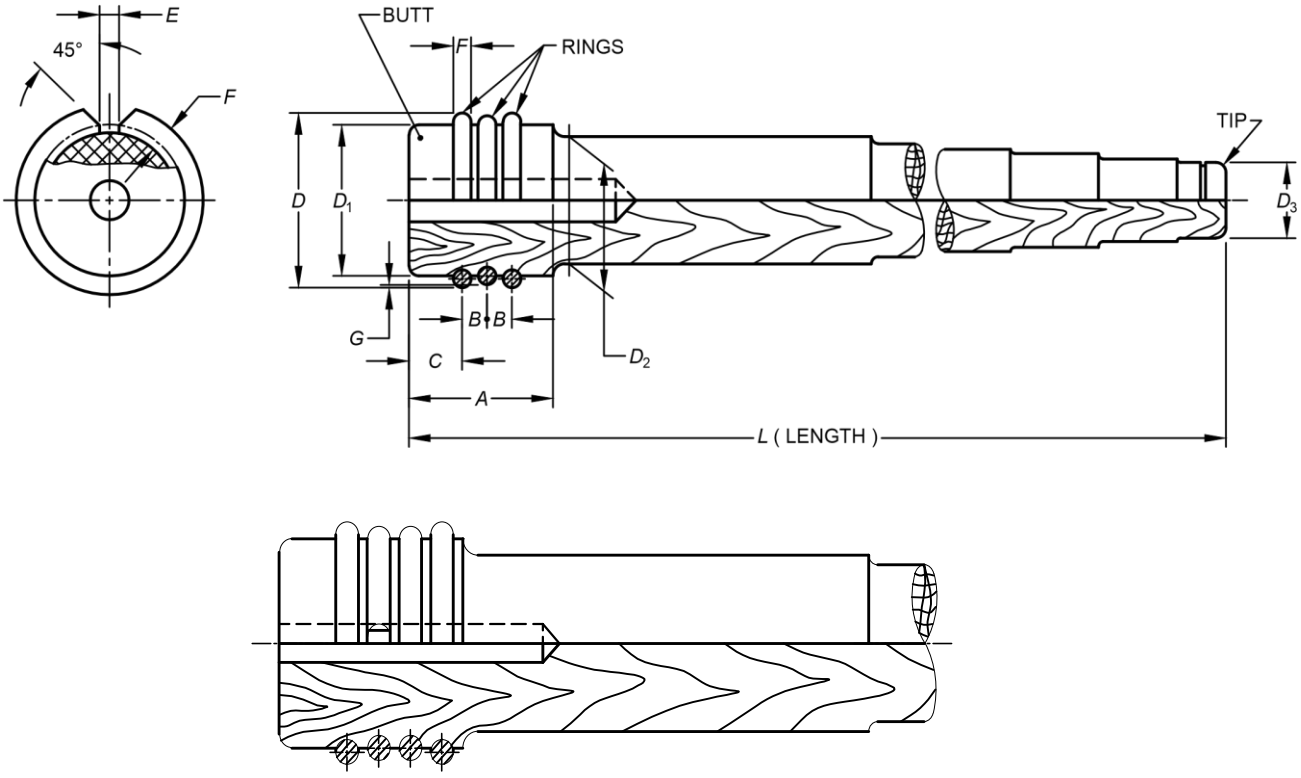
The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

7 PACKING

7.1 A suitable number of pirns shall be packed in wooden cases strong enough to withstand normal hazards of storage and transport.

7.2 Each case of pirns shall bear the following information:

a) Manufacturer's name, initials or trade-mark;
b) Variety No. with a reference to this Indian Standard;
c) Number of pirns in the case; and
d) Any other information as required by the buyer.



NOTE — In case of three rings, the openings of rings shall be at an angle of 120° and in case of four rings, they shall be at an angle of 90°.

FIG. 1 A TYPICAL AUTO PIRN

Table 1 Dimensions of Weft Pirns

(*Clause* 4.l *and Fig*. 1)

All dimensions in millimetres.

Sl No.	Variety	Length	A	B	C	E		F		G	D		D_1	D_2	D_3
		(L)	*Min*			*Min*	*Max*	*Min*	*Max*	*Max*	*Min*	*Max*	*Max*		*Min*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
i)	PA1	172	25	4.20	9.4	1	4	2.60	2.80	0.5	24.20	24.95	21.1	As agreed to between the buyer and the seller	10
ii)	PA2	172	25	4.20	9.4	1	4	2.60	2.80	0.5	27.00	27.68	23.4		10
iii)	PA3	190	25	4.20	9.4	1	4	2.60	2.80	0.5	27.00	27.68	23.4		10
iv)	PA4	200	25	4.20	9.4	1	4	2.60	2.80	0.5	30.10	30.85	26.2		10
v)	PA5	220	25	4.20	9.4	1	4	2.60	2.80	0.5	30.10	30.85	26.2		10
vi)	PA6	220	25	4.20	9.4	1	4	2.60	2.80	0.5	33.53	34.20	30.2		10
vii)	PA7	240	25	4.20	9.4	1	4	2.60	2.80	0.5	33.53	34.20	30.2		10
viii)	Tolerance	± 1	—	± 0.05	± 0.2	—	—	—	—	—	—	—	—	± 0.05	—

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 707 : 2011	Timber technology and utilization of wood, bamboo and cane — Glossary of terms (*third revision*)
IS 1141 : 1993	Seasoning of timber — Code of practice (*second revision*)
IS 2500 (Part 1) : 2000/ISO 2859-1 : 1999	Sampling procedures for inspection by attributes: Part 1 Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection (*third revision*)
IS 3364 (Part 1) : 1976	Methods of measurement and evaluation of defects in timber: Part 1 Logs (*first revision*)
IS 4454 (Part 1) : 2001	Steel wire for mechanical springs — Specification: Part 1 Cold drawn unalloyed steel wire (*third revision*)

ANNEX B

(*Clauses* 4.2 *and* 4.3)

METHODS OF TEST

B-1 TACKINESS

B-1.1 Place a pirn in one pan of a suitable balance, counterpoise it with weights in the second pan and add a 2.5 kg weight. Press down the pirn in the first pan with the thumb till the two pans are balanced. Hold the balance in that position for one minute and release the pressure of thumb slowly.

B-1.2 Report the pirn to be in conformity in respect of tackiness, if

a) it does not show any apparent tendency to stick to the thumb; and

b) the thumb impression on it, if any, can be wiped out with dry cotton.

B-2 RESISTANCE TO MOISTURE

B-2.1 Weigh a pirn Immerse it in water at 50 °C temperature for 1 hour, wipe, dry and weigh it again. Calculate the gain in weight and express it in percentage.

ANNEX C

(*Foreword*)

COMMITTEE COMPOSITION

Textile Machinery and Accessories Sectional Committee, TXD 14

Organization	*Representative(s)*
Central Manufacturing Technology Institute, Bengaluru	DR NAGAHANUMAIAN **(*Chairperson*)**
Amritlakshmi Machine Works, Mumbai	SHRI N. K. BRAHMACHARI SHRI N. K. RAUT (*Alternate*)
ATE Enterprises Private Limited, New Delhi	SHRI ABHIJIT KULKARNI SHRI ANIL KUMAR SHARMA (*Alternate*)
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Dashmesh Jacquard and Powerloom Private Limited, Panipat	SHRI RAJMEET DHAMMU
HLL Lifecare Limited, Noida	SHRI AKHIL G. S. SHRI RATNAKAR GUPTA (*Alternate*)
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Amend No.	Date of Issue	Text Affected

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