

भारतीय मानक ब्यूरो
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भारतीय मानक मसौदा

वस्त्रादि — खादी धागा — विशिष्टि

Draft Indian Standard

TEXTILES — KHADI YARN — SPECIFICATION

ICS 59.080.20

Handloom and Khadi Sectional Committee,
TXD 08

Last date for receipt of comment is
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FOREWORD

Khadi yarn is also called Khaddar yarn. It is prepared from strands of Cotton, mostly. However, they can be prepared from other natural fibres like silk or wool as Well. Khadi is made from completely natural fibres of any of the above mentioned materials. The fibres are handspun to manufacture yarn using a Charkha or Spinning Wheel, especially In India.

For khadi sector, yarn quality parameters play a major role in the working and quality determination of fabric in weaving and subsequent processes.

This standard will be beneficial for the khadi institutions, as it will enhance awareness and earnings of khadi spinners and weavers and its impact may be reflected in the form of awareness related to production of improved khadi yarn, working of looms, quality of khadi fabric.

In the formulation of this standard, considerable assistance has been derived from ‘Manual on Quality Guidelines for Khadi Spinning’ issued by Mahatma Gandhi Institute for Rural Industrialization (MGIRI), Wardha.

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.

1 SCOPE

1.1 This standard prescribes the requirements for khadi yarn handspun from cotton fibres and blend of cotton with polyester fibres.

1.2 This standard does not cover general appearance, feel, shade and type of finish.

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 the standards indicated in Annex A.

3 TERMINOLOGY

For the purpose of this standard the following definitions shall apply.

3.1 Charkha or Spinning Wheel — A simple hand-operated contrivance for spinning yarn from natural fibres.

3.2 Coefficient of Variation — The square root of the average of the squares of the deviation of linear density from the average linear density; expressed as percentage of the average linear density within the tested length of strand.

3.3 Count Lea Strength Product (CSP) — A number obtained by multiplying the breaking load of skein of yarn by the count of yarn expressed in an indirect system (that is, cotton count × pounds).

3.4 Metric Count (Nm) — The linear density of yarns, expressed as number of 1000 m hanks/kg.

3.5 Twist Factor or Twist Multiplier (TM) — A measure of the ‘twist hardness’ of a yarn determined by the multiplication of the turns per unit length by the square root of the linear density

on a direct system, or the division of the turns per unit length by the square root of the count on an indirect system. Typical examples of units of twist multiplier are:

- a) Turns per centimetre multiplied by $\sqrt{\text{(linear density of yarn of yarn in tex)}}$; and
- b) Turns per inch divided by $\sqrt{\text{(cotton count of yarn)}}$.

3.6 Twist Per Inch (TPI) — The number of turns per unit length (inch) of a yarn expressed as turns per inch (tpi).

4 MANUFACTURE

4.1 The khadi yarn shall be handspun using charkha or spinning wheel.

4.2 The khadi yarn shall be reasonably free from snarls, slubs, loose ends, odd, knots, knots with long tails, stains, burrs, etc. However, five knot per kg of khadi yarn shall be permissible.

5 REQUIREMENTS

5.1 The cotton khadi yarn shall conform to the requirements given in Table 1 and cotton content of the yarn shall be 100 percent. The fibres present in the yarn shall be identified according to the method prescribed in IS 667.

5.2 The poly khadi yarn shall conform to the requirements given in Table 2 and the blend composition of polyester with cotton fibres shall be 65 percent and 35 percent. However, a tolerance of ± 2 on blend percentage of the major fibre component shall be permissible. The blend composition shall be determined by the method prescribed in IS 3416.

5.3 Freedom from Defects

The yarn shall be free from defects listed in Annex B.

6 MARKING

6.1 Each cone or cheese of yarn shall be marked with the following:

- a) Indication of the source of manufacture;
- b) Count of yarn (in Nm);
- c) Net mass of yarn in package;
- d) Name of the material and variety number;
- e) Manufacturer's name, initials or trade-mark; and
- f) Any other information required by the buyer or by the law in force.

6.2 Each case containing cones or cheeses shall be marked with the following:

- a) Indication of the source of manufacture;
- b) Count of yarn (in Nm);

- c) Gross mass of bale or case;
- d) Net mass of bale or case; and
- e) Any other information required by the buyer or by the law in force.

6.3 BIS Certification Marking

The product 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 cone/cheese of yarn and case containing cones/cheeses may be marked with the Standard Mark.

Table 1 Requirements of Cotton Khadi Yarn
(Clause 5.1)

Sl No.	Variety No.	Count Group (Nm)	Count Group CV%	Minimum CSP	CSP Group CV%	TPI Range	TM
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	1	10-16	9	900	12	12-14	4.7
ii)	2	16-24	9	1200	12	14-16	4.4
iii)	3	24-36	7	1350	10	17-19	4.2
iv)	4	36-50	7	1450	10	19-23	4.2
v)	5	50-70	7	1600	10	23-26	4.1
vi)	6	70-85	7	1700	10	26-29	4.1
vii)	7	85-100	7	1800	10	29-32	4.1
viii)	8	100-140	7	1800	10	33-36	4.1
ix)	9	150	7	1750	10	36-40	4.0
x)	10	200	7	1600	10	41-45	3.9
xi)	11	250	7	1600	10	46-50	3.9
xii)	12	300	7	1600	10	50-54	3.9
xiii)	13	400	7	1600	10	58-62	3.9
xiv)	Method of Test, Ref to	IS 1315		IS 1671	See Note	IS 832 (Part 1)	

NOTE — Calculate the coefficient of variation (CV%) of all the CSP values taken.

Table 2 Requirements of Poly Khadi Yarn
(Clause 5.2)

Sl No.	Variety No.	Count Group (Nm)	Count Group CV%	Minimum CSP	CSP Group CV%	TPI Range	TM
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	1	24-36	6	2500	12	14-17	3.7
ii)	2	36-50	6	2500	12	16-19	3.5
iii)	3	50-70	6	2400	10	19-22	3.5
iv)	4	70-85	5	2400	10	22-25	3.5
v)	5	85-100	5	2400	8	24-27	3.5
vi)	Method of Test, Ref to	IS 1315		IS 1671	See Note	IS 832 (Part 1)	

NOTE — Calculate the coefficient of variation (CV%) of all the CSP values taken.

7 PACKING

7.1 Unless otherwise agreed upon by the buyer and the seller, the yarn shall preferably be packed in bales or cases in conformity with the procedure laid down in IS 293 or IS 1347.

8 SAMPLING

8.1 Lot

In any consignment the cases containing yarn of the same type and of the same nominal count shall constitute a lot.

8.2 Samples shall be drawn from each lot to determine its conformity with the requirements of the standard.

8.3 Unless otherwise agreed to between the buyer and the seller the number of cases to be selected from a lot shall be in accordance with Table 3. The bales or cases shall be selected at random, and in order to ensure the randomness of selection, guidance may be obtained from IS 4905.

8.4 In case two or less cases are selected in the sample, at least 10 cones or cheeses shall be drawn at random from each of the selected case. However, in case three or more cases are selected in the sample at least five cones or cheeses shall be drawn at random from each of the selected case. The number of leas to be prepared from each cone/cheese shall not be greater than 5. As far as possible, equal number of lease shall be prepared from each of the selected cone/cheese. The number of lease so prepared from the lot shall be equal to 30.

Table 3 Sampling
(Clause 8.3)

Sl No.	Lot Size	Sample Size
(1)	(2)	(3)
i)	Up to 3	1
ii)	4 to 10	2
iii)	11 to 30	3
iv)	31 to 50	5
v)	Over 50	8

8.5 Criteria for Conformity

The lot shall be considered as conforming to the requirements of this standard, if the following conditions are satisfied:

- a) The count calculated from the test results lies within the tolerance specified and the coefficient of variation for the count is less than those specified values;
- b) The count strength product is greater than or equal to the minimum specified values, and the coefficient of variation is less than the specified values; and
- c) All the test specimens examined for defects, twist and blend composition requirements.

ANNEX A
(Clause 2)

LIST OF REFERRED STANDARDS

<i>IS</i>	<i>Title</i>
IS 293 : 1980	Code for seaworthy packaging of cotton yarn and cloth (<i>third revision</i>)
IS 667 : 1981	Methods for identification of textile fibres (<i>first revision</i>)
IS 832 (Part 1) : 2021/ISO 2061 : 2015	Textiles — Determination of twist in yarns: Part 1 Direct counting method (<i>third revision</i>)
IS 1315 : 1977	Method for determination of linear density of yarns spun on cotton system (<i>first revision</i>)
IS 1347 : 1972	Specification for inland packaging of cotton cloth and yarn (<i>first revision</i>)
IS 1671: 1977	Method for determination of yarn strength parameters of yarns spun on cotton system (<i>first revision</i>)
IS 3416 : 1988	Method for quantitative chemical analysis of binary mixtures of polyester fibres with cotton or regenerated cellulose (<i>second revision</i>)
IS 4905 : 2015/ISO 24153 : 2009	Random Sampling and Randomization Procedures (<i>first revision</i>)

ANNEX B
(Clause 5.3)

COMMON DEFECTS OF YARN ON CONES/CHEESES AND HANKS

B-1 COMMON DEFECTS OF YARN ON CONES/CHEESES

- a) Stiches of more than 2.5 cm in length at the base;
- b) Excessive stiches at the nose;
- c) Soft cones or chesses;
- d) Collapsed cones or chesses;
- e) Prominent stains inclusive of chalk and other markings;
- f) Cut threads;
- g) Absence of tail end where it is required and the length of the tail-end should not be less than 30 cm;
- h) Ribbon formation; and
- j) Drum cuts.

B-2 COMMON DEFECTS OF YARNON HANKS

- a) Improper leasing;
- b) Nose and tail-end not tied with tie yarn;
- c) Entanglement;
- d) Presence of many knots with long tail-ends;
- e) Presence of hard waste;
- f) Excessive presence of twistlessness, irregular twist or cork screw effects in case of plied yarns; and
- g) Plying of wrong counts.