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IS 7866 (1993): Textiles - Ring spun polyester blended grey yarn [TXD 31: Man-Made Fibres, Cotton and their Products]
Indian Standard

TEXTILES — RING SPUN POLYESTER BLENDED GREY YARN — SPECIFICATION

( First Revision )

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

April 1993

Price Group 2
FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Cotton and Cotton Products Sectional Committee had been approved by the Textile Division Council.

This Standard was first published in 1975. It has been revised on the basis of experience gained and keeping in view the need of the industry. Following are the important changes carried out during this revision:

a) Tolerance on Yarn Count as well as CV% of Yarn Count has been tightened
b) Requirement of CSP has been upgraded
c) Requirement of imperfections per km has been added
d) Earlier blend composition of 67% polyester and 33% cotton was specified. Now blend composition has been left to the agreement between the buyer and the seller.

Following are the other standards available on yarn:

IS 171 : 1993 Textiles — Ring spun grey cotton yarn for weaving — Specification (fourth revision)
IS 834 : 1993 Textiles — Ring spun grey cotton yarn for hosiery — Specification (fourth revision)
IS 13683 : 1993 Textiles — Ring spun grey cotton yarn, superior type — Specification
IS 13719 : 1993 Textiles — Ring spun cotton grey regenerated cellulosic fibre blended yarn — Specification

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 : 1960 Rules for rounding off numerical values (revised). 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 — RING SPUN POLYESTER
BLENDED GREY YARN —
SPECIFICATION

( First Revision )

1 SCOPE
This standard specifies requirements of grey yarn (single and doubled) spun from blend of polyester with cotton or viscose fibre on ring spinning frame.

2 REFERENCES
The standards listed in Annex A are necessary adjuncts to this standard.

3 TERMINOLOGY
3.0 For the purpose of this standard the definitions given in 3.1 to 3.8 shall apply.

3.1 Cotton Count ( Ne )
The number of hanks (each measuring 768 m or 840 yd) in 453.6 g (or 1 lb).

3.2 Count Lea Strength Product ( CSP )
A number obtained by the following relationship:

\[ \text{CSP} = \frac{\text{Breaking Load of a lea in kg} \times \text{Cotton count (} \text{Ne} \text{)}}{2.2046} \]

3.3 Grey Yarn
Yarn as it leaves the spinning frame without any bleaching, dyeing or finishing treatment and in case of open end yarn, waxed or not waxed.

3.4 Lea
A continuous length of yarn measuring 109.73 m (120 yd) in the form of a coil having 80 wraps wound on a reel of 1.37 m (1.5 yd) girth.

3.5 Lea Breaking Load
The breaking load of a lea determined on a pendulum type testing machine, the rate of traverse being 300 ±15 mm per minute.

3.6 Ring Spun Yarn
Yarn spun on a system employing flat top cards and roller drafting assemblies with or without aprons on drawing, roving and ring frames.

3.7 Tex
A number indicating the mass in grams of one kilometre of yarn,

\[ \text{tex} = \frac{590.5}{\text{Ne}} \]

3.8 Two-Fold Yarn (Doubled Yarn)
A yarn in which two single yarns are twisted together in one or two operations.

4 CLASSIFICATION
The ring spun polyester blended yarn shall be classified as under:

PB 45 The polyester content in the blended yarn between 40 to 55 percent (inclusive)
PB 65 The polyester content in the blended yarn between 55 to 70 percent (inclusive)
PB 80 The polyester content in the blended yarn above 70 percent

5 REQUIREMENTS

5.1 Single Yarn

5.1.1 Blend Composition
The blend composition of polyester with cotton or viscose fibre shall be as agreed to between the buyer and the seller. However, a tolerance of ±3 on blend percentage of the major fibre component shall be permissible (see also IS 11195:1985).

5.1.1.1 The blend composition shall be determined by the method prescribed in IS 3416:1988.

5.1.2 Count of Yarn
The average count of yarn shall be as agreed to between the buyer and the seller. However, a tolerance of ±3 percent shall be permissible on count of yarn.

5.1.2.1 The coefficient of variation of yarn count shall not exceed 3.5 percent.

5.1.2.2 The count of yarn shall be determined by the method prescribed in IS 1315:1977.
5.1.3 Lea Breaking Load

The lea breaking load of yarn shall be determined by the method prescribed in IS 1671 : 1977.

5.1.3.1 The coefficient of variation of lea breaking load shall not exceed 10.0 percent.

5.1.3.2 The count lea strength product (CSP) of the yarn shall conform to the values specified in Table 1.

5.1.4 Twist in Yarn

The twist in yarn shall be as agreed to between the buyer and the seller and average twist shall be within ±10 percent of the specified value.

5.1.4.1 The twist in yarn shall be determined by the method prescribed in IS 832 : 1985.

5.1.5 Evenness of Yarn

The unevenness percentage (U percent) (see also Note 1) and the imperfections per km of the yarn on packages shall not exceed the values given in Table 2 when tested at a speed of 50 metres per minute and at sensitivity level of 0.5, 3 and 3 for thin places, thick places and neps respectively (see Notes 2 and 3).

NOTES

1 The unevenness percent can be expressed as coefficient of variation of unevenness using the formula CV% = 1.25 x U%.

2 The speed and sensitivity levels may be altered, subject to the agreement between the buyer and the seller.

3 The speeds and sensitivity level are specified based on the most popular instrument for determining evenness by Zellweger Uster and other instruments based on similar principle, that are most commonly used in the testing for yarn.

5.1.6 Freedom from Defects

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

5.2 Two-Fold Yarn (Doubled Yarn)

5.2.1 The single yarn used for producing two-fold yarn shall satisfy the requirements specified in 5.1.

5.2.2 The average resultant count of the two-fold yarn shall be as agreed to between the buyer and the seller. However, a tolerance of ±3 percent shall be permissible on the average resultant count.

5.2.2.1 The coefficient of variation of the resultant count shall not exceed 3.5 percent.

5.2.2.2 The resultant count shall be determined as per the method prescribed in IS 1315 : 1977.

5.2.3 Lea Breaking Load

The lea breaking load of two-fold yarn shall be determined by the method prescribed in IS 1671 : 1977.

5.2.3.1 The coefficient of variation of lea breaking load shall not exceed 8 percent.

5.2.3.2 The count lea strength products (CSP) of two-fold yarn shall not be less than the value calculated by the following relationship:

CSP of two-fold yarn = CSP of single yarn of equivalent count given in Table 1 X 1.18

5.2.4 The ply twist in the two-fold yarn shall be as agreed to between the buyer and the seller, and the average ply twist shall be within ±5 percent of the specified value.

5.2.4.1 The twist shall be determined by the method prescribed in IS 832 : 1985.

6 MARKING

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

a) Count of yarn;

b) Blend composition;

c) Table 1 CSP for Single Yarn

<table>
<thead>
<tr>
<th>Linear Density, Range</th>
<th>CSP Polyester/Cotton, Min</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PB 45</td>
</tr>
<tr>
<td>WEAVING YARN</td>
<td></td>
</tr>
<tr>
<td>Coarser than 25 tex (24s Ne)</td>
<td>2300</td>
</tr>
<tr>
<td>Above 25 tex (24s Ne) up to 16 tex (36s Ne)</td>
<td>2300</td>
</tr>
<tr>
<td>Above 16 tex (36s Ne) up to 12 tex (50s Ne)</td>
<td>2200</td>
</tr>
<tr>
<td>Above 12 tex (50s Ne) up to 8 tex (75s Ne)</td>
<td>2100</td>
</tr>
<tr>
<td>Finer than 8 tex (75s Ne)</td>
<td>2000</td>
</tr>
</tbody>
</table>

NOTE — For polyester/viscose blended yarn, the minimum CSP shall be higher than values specified above to the extent as under:

PB 45 — 200, PB 65 — 150, PB 80 — 100
Table 2 Unevenness of Yarn

<table>
<thead>
<tr>
<th>Linear Density, Range</th>
<th>Unevenness percent</th>
<th>Imperfections/km</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Thin places</td>
</tr>
<tr>
<td>Courser than 25 tex (24s Ne)</td>
<td>14.5</td>
<td>75</td>
</tr>
<tr>
<td>Above 25 tex (24s Ne) up to 16 tex (36s Ne)</td>
<td>14.5</td>
<td>75</td>
</tr>
<tr>
<td>Above 16 tex (36s Ne) up to 12 tex (50s Ne)</td>
<td>15.5</td>
<td>150</td>
</tr>
<tr>
<td>Above 12 tex (50s Ne) up to 8 tex (75 Ne)</td>
<td>16.0</td>
<td>275</td>
</tr>
<tr>
<td>Finer than 8 tex (75s Ne)</td>
<td>18.0</td>
<td>500</td>
</tr>
</tbody>
</table>

c) Net mass of yarn in package;
d) Indication of the source of manufacture; and
e) 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) Count of yarn;
b) Blend composition;
c) Gross mass of bale or case;
d) Net mass of bale or case;
e) Indication of the source of manufacture;
f) Any other information required by the buyer or by the law in force.

6.3 The package may also be marked with the Standard Mark.

7 PACKING

7.1 Unless otherwise agreed to between the buyer and the seller, the yarn shall be packed in accordance with the procedure laid down in either IS 293 : 1980 or IS 1347 : 1972.

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 : 1968.

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 leas so prepared from the lot shall be equal to 30.

Table 3 Sampling

<table>
<thead>
<tr>
<th>Lot Size</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 3</td>
<td>1</td>
</tr>
<tr>
<td>4 to 10</td>
<td>2</td>
</tr>
<tr>
<td>11 to 30</td>
<td>3</td>
</tr>
<tr>
<td>31 to 50</td>
<td>5</td>
</tr>
<tr>
<td>Over 50</td>
<td>8</td>
</tr>
</tbody>
</table>

8.5 In case two or less case 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 leas shall be prepared from each of the selected cone/cheese. The number of leas so prepared from the lot shall be equal to 30.

8.6 Criteria for Conformity

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

a) The average 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 lea strength product is greater than or equal to the minimum specified values, and the coefficient of variation is less than the specified values.

c) All the test specimens examined for defects, evenness, twist and blend composition shall satisfy the relevant requirements.
ANNEX A
( Clause 2 )
LIST OF REFERRED INDIAN STANDARDS

<table>
<thead>
<tr>
<th>IS No.</th>
<th>Title</th>
<th>IS No.</th>
<th>Title</th>
</tr>
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<tbody>
<tr>
<td>832 : 1985</td>
<td>Methods for determination of twist in yarn ( first revision )</td>
<td>3416 : 1988</td>
<td>Method for quantitative chemical analysis of mixtures of polyester fibres with cotton or regenerated cellulose ( second revision )</td>
</tr>
<tr>
<td>1315 : 1977</td>
<td>Method for determination of linear density of yarns spun on cotton system ( first revision )</td>
<td>4905 : 1968</td>
<td>Methods for random sampling</td>
</tr>
<tr>
<td>1347 : 1972</td>
<td>Inland packaging of cotton cloth and yarn ( first revision )</td>
<td>11195 : 1983</td>
<td>Blend composition of textiles</td>
</tr>
</tbody>
</table>

ANNEX B
( Clause 5.1. 6 )
COMMON DEFECTS OF YARN ON CONES/CHEESES AND HANKS

B-1 COMMON DEFECTS OF YARN ON CONES/CHEESES

a) Stitches of more than 2.5 cm in length at the base,
b) Excessive stitches at the nose,
c) Soft cones or cheeses,
d) Collapsed cones of cheeses,
e) Prominent stains inclusive of chalk and other markings,
f) Cut threads, and
g) Absence of tail end where it is required 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 YARN ON 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.
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