भारतीय मानक
Indian Standard

IS/ISO 16322-3 : 2021

वस्त्रादि — धुलाई के बाद स्पाइरेलिटी ज्ञात करना

भाग 3 बुने और निटेड परिधान

(पहला पुनरीक्षण)

Textiles — Determination of Spirality after Laundering

Part 3 Woven and Knitted Garments

(First Revision)

ICS 59.080.01

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November 2022 **Price Group 5**

Physical Methods of Test Sectional Committee, TXD 01

NATIONAL FOREWORD

This Indian Standard (Part 3) (First Revision) which is identical with ISO 16322-3 : 2021 'Textiles — Determination of spirality after laundering — Part 3: Woven and knitted garments' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on recommendation of the Physical Methods of Test Sectional Committee and approval of the Textiles Division Council.

This standard was first published in 2005 and was based on ISO 16322-3 : 2005. This standard has been revised to align it with the latest ISO 16322-3 : 2021 on the subject. Since ISO 16322 has been published in three parts, this standard has also been published in three parts. Other parts in this series are:

Part 1 Percentage of wale spirality change in knitted garments
Part 2 Woven and knitted fabrics

Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appears referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards the current practice is to use a point (.) as the decimal marker

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 139 Textiles — Standard atmospheres for conditioning and testing	IS 6359 : 2022 Method for conditioning of textiles (*first revision*)	Technically equivalent
ISO 6330 Textiles — Domestic washing and drying procedures for textile testing	IS 15370 : 2020 Textiles — Domestic washing and drying procedures for textile testing	Identical to ISO 6330 : 2012

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'.

Indian Standard

TEXTILES — DETERMINATION OF SPIRALITY AFTER LAUNDERING

PART 3 WOVEN AND KNITTED GARMENTS

(First Revision)

1 Scope

This document specifies procedures to measure the spirality or torque of woven and knitted garments after domestic laundering.

The results obtained from different procedures might not be comparable.

This document is not intended to measure the spirality of garments as manufactured, but rather the spirality after domestic laundering.

NOTE Some fabric constructions, such as denim, can have spirality intentionally introduced during manufacturing. Garments made of fabrics from circular knitting machines can have inherent nonverticality of wale alignment.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 139, *Textiles — Standard atmospheres for conditioning and testing*

ISO 6330, *Textiles — Domestic washing and drying procedures for textile testing*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
spirality
torque
<in garments>rotation, usually lateral, between different panels of a garment resulting from the release of latent stresses during laundering of the woven or knitted fabric forming the garment

Note 1 to entry: The phenomenon is sometimes referred to as twist, for example, denim jean leg twist.

4 Principle

Test specimens are prepared, marked and laundered according to specified procedures. Spirality is measured in percentage of a marked distance.

5 Apparatus

5.1 Automatic washing machine, as described in ISO 6330, the type agreed upon between parties.

5.2 Automatic drying machine, as described in ISO 6330, and agreed upon between parties.

5.3 Calibrated ruler, at least 500 mm in length, with 1 mm graduated mark.

5.4 T-square, at least 500 mm in length.

5.5 Conditioning rack.

6 Conditioning

Condition the garments in the standard atmosphere for textile testing in accordance with ISO 139, for a minimum of 4 h before marking or measuring them.

7 Test specimen

Select two garments to represent the sample. Mark appropriate distances on the garments.

8 Marking procedures

8.1 Procedure A — Garment, within-panel

8.1.1 Normal procedure

Mark reference line YZ across the width of the garment panel 75 mm above the bottom edge or hem (see Figure 1). If the bottom edge or hem is not straight, draw the reference line YZ perpendicular to the vertical axis of symmetry of the garment.

Place benchmark A midway along line YZ. Place one leg of a right angle device along line YZ so that the second leg is perpendicular upward from benchmark A. Draw a line parallel to line YZ, 500 mm above point A. Mark the intersection of the new line and the point directly above A. This is point B. If the garment panel size is insufficient to mark a 500 mm distance, mark the longest available length which is at least 75 mm below the upper edge of the test garment. Measure and record AB (see Figure 1).

8.1.2 Alternative procedure

If preferred, spirality may be determined using Procedure A as defined in ISO 16322-2:2021, 7.1.

8.2 Procedure B — Garment, panel sides

Lay the test garment flat with seams falling at their natural alignment. Circular knit garments that do not have side seams should be laid flat in the natural vertical alignment as if they had seams.

Mark the bottom edge or hem that intersects with the side seam or natural side edge of the garment. Mark another point up the seam or edge fold, 500 mm above the marked side hem point. This will be distance AB (see Figure 3). If the garment panel size is insufficient to mark a 500 mm distance, use the longest available length.

If the test specimens exhibit spirality prior to laundering, include those results in the report.

9 Laundering

9.1 Select laundering conditions according to ISO 6330 that correspond to those which the garment will be exposed.

9.2 Perform the selected number of laundering cycles.

9.3 After the final laundering cycle, condition garments in the standard atmosphere for testing textiles according to ISO 139.

10 Assessment

10.1 General

Specimens should be placed flat on a smooth surface in their natural orientation.

10.2 Assessment by procedure

10.2.1 Procedure A — Garment, within-panel

Place the horizontal leg of a right angle device along line YZ and the second leg on a perpendicular downward from point B. Mark the point where the angle device intersects with line YZ. This is point A′ (see Figure 2).

Measure and record AA′.

Calculate the percentage spirality (X) of each garment to nearest 0,1 % as shown in Formula (1):

$$X = 100(AA'/AB) \tag{1}$$

Calculate and report the mean percentage spirality in the garments tested.

10.2.2 Procedure B — Garment, side panel

The side seam or edge fold at the bottom hemmed edge is marked. This is point A′.

Measure and record line AB and AA′ (see Figure 4).

Calculate the percentage spirality (X) of each garment to the nearest 0,1 % as shown in Formula (2):

$$X = 100\left(\frac{AA'}{AB}\right) \tag{2}$$

Calculate and report the mean percentage spirality in the garments tested.

11 Test report

The test report shall contain the following:

a) a reference to this document, i.e. ISO 16322-3:2021;

b) details of garment tested;

c) mean percentage spirality of garments prior to laundering, if any;

d) mean percentage spirality of the garments tested after laundering;

e) marking procedure used (A or B);

f) laundering procedure and type washer used;

g) number of laundering cycles used;

h) date of the test;

i) details of any deviations from the specified procedure.

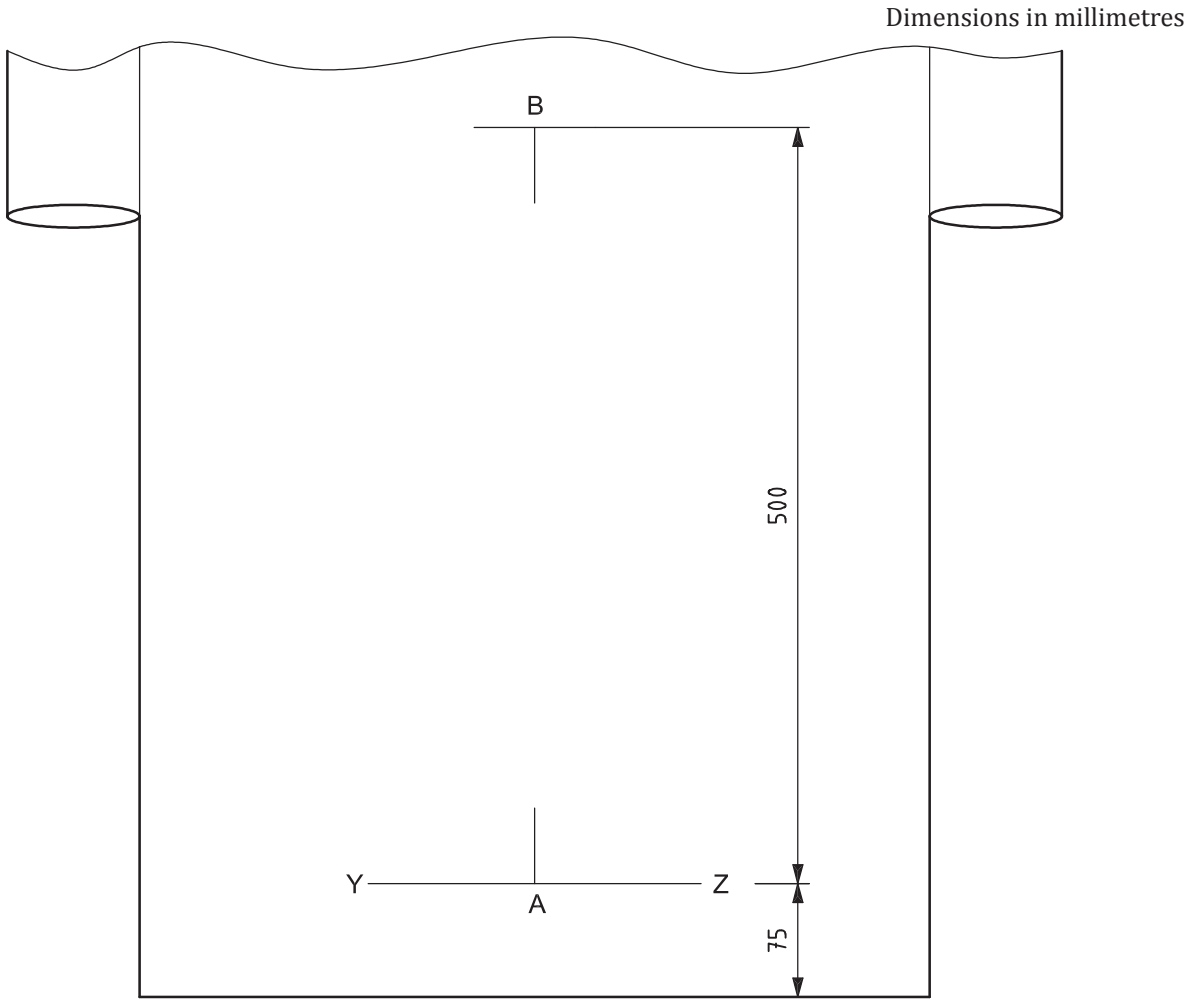
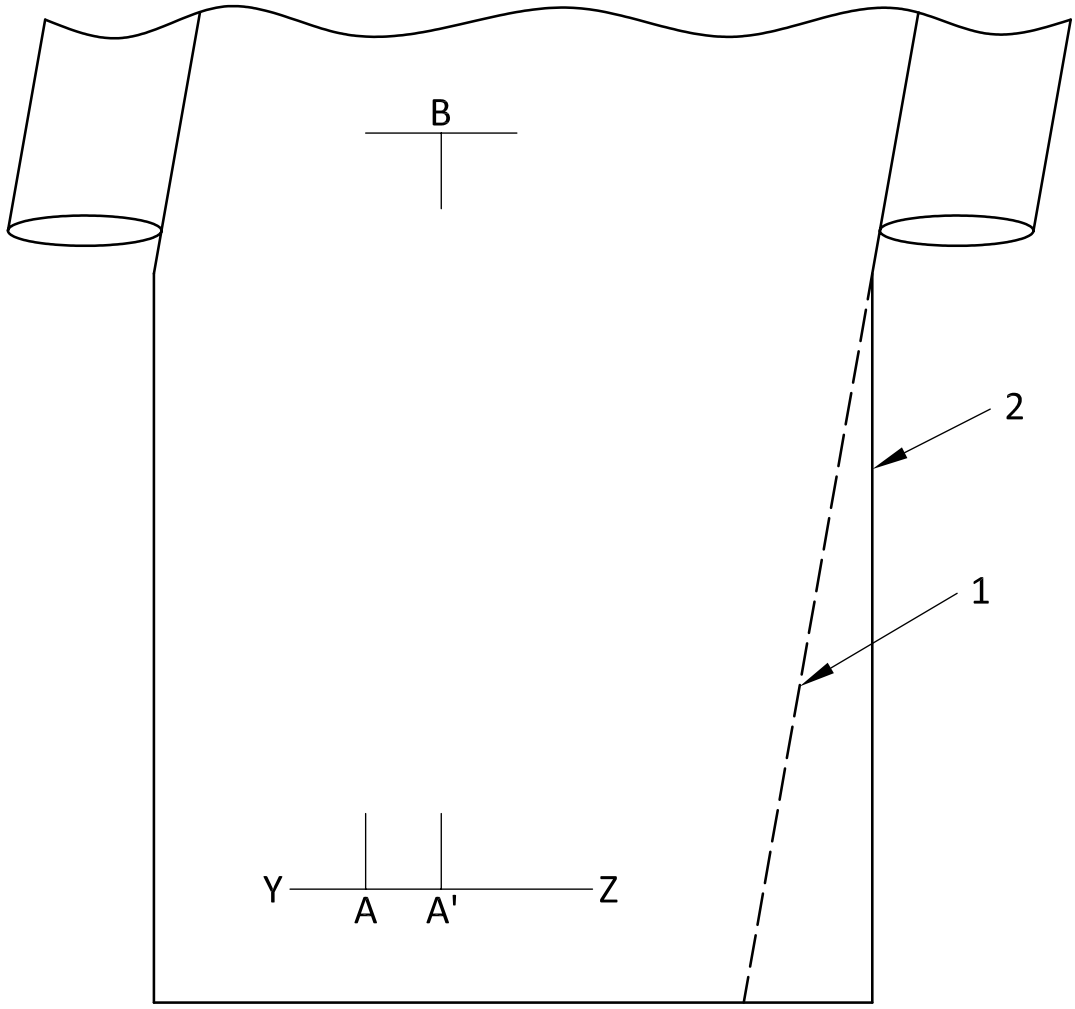


Figure 1 — Within-garment panel — Marks before laundering



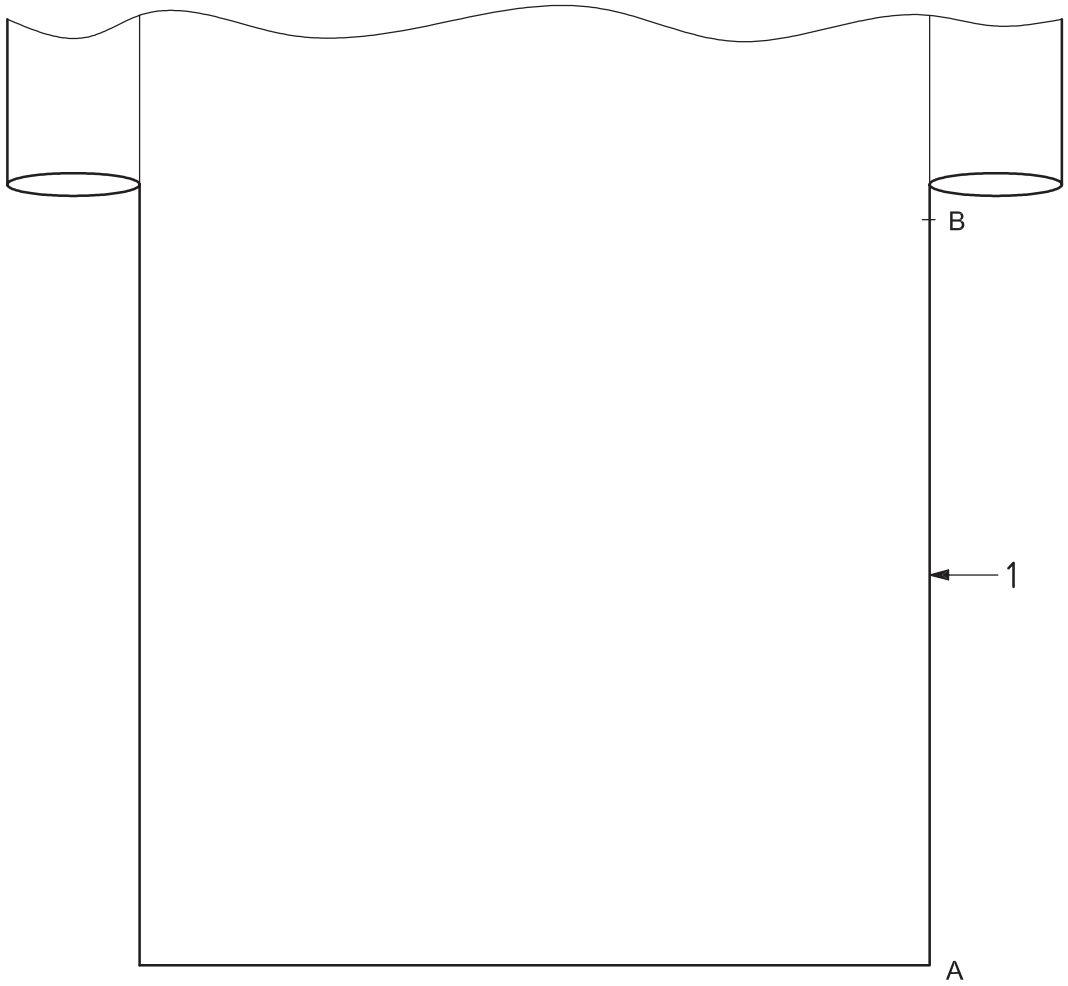
Key

1 original side seam

2 after laundering side edge fold

NOTE The spirality direction in the figure is for illustration only. Spirality can be in either direction.

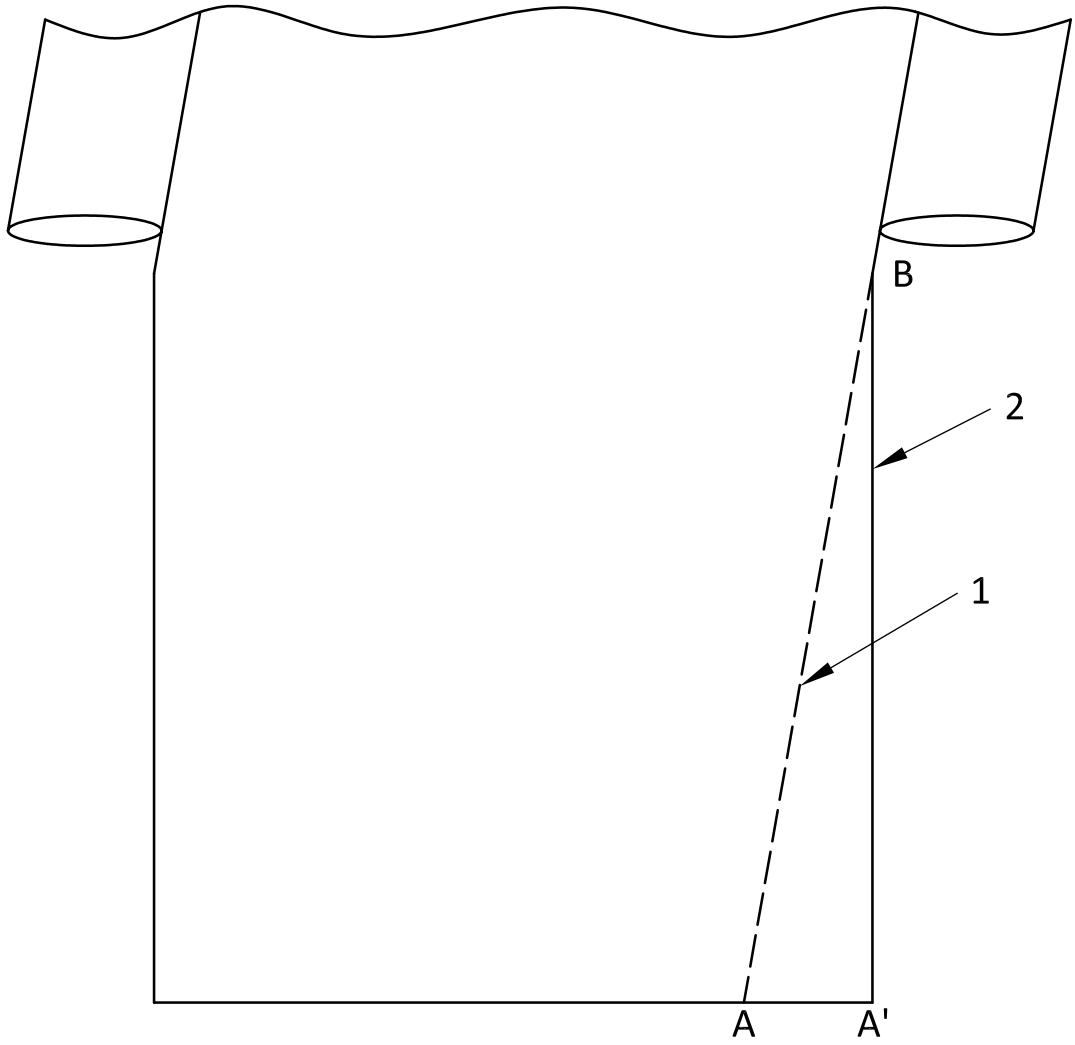
Figure 2 — Within-garment panel — Marks after laundering



Key

1 side seam (edge fold)

Figure 3 — Side seam (edge fold) — Garment marks before laundering



Key

1 original side seam

2 after laundering side edge fold

NOTE The spirality direction in the figure is for illustration only. Spirality can be in either direction.

Figure 4 — Side seam (edge fold) — Garment marks after laundering

Bureau of Indian Standards

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

This Indian Standard has been developed from Doc No.: TXD 01 (17865).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Published by BIS, New Delhi