INTERNATIONAL STANDARD

ISO 16322-3

Second edition

Textiles — Determination of spirality after laundering —

Part 3: Woven and knitted garments

Textiles — Détermination du vrillage après lavage —

Partie 3: Vêtements tissés ou tricotés

PROOF/ÉPREUVE

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 2, *Cleansing, finishing and water resistance tests*.

This second edition cancels and replaces the first edition (ISO 16322-3:2005), which has been technically revised. The main changes compared to the previous editions are as follows:

— Figure 4 has been corrected.

A list of all parts in the ISO 16322 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Textiles — Determination of spirality after laundering —

Part 3: Woven and knitted garments

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):

$$X = 100(AA'/AB) \quad (1)$$

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):

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

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.

Dimensions in millimetres

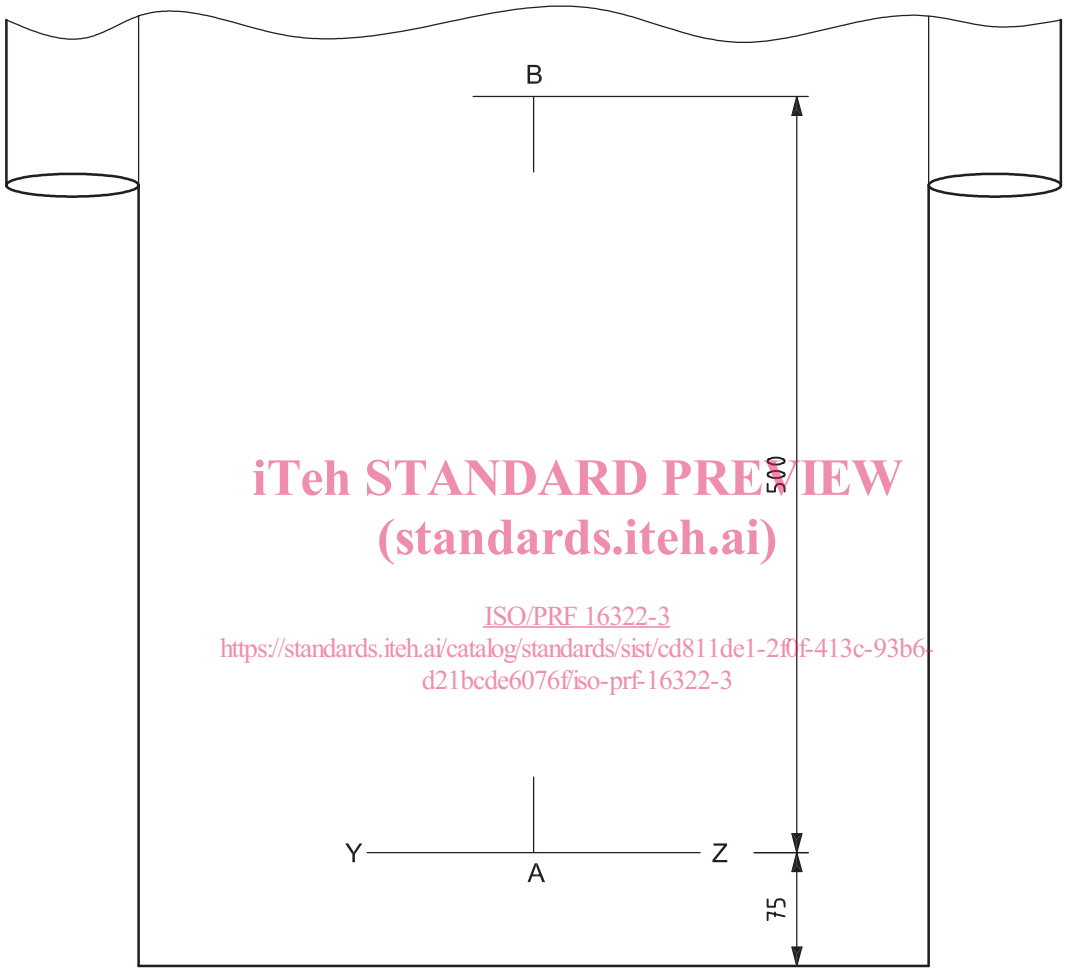
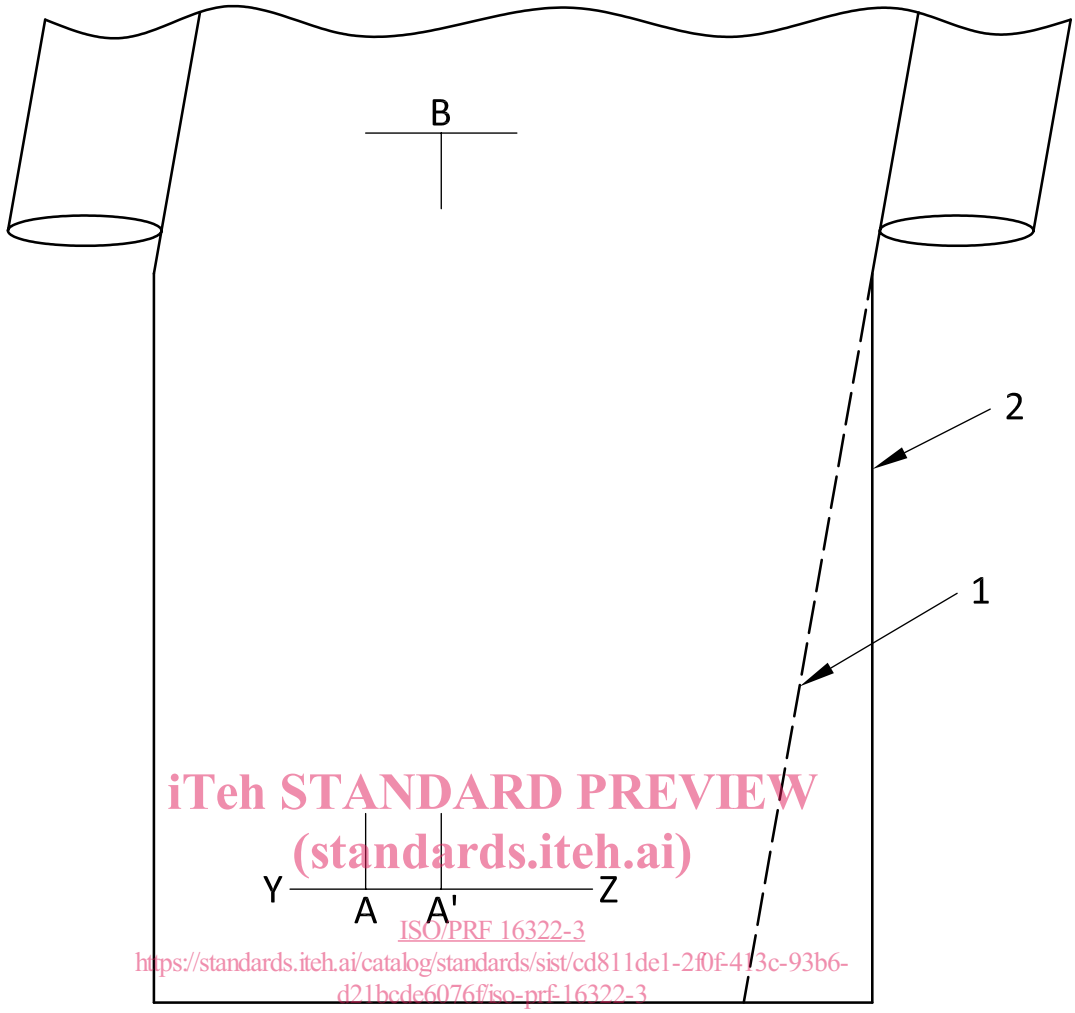


Figure 1 — Within-garment panel — Marks before laundering



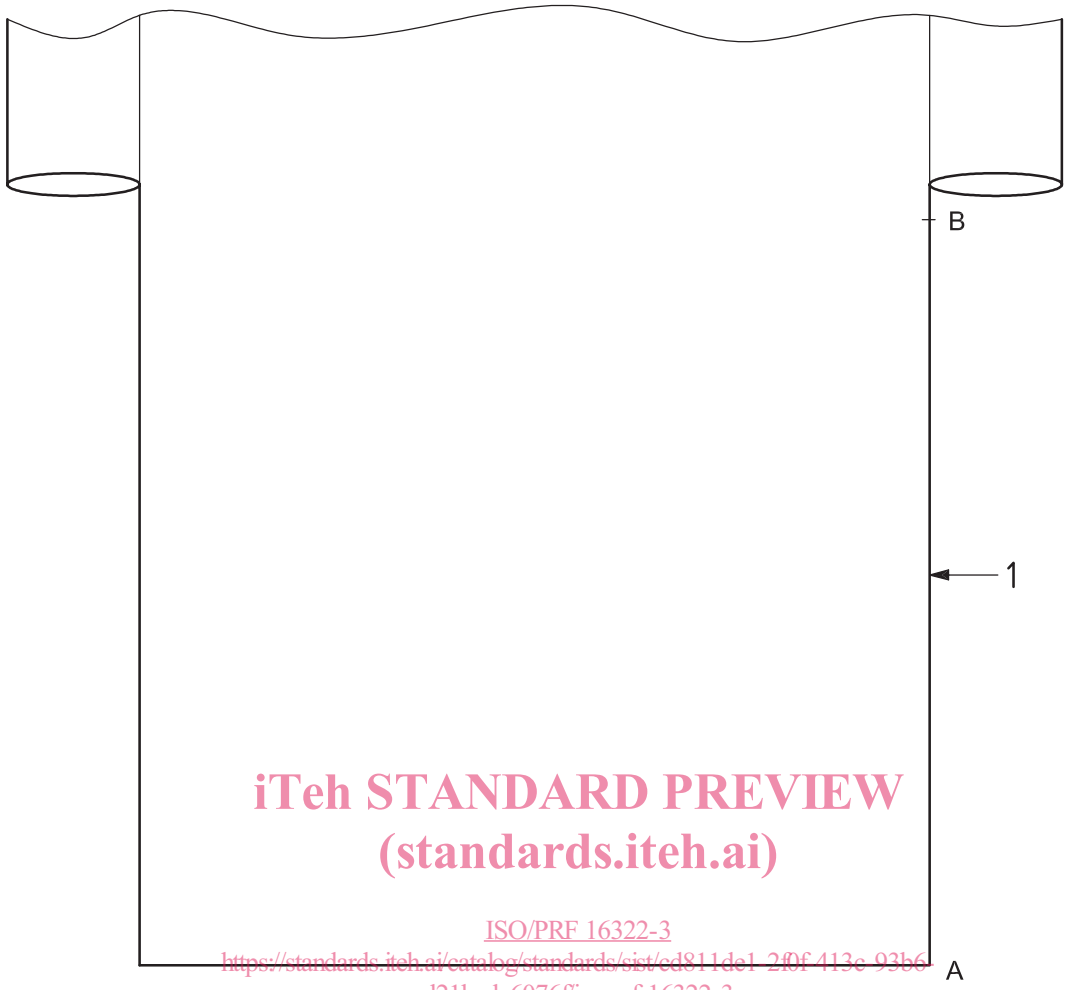
Key

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

