भारतीय मानक

Indian Standard

IS 4681 (Part 1) : 2024
ISO 2313-1 : 2021

वस्त्रादि — पुनः प्राप्ति के कोण को मापने के द्वारा कपड़े के एक मोड़े हुए नमूने की शिकन से पुनः प्राप्ति का निर्धारण

भाग 1 क्षैतिज में मुड़े हुए नमूने की पद्धति

(दूसरा पुनरीक्षण)

Textiles — Determination of the Recovery from Creasing of a Folded Specimen of Fabric by Measuring the Angle of Recovery

Part 1 Method of the Horizontally Folded Specimen

(Second Revision)

ICS 59.080.30

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Physical Methods of Test Sectional Committee, TXD 01

NATIONAL FOREWORD

This Indian Standard (Second Revision) which is identical to ISO 2313-1 : 2021 ‘Textiles — Determination of the recovery from creasing of a folded specimen of fabric by measuring the angle of recovery — Part 1: Method of the horizontally folded specimen’ 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 approved by the Textiles Division Council.

This standard was first published in 1968 and subsequently revised in 1981. The second revision of this standard has been undertaken to align it with the latest version ISO 2313-1 : 2021 ‘Textiles — Determination of the recovery from creasing of a folded specimen of fabric by measuring the angle of recovery — Part 1: Method of the horizontally folded specimen’ issued by the International Organization for Standardization (ISO).

The text of ISO standard has been approved as suitable for publication as an Indian Standard without deviations. 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’ appear referring to this standard, they should be read as ‘Indian Standard’; and

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 : 2023 Method for conditioning of textiles (*first revision*)	Technical Equivalent

In reporting the result 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*)’.

Contents

Page

Introduction

Creases in textile fabrics diminish at varying rates on the removal of the creasing forces. The magnitude of the crease recovery angle is an indication of the ability of a fabric to recover from accidental creasing.

The suitable method can be chosen according to the type or end-use of textile fabrics. The test results obtained by different methods are not comparable.

Indian Standard

TEXTILES — DETERMINATION OF THE RECOVERY FROM CREASING OF A FOLDED SPECIMEN OF FABRIC BY MEASURING THE ANGLE OF RECOVERY

PART 1 METHOD OF THE HORIZONTALLY FOLDED SPECIMEN

(Second Revision)

1 Scope

This document specifies a method for determining the angle of recovery of fabrics from creasing. The results obtained by this method for textile fabrics of very different kinds cannot be compared directly.

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*

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 https://www.electropedia.org/

3.1
crease recovery angle
angle formed between the two Iimbs of fabric specimen previously folded under prescribed conditions, at a specified time after removal of the creasing load

Note 1 to entry: In this method, rapid crease recovery angle is obtained at 15 s after removal of the creasing load.

Note 2 to entry: In this method, delay crease recovery angle is obtained at 5 min after removal of the creasing load.

4 Principle

A rectangular specimen of prescribed dimensions is horizontally placed in the flat surface and folded by means of a suitable device and maintained in this state for a specified time under a specified load. This creasing load is removed, the specimen is allowed to recover for a specified time, and then the crease recovery angle is measured.

Attention is drawn to the fact that for some types of fabrics, the limpness, thickness and tendency to curl of the specimen can give rise to very ill-defined crease recovery angles, and therefore an unacceptable lack of precision in making measurements. Many wool and wool mixture fabrics come under this heading.

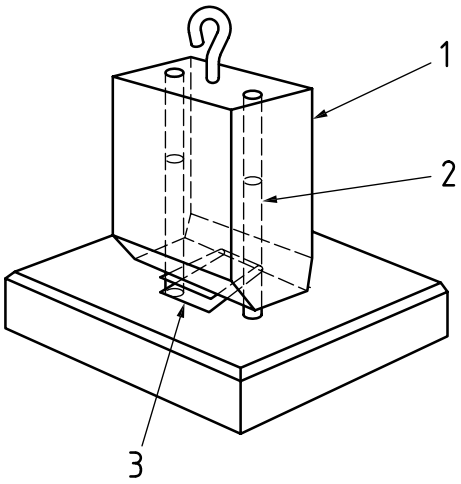
5 Apparatus

5.1 Apparatus for loading the specimen (press), consisting of the following parts:

a) A press to apply a total load of 10,0 N ± 0,5 N[1)] on an area of 15 mm ×15 mm of the folded specimen. It shall be possible to complete the removal of the load within a period of less than 1 s.

b) Two flat pressure plates which remain parallel to one another throughout the period of the application of the load to the specimen. On the lower plate an area of 15 mm × 20 mm shall be marked or other provisions made to facilitate correct placement of the specimen.

An example of a loading apparatus is shown in Figure 1.



Key

1 press
2 guide
3 folded specimen

Figure 1 — Apparatus with vertical guides for loading the specimen

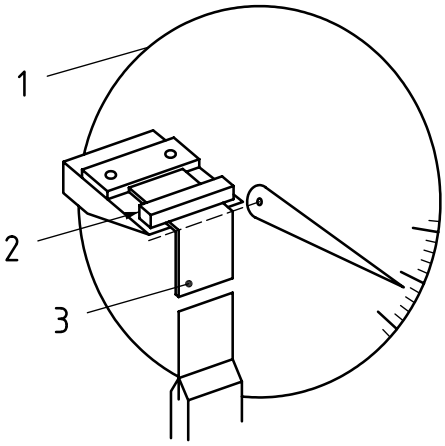
5.2 Instrument for measuring the crease recovery angle, consisting of the following parts.

a) A circular scale divided in degrees and correct to ±0,5°. It shall be possible to read the angle correct to the nearest degree without parallax error.

b) A specimen grip to hold the specimen in such a manner that the fold lies in a horizontal line through the centre of the circular scale. The edge of the grip shall lie 2 mm from the centre of the scale, as shown in Figure 2. The specimen grip shall be rotatable about this axis to keep the free limb of the specimen in a vertical position.

A suitable device is shown in Figure 2.

1) Weight of a body of mass 1,019 kg is approximately equal to a force of 10 N.



Key

1 circular scale
2 specimen grip
3 specimen

Figure 2 — Instrument for measuring the crease recovery angle

5.3 Stop-watch.

5.4 Tweezers with broad, spade shaped jaws.

5.5 Paper or metal foil, not thicker than 0,02 mm.

6 Sampling and preparation of specimens

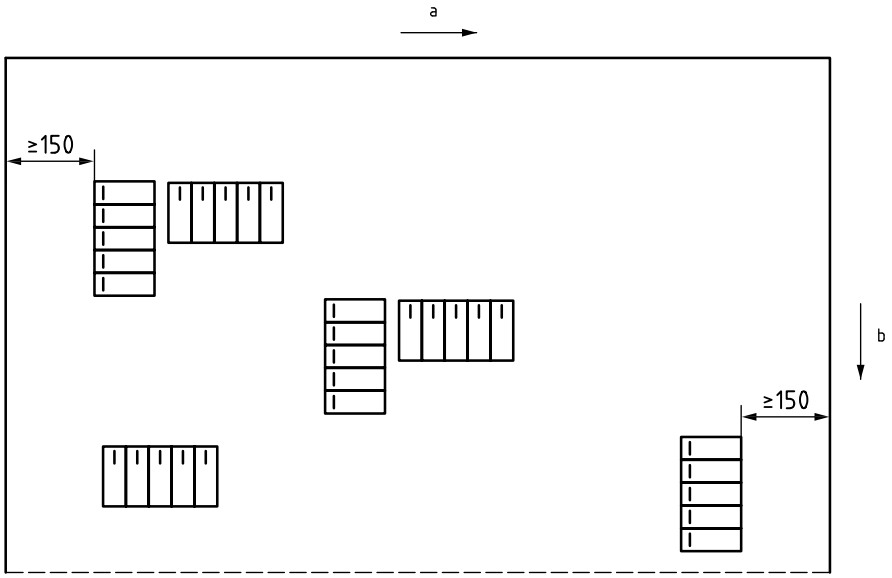
6.1 Cut the samples so as to be as representative as possible of the whole delivery.

NOTE 1 Newly finished fabrics and fabrics that have been subject to washing, dry cleaning or pressing treatments can show a gradual improvement increase recovery. Store samples from such fabrics for at least 6 days under room conditions before specimens are taken.

NOTE 2 The creasing propensity for cellulosic and protein fibre materials varies with time over a much longer period than 6 days, and to cancel any ageing effects, soak these fabrics in water at 20 °C for 30 min, centrifuge and steam press while still damp before conditioning as in Clause 7.

6.2 In order to ensure a representative average for the fabric to be tested, take specimens in the manner shown in Figure 3, and ensuring that specimens are taken not less than 150 mm from the selvedge. Do not take specimens from creased, wrinkled, bent, or deformed parts. Mark the length, for example (warp) direction on the face side of the fabric.

Dimensions in millimetres



a Transverse direction of sample.

b Length direction of sample.

Figure 3 — Example of sampling method

6.3 Cut rectangular specimens each 40 mm long and 15 mm wide.

6.4 Unless otherwise agreed by the interested parties, prepare not fewer than 20 specimens for each test, half of them taken with their short sides parallel to the warp (woven fabric) or wales (knitted fabric) or the direction marked “length” (non-woven fabric) and the other half with their short sides parallel to the weft (woven fabric) or courses (knitted fabric) or at right angles to the length direction (non-woven fabric).

7 Atmosphere for conditioning and testing

The standard atmosphere for conditioning and testing shall be as specified in ISO 139.

8 Test procedure

8.1 General conditions

Conduct all testing in the standard atmosphere according to ISO 139. Screen the testing equipment from draughts, from the operator’s breath and from excessive heat radiation from lighting appliances.

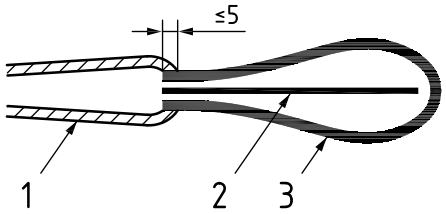
8.2 Loading

Fold the specimen end to end and hold in this position by tweezers, gripping no more than 5 mm from the ends. Where the surfaces of the specimens show any tendency to adhere, place a sheet of paper or metal foil 18 mm × 15 mm between the limbs of the specimen (see Figure 4). Then place the specimen on the marked area of the lower plate of the loading device, and apply the load gently, without delay.

Fold half the number of specimens face to face, the other half back to back. Load the specimens for 5 min ± 5 s. Thereafter, remove the load quickly but smoothly so that the specimen does not suddenly spring open, completing the removal in less than 1 s. By means of tweezers, transfer the specimen

directly to the specimen holder of the measuring instrument. To make the transfer, hold in the flat of the forceps that arm of the specimen which is to hang down and gently introduce the other arm between the two parts of the grip as far as, but no farther than, the back stop, taking care not to disturb the existing crease formation.

Dimensions in millimetres



Key

1 tweezers
2 paper or metal foil
3 specimen

Figure 4 — Folding of specimen

8.3 Measurement of the crease recovery angle

While the specimen is in the holder, adjust the instrument continuously to keep the suspended free limb always in a vertical position.

Read the crease recovery angle at 15 s ± 1 s after the removal of the load (and the paper or metal foil , if necessary) from the folded specimen, expressed as rapid crease recovery angle; or read the crease recovery angle at 5 min ± 5 s after the removal of the load (and the paper or metal foil, if necessary) from the folded specimen, expressed as delay crease recovery angle.

If the free limb twists or curls slightly, use a vertical plane through its centre and the axis of the circular scale to serve as a basis for reading the crease recovery angle.

9 Expression of results

Calculate the mean value rounded off to one decimal place for the following:

1) crease across length (for example, warp) direction
   a) face to face, or
   b) back to back;
2) crease across transverse (for example, weft) direction
   a) face to face, or
   b) back to back.

10 Test report

The test report shall include at least the following information:

a) a reference to this document, i.e. ISO 2313-1:2021;

b) all details necessary for the identification of the sample tested;

c) number of specimens evaluated;

d) folded surface (face to face, or back to back);

e) creasing direction (warp/length, or weft/transverse);

f) the mean value of rapid crease recovery angle or delay crease recovery angle;

g) any deviation from the procedure specified;

h) the date of the test.

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.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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