BRITISH STANDARD

BS 2819:1990

Incorporating Amendment No. 1

Methods for determination of

Bow, skew and lengthway distortion in woven and knitted fabrics

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Textiles and Clothing Standards Policy Committee (TCM/-) to Technical Committee TCM/24, upon which the following bodies were represented:

Association of Consulting Scientists
British Nonwovens Manufacturers' Association
British Polyolefin Textiles Association
British Textile Employers' Association
British Textile Machinery Association
British Textile Technology Group
Confederation of British Wool Textiles Limited
International Wool Secretariat
Man-made Fibres Producers Committee
Ministry of Defence
SATRA Footwear Technology Centre
Soap and Detergent Industry Association
Society of Dyers and Colourists
Textile Institute

This British Standard, having been prepared under the direction of the Textiles and Clothing Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on
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The following BSI references relate to the work on this standard:
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Amendments issued since publication

Amd. No.	Date	Comments
16629	29 September 2006	Figure 4 amended to show dimension

Contents

Foreword

This British Standard has been prepared under the direction of the Textiles and Clothing Standards Policy Committee and forms a revision of BS 2819:1968 which is withdrawn.

Widthway or weft bow and skew can be present in fabrics as defects causing making up difficulties, being visually displeasing and resulting in made-up articles which may function improperly. In such cases the distortion is likely to occur sporadically in certain pieces or parts of pieces and the normal provisions for random sampling may well be inappropriate.

When widthway bow and skew are present as defects, it has been customary in the past for British Standard test methods to measure both defects separately. These are, however, idealized defects and the property of interest, particularly to the garment maker, is the total lengthway distortion which is generally a combination of both width-way bow and skew, and a method of measuring this is included in this edition.

Lengthway distortion is generally best ascertained on the fabric rolls or bundles at the time of inspection as it is the maximum amount of distortion which is of interest in most cases and the worst areas can be most readily observed at this time. Tests are, therefore, not always carried out in the standard temperate atmosphere for testing textiles. In many instances tests made in this manner are quite acceptable.

It is, however, sometimes convenient to make measurements on samples removed from the bulk as in the case of fabrics where the exact position of the threads is not obvious on the face of the fabric. In such an event, in cases of dispute and when results of high accuracy are required tests are made in the standard temperate atmosphere for testing textiles on samples removed from the bulk.

Skew can also be present in some fabrics as a desirable and essential part of their construction. A specified amount of skew is needed in some fabrics if, for example, the twisting of trouser legs is to be prevented in subsequent laundering. In such cases the average percentage skew is the property of interest and tests are made in the standard temperate atmosphere for testing textiles.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 4, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard describes methods for measuring bow, skew and lengthway distortion in woven and knitted fabrics.

NOTE The titles of the publications referred to in this British Standard are given on the inside back cover.

2 Definitions

For the purposes of this British Standard the following definitions apply.

2.1
bow

the curvature of the warp or weft of woven fabrics or the curvature of the wales and courses in knitted fabrics

NOTE Bow may assume many different forms and some are shown in Figure 1.

2.2
skew

a fabric condition where the picks or courses, although straight, are not at right angles to the ends or wales

NOTE For example of a skew condition see Figure 2.

2.3
lengthway distortion

a combination of weft bow and skew which may assume many different forms

NOTE Examples of the forms assumed as a result of lengthway distortion are shown in Figure 3.

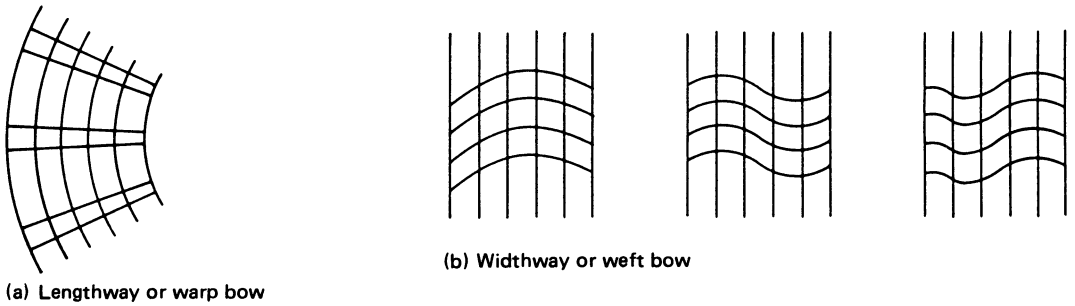


Figure 1 — Types of bow

Figure 2 — Illustration of skew

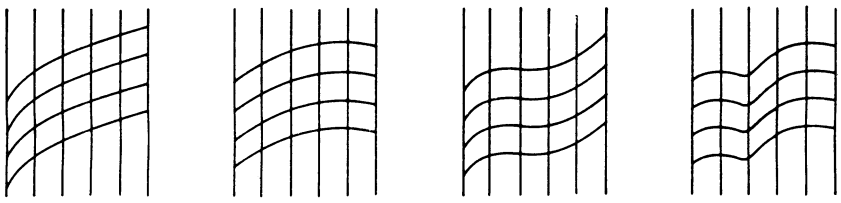


Figure 3 — Illustrations of lengthways distortion

3 Principle

3.1 Weft bow is measured as the total perpendicular distance which a pick or course deviates from a straight line joining the extremities of the pick or course.

3.2 Warp bow is measured as the greatest perpendicular distance between the edge of the fabric and a straight line joining two selected points on the edge.

3.3 Skew is measured as the distance between one end of a pick or course and the point on the same edge intersected by a line from the other end of the pick or course running at right angles to the fabric length.

3.4 Lengthway distortion is measured as the greatest lengthway distance covered by a pick or course.

4 Apparatus

4.1 *Rule,* graduated in millimetres, not less than 500 mm long or not less than the width of the fabric.

4.2 *Set square,* with two sides at right angles with the sides forming the right angle graduated in millimetres.

5 Atmosphere for conditioning and testing

The conditioning and testing atmosphere shall be the standard temperate atmosphere for testing textiles as defined in BS 1051, i.e. a relative humidity of 65 ± 2 % and a temperature of 20 ± 2 °C.

6 Test specimens

6.1 When test specimens are taken from the bulk, take care to ensure that they are removed in such a manner that minimum stress is applied.

6.2 Take full width specimens not less than 500 mm long.

6.3 When it is desired to determine the average skew or average lengthway distortion take a minimum of five test specimens.

6.4 Do not take test specimens within 1 m of the ends of the piece.

7 Procedures

7.1 General

7.1.1 Make measurements on a flat surface without tension.

7.1.2 Where specimens are conditioned allow them to remain in the standard temperate atmosphere for testing textiles (see clause **5**) for at least 24 h prior to testing and measure in the same atmosphere.

7.2 Weft bow

7.2.1 Trace one pick or course across the full width using a marker taking care not to distort the fabric. It may be necessary to do this on the back of the fabric.

7.2.2 Place the rule across the fabric width connecting the points at which the marked pick or course meets the edge of the fabric.

7.2.3 Slide the set square gently along the rule and record the greatest perpendicular distance between the pick or course and the rule to the nearest millimetre as shown in Figure 4 (a).

7.3 Warp bow

7.3.1 Place the rule to form a chord 500 mm long to the curved surface as shown in Figure 5.

7.3.2 Gently slide the set square along the rule and record the greatest perpendicular distance between the edge of the fabric and the rule to the nearest millimetre.

7.4 Skew

7.4.1 Condition the specimen for at least 24 h in the standard temperate atmosphere for testing textiles (see clause **5**).

7.4.2 Trace one pick or course across the full width using a marker, without distorting the fabric. It may be necessary to do this on the reverse side of the fabric.

7.4.3 Placing the rule across the fabric at right angles to the warp ends or wales and coinciding with one end of the marked pick or course slide the set square gently to the opposite edge and measure the distance, d, between the other end of the marked pick and the rule to the nearest millimetre as shown in Figure 6 (a).

7.4.4 Measure the overall fabric width, W, in millimetres, as described in BS 1930.

7.5 Lengthway distortion

7.5.1 Trace one pick or course across the full width using a marker without distorting the fabric.

NOTE It may be necessary to do this on the back of the fabric.

7.5.2 Place the rule across the fabric at the nearest extremity of the marked thread so that the rule is at right angles to the warp ends or wales.

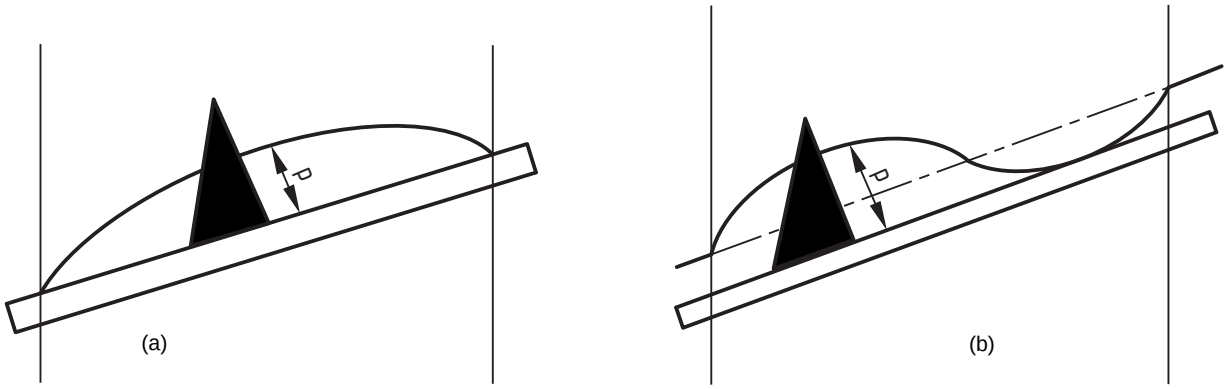
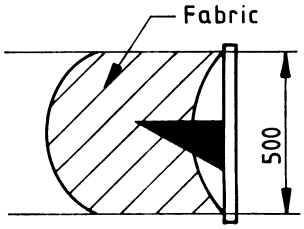


Figure 4 — Measurement of weft bow



Dimension is in millimetres.

Figure 5 — Measurement of warp bow

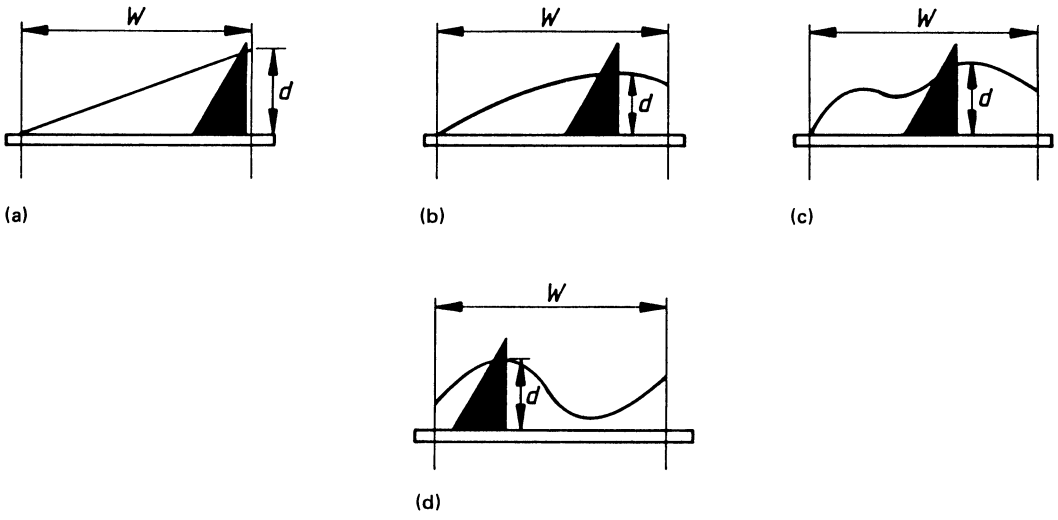


Figure 6 — Measurement of skew

7.5.3 Slide the set square gently along the rule and measure the greatest perpendicular distance, *d*, between the rule and the far extremity of the marked thread, in millimetres, as shown in Figure 6 (b), Figure 6 (c) and Figure 6 (d).

7.5.4 Measure the overall fabric width, *W*, in millimetres as described in BS 1930.

8 Calculation

Calculate the percentage skew and lengthway distortion from the formula

$$\% \text{ skew or } \% \text{ distortion} = \frac{d}{W} \times 100$$

where

d is the skew or distortion measured (in mm);

and

W is the overall fabric width (in mm).

9 Test report

9.1 The report shall include the following particulars:

a) the number and date of this British Standard, i.e. BS 2819:1990;

b) whether or not specimens were removed from the bulk;

c) whether or not the tests were made in the standard temperate atmosphere for testing textiles (see clause **5**);

d) a description of the sample tested.

NOTE In the event of skew being present in the fabric as an attribute, it is unnecessary to record b) or c) as specimens are always conditioned.

9.2 The following shall be reported as appropriate:

a) the individual measurements of warp bow in millimetres;

b) the individual measurements of weft bow in millimetres together with the fabric width;

c) the individual percentage skew measurements. The average percentage skew and its direction (see Figure 2) shall be reported if it is present as an attribute;

d) the individual percentage lengthway distortions and, if required, the average value.

Publications referred to

BS 1051, *Glossary of terms relating to the conditioning, testing and mass determination of textiles.*
BS 1930, *Method for the determination of width of woven or knitted fabrics when relaxed at zero tension.*

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