

INTERNATIONAL  
STANDARD

**ISO**  
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**Textiles — Preparation, marking and  
measuring of fabric specimens and  
garments in tests for determination of  
dimensional change**

*Textiles — Préparation, marquage et mesurage des éprouvettes d'étoffe  
et des vêtements dans les essais de détermination de la variation des  
dimensions*



Reference number  
ISO 3759:1994(E)

## 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 3759 was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 2, *Cleansing, finishing and water resistance tests*.

This third edition cancels and replaces the second edition (ISO 3759:1984), which has been technically revised. The principal modifications with respect to the second edition are the following:

- a) The measuring positions of garments have been revised to accommodate current practices of garment manufacture.
- b) The method has been extended to cover flat textile articles such as curtains.

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# Textiles — Preparation, marking and measuring of fabric specimens and garments in tests for determination of dimensional change

## 1 Scope

This International Standard specifies a method for the preparation, marking and measuring of textile fabrics, garments and fabric assemblies for use in tests for assessing dimensional change after specified treatment, e.g. washing, dry cleaning, soaking in water and steaming. The standard is applicable to woven and knitted fabrics and to flat-woven, made-up textile articles. The procedures are not applicable to articles that stretch readily in use, e.g. knitted articles and certain upholstery coverings.

NOTE 1 Work is proceeding on the development of formers for use with knitwear and extensible made-up articles. When a suitable former is developed, this International Standard will be revised.

## 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 139:1973, *Textiles — Standard atmospheres for conditioning and testing*.

## 3 Principle

Test specimens are selected to represent the bulk of

the textile under examination. Pairs of reference points are marked on each specimen and the distance between each pair of reference points is measured before and after specified treatments.

## 4 Apparatus

**4.1 Rule or flexible steel rule or glass-fibre tape**, marked in millimetres and longer than the greatest dimension being measured.

NOTE 2 The accuracy of glass-fibre tapes should be verified at least every six months.

**4.2 Equipment for marking precise reference points**, such as:

- a) **indelible ink**, for use, if necessary, with a template with a measuring grid;
- b) **fine threads of contrasting colour**, sewn into the fabric;
- c) **heated wire** for making small holes (for marking thermoplastics materials);
- d) **staples** (suitable for tests during which specimens are not agitated, e.g. for soaking in water).

**4.3 Smooth, flat surface**, large enough to lay out complete articles.

**4.4 Means of producing the standard atmospheres for conditioning and testing textiles.**

**4.5 Workroom stands**, to support garments.

## 5 Atmospheres for conditioning and testing

The atmospheres used for preconditioning and testing shall be in accordance with ISO 139.

## 6 Procedure for fabric specimens

### 6.1 Selection

For fabric piece goods, select specimens representative of the sample. Do not cut specimens from within 1 m of either end of a piece.

### 6.2 Dimensions

Cut specimens, each measuring at least 500 mm × 500 mm, with edges parallel to the length and width of the fabric. For fabrics less than 650 mm in width, full width specimens may be used and measurements made by agreement between the parties concerned.

If the fabric may possibly unravel during the test, overlock the edges of the specimen with dimensionally stable thread.

### 6.3 Marking

Place the specimen on the measuring table and make at least three pairs of marks on it in both length and width directions. Ensure that the distance between marks of each pair is at least 350 mm, that no mark is less than 50 mm from the edges of the specimen and that the measuring points are regularly spaced across the specimen (see figure 1).

### 6.4 Preconditioning

Expose the specimen to the preconditioning atmosphere (see clause 5) for at least 4 h or until a constant mass is achieved.

NOTE 3 A constant mass is considered to be achieved when measurements made at intervals of 1 h do not show a change in mass greater than 0,25 %.

### 6.5 Conditioning

Expose the specimen to the standard atmosphere for testing textiles (see clause 5) until it reaches a constant mass (see 6.4, note 3). Conduct all measurements in this atmosphere.

## 6.6 Method of measuring

Lay the specimen flat on the smooth, flat surface (4.3) and remove wrinkles without stretching the specimen. Place the rule (4.1) on the specimen, taking care to avoid distortion of the specimen. Record the distances between the pairs of marks to the nearest 1 mm.

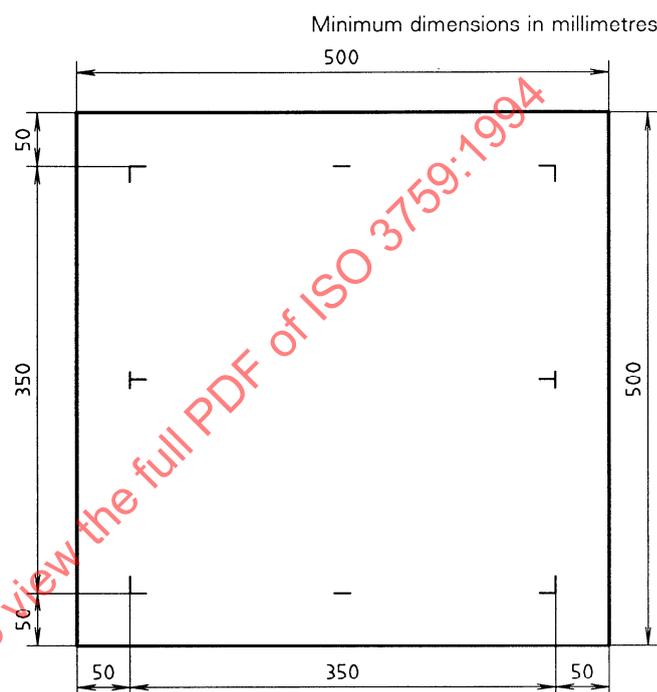


Figure 1 — Marking of fabric specimens

## 7 Procedure for garments

NOTE 4 The measurements listed are comprehensive and may not all be necessary, as their selection depends on the type and style of garment.

### 7.1 General

7.1.1 Measure between specific points, preferably at seams or between points where seams meet. Mark (4.2) the positions on the garment at which the measurements are to be made, if required.

NOTE 5 If the garment design is complicated, it may be helpful to produce a diagram showing the measuring points.

7.1.2 Where linings are of a fabric different from the outer fabric, measure these in the appropriate positions described in 7.2 (i.e. treat the linings separately).

**7.1.3** Expose the garment to the conditioning atmosphere (see clause 5) until a constant mass is achieved (see 6.4, note 3).

**7.1.4** Place the garment on the smooth, flat surface (4.3) or on the workroom stand (4.5).

**7.1.5** Ensure that all closures are closed. For garments placed flat on the surface, measure the width between seams.

**7.1.6** Measure with the rule (4.1), to an accuracy of at least 1 mm, the distance between each pair of marked positions without unnecessarily tensioning the garment.

**7.1.7** Measure elasticated garments or portions of garments in the relaxed state.

**7.1.8** Make corresponding measurements on both halves of the garment, e.g. both sleeves.

## 7.2 Measuring positions

**7.2.1 Jacket-like garments** (including dresses, coats, pyjamas, shirts and vests)

The measuring positions shall be as follows:

- a) length of neckband for garments where the collar is intended to be closed;

NOTE 6 A suitable former may be used to fit the neck/neckband.

- b) length from lowest point of armhole to bottom hem of garment;
- c) length of front from junction of shoulder seam and neck seam to bottom hem;
- d) length of centre back from neck immediately below collar or ribbing to bottom hem;
- e) length of underarm seam(s) from armhole to bottom of sleeve;
- f) width across back between sleeve seams measured at a distance halfway between centre back neck and bottom of armhole, or width of yoke from sleeve seam to sleeve seam;
- g) width (i.e. half the girth measure) at not less than three places at approximately equidistant points below the centre back neck;

- h) width of sleeve, from junction of side with sleeve seams, at right angles to sleeve length;
- i) width of sleeve at bottom of cuff or bottom of sleeve.

### 7.2.2 Trouser-like garments

The measuring positions shall be as follows:

- a) length from top to junction of leg seams at front, excluding the waistband;
- b) length from top to junction of leg seams at back, excluding the waistband;
- c) inside leg from crotch to bottom of leg. If leg is short, measure from the bottom of one leg to the bottom of the other leg via the crotch;
- d) width at waist;
- e) width at bottom of leg;
- f) width of leg halfway between crotch and bottom of leg, i.e. knee (omit if leg length is short);
- g) width of top of leg, i.e. thigh.

### 7.2.3 Boiler suits, coveralls, bib and brace overalls, combinations and one-piece swim suits

Combine the jacket and trouser categories and, where applicable, replace the measuring positions given in 7.2.1 as follows:

replace c) by "length from centre front neck to crotch seam or end of opening";

replace d) by "length from centre back neck to crotch".

### 7.2.4 Skirts

The measuring positions shall be as follows:

- a) length from waist to bottom hem, excluding the waistband if present, taken at centre front and centre back;
- b) width at waistband;
- c) width at not less than three approximately equidistant points below top edge, or below bottom edge of waistband if present.

## 8 Procedure for flat made-up textile articles

Follow the procedure described in 7.1, using the following measuring positions:

- a) overall length;
- b) overall width.

### NOTES

7 Heavy drapes may stretch on hanging and shrink on washing. Methods for assessing dimensional change do not in general include dimensional changes occurring under tension.

8 Additional measurements may be necessary for particular articles, e.g. fitted sheets.

## 9 Treatment of specimens

Subject the specimen to the required treatment and repeat the measurements detailed in clause 6, 7 or 8.

## 10 Expression of results

Calculate the percentage change in dimensions using the following equation:

$$\frac{x_o - x_t}{x_o} \times 100$$

where

$x_o$  is the original dimension;

$x_t$  is the dimension measured after treatment.

Record the changes in measurements separately as percentages of the corresponding original value. Use a plus sign (+) to indicate an extension and a minus sign (−) to indicate shrinkage.

## 11 Test report

The test report shall include the following information:

- a) the number and year of this International Standard, i.e. ISO 3759:1994;
- b) the description, mark and size of the article tested;
- c) an adequate description of each measuring position;
- d) the results, expressed in accordance with clause 10.

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