# INTERNATIONAL STANDARD 3932

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## Textiles — Woven fabrics — Measurement of width of pieces

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## FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3932 was drawn up by Technical Committee ISO/TC 38, *Textiles*, and was circulated to the Member Bodies in September 1975.



It has been approved by the Member Bodies of the following countries :



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No Member Body expressed disapproval of the document.



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# Textiles — Woven fabrics — Measurement of width of pieces



## 0 INTRODUCTION

The width of a piece of fabric is influenced by the strains imposed during manufacture, finishing and storage, and by the moisture content of the fabric at the time of measurement. In order to determine its width accurately it is, therefore, essential to allow the fabric to become relaxed and to condition it (preferably in the standard atmosphere for testing) before the measurements are made.

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies two methods for the determination of the width of pieces (of any length) of woven fabrics that are in the state of relaxation obtained by exposure (free from applied tension) to the standard atmosphere for testing.

The methods are applicable to woven fabrics (including "stretch" fabrics) of width of at least 10 cm and that are made up full width or folded down the middle.

## 2 REFERENCE

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

## 3 DEFINITIONS

**3.1 overall width :** The distance, at right angles to the length of the fabric, between the outermost warp threads in a piece.

**3.2 width between lists or selvedges (usable width) :** The distance, at right angles to the length of the fabric, between the outermost warp threads of the body of the fabric.

## 4 PRINCIPLE

### 4.1 Method 1

When the complete piece can be conditioned in the atmosphere for testing, a graduated steel rule is used to determine the width of the fabric at different measuring points.

### 4.2 Method 2

When it is impracticable to condition the whole piece in the standard atmosphere for testing, a graduated steel rule is used to determine (as in method 1) the width of the fabric after relaxation in the prevailing atmosphere, and this width is then corrected by the application of a factor based on measurement of the width of a specific portion of the relaxed piece that has been conditioned (with or without removal from the piece) in the standard atmosphere.

## 5 APPARATUS

**5.1 Calibrated steel rule,** of length greater than the width of the fabric, graduated in centimetres and millimetres.

**5.2 Table,** having a smooth flat surface, of width greater than that of the fabric, and of length at least 4 m.

## 6 STANDARD ATMOSPHERE

The standard temperate atmosphere for testing has a relative humidity (RH) of 65 ± 2 % at a temperature of 20 ± 2° C. In tropical regions a temperature of 27 ± 2° C may be used, subject to the agreement of the interested parties. (See ISO 139.)

## 7 PROCEDURE

### 7.1 Measurements

**7.1.1** Take each measurement to the nearest millimetre and with the steel rule resting on the fabric in a direction at right angles to the selvedge.

**7.1.2** Fabric folded down the middle, if received in that state, may be relaxed and conditioned in that state, but all measurements shall be taken from edge to edge with the fabric open and laid flat.

### 7.2 Method 1 for pieces of length greater than 5 m

**7.2.1** *Preliminary marking*

Place the piece on the table (at full width, or folded down the middle if received in this state) so that the first 1 to 2 m portion lies flat and free from applied tension, and make a temporary mark[1] at a point close to a selvedge and approximately 1 m from the end of the piece. Then draw the fabric gently along the table until the middle portion of the piece lies flat and free from applied tension, and make a second temporary mark. Finally, draw the remainder of the fabric gently along the table until the last 1 to 2 m portion lies flat and free from applied tension, and make a third temporary mark.

**7.2.2** *Conditioning*

With the fabric so arranged as to be free from applied tension and freely exposed to the standard atmosphere[2], condition it until the difference between successive measurements, made at intervals of at least 24 h, of the appropriate width of the fabric as determined at the three marked measuring points is less than 0,25 % at each measuring point.

**7.2.3** *Final measurements*

Remove the temporary marks, place the fabric on the table and, manipulating as described in 7.2.1, measure the width of the fabric at least five times at equal intervals of not more than 10 m along the length of the piece, the first measurement being made at a position at least 1 m from one end of the piece and the last measurement at least 1 m from the other end of the piece.

### 7.3 Method 1 for pieces (samples) of length at least 0,5 m and not exceeding 5 m

With the fabric laid flat on the table and free from applied tension, make at least four marks at equal intervals at points close to a selvedge, the first and the last marks being made not closer to the adjacent end of the fabric than one-fifth of the length of the sample. Then expose the sample to the standard atmosphere and condition it as described in 7.2.2, but taking measurements at each mark. Record the final readings at each point.

### 7.4 Method 2

**7.4.1** *Relaxation and relaxed width*

Allow the piece to relax, free from applied tension, in the prevailing atmosphere for at least 24 h. Then place the piece on the table (at full width, or folded down the middle if received in this state) and use the procedure given in 7.2.3 to determine its relaxed width.

**7.4.2** *Marking for determination of correction factor*

Manipulate the piece as described in 7.2.1, until the middle 2 to 3 m portion lies flat and free from applied tension on the table, and on this portion make four marks at points close to a selvedge and at least 25 cm but preferably 50 cm apart. Measure and record the width at each of the four marks.



**7.4.3** *Conditioning and final measurements*

Freely expose the portion marked in accordance with 7.4.2 (with or without removal from the piece) to the standard atmosphere until the difference between successive measurements, made at intervals of at least 24 h, of the width of the fabric is less than 0,25 % at each of the four measuring points. Record the mean of the last four readings.

## 8 EXPRESSION OF RESULTS

### 8.1 Method 1

**8.1.1** Take the mean of the final measurements made in accordance with 7.2.3 or 7.3 (as relevant) as the width of the piece.

**8.1.2** Record the minimum and maximum width.

1) Temporary marks are made only to determine completion of relaxation and conditioning.

2) Convenient methods of arranging the fabric on the table are described in the annex.

### 8.2 Method 2

**8.2.1** Calculate the width of the piece from the following formula :

$$W_c = W_r \times \frac{W_{sc}}{W_s}$$

where

$W_c$ is the width, in centimetres, of the piece after conditioning;

$W_r$ is the mean width, in centimetres, of the piece after relaxation (see 7.4.1);

$W_{sc}$ is the mean width, in centimetres, of the marked portion after conditioning (see 7.4.3);

$W_s$ is the mean, in centimetres, of the marked portion after relaxation and before conditioning (see 7.4.2).

**8.2.2** Calculate the minimum and the maximum width of the test piece from the following formula :

$$W_m = W_{mr} \times \frac{W_{sc}}{W_s}$$

where

$W_m$ is the minimum (or maximum, as relevant) width, in centimetres, of the piece after conditioning;

$W_{mr}$ is the minimum (or maximum, as relevant) width, in centimetres, of the piece after relaxation (see 7.4.1);

$W_{sc}$ is the mean width, in centimetres, of the marked portion after conditioning (see 7.4.3);

$W_s$ is the mean width, in centimetres, of the marked portion after relaxation and before conditioning (see 7.4.2).

### 8.3 Rounding off

**8.3.1** Round off the widths calculated in accordance with 8.1.1 and 8.2.1 as follows :

a) widths over 10 cm and not exceeding 50 cm to the nearest millimetre;

b) widths over 50 cm and not exceeding 100 cm to the nearest 5 mm;

c) widths over 100 cm to the nearest centimetre.

**8.3.2** Round off the minimum and maximum width recorded in accordance with 8.1.2 and calculated in accordance with 8.2.2 to the nearest millimetre.

## 9 TEST REPORT

The test report shall include the following particulars :

a) a statement that the test was performed in accordance with this International Standard;

b) date of the test;

c) width of the piece, minimum and maximum width;

d) whether the results were obtained by method 1 or method 2;

e) whether or not the results include the lists or selvedges;

f) details of any deviation from the specified test procedure.

ANNEX

## ARRANGEMENT OF PIECES FOR CONDITIONING AND MEASUREMENT

A convenient and effective method of arranging a long piece of fabric for conditioning so that it is free from applied tension and is well exposed to the conditioning atmosphere is to unroll the piece and lay it in loose corrugated folds of suitable size. (See figure 1.)

During marking and measuring, it is essential that the piece of fabric whose width is being determined should be free from tension as it lies on the measuring table. To achieve this, it has been found convenient to cuttle-fold (see figure 2) the ends of the piece which extend beyond the portion being measured, thus producing a stack of fabric at each end of the portion being measured.

If the measuring table is too short to enable this method to be used, supplementary tables may be used at each end of the measuring surface, provided that such extra tables are of exactly the same height and width as those of the main table, and that they are so placed as to form (with the measuring table) a continuous rectangular surface.

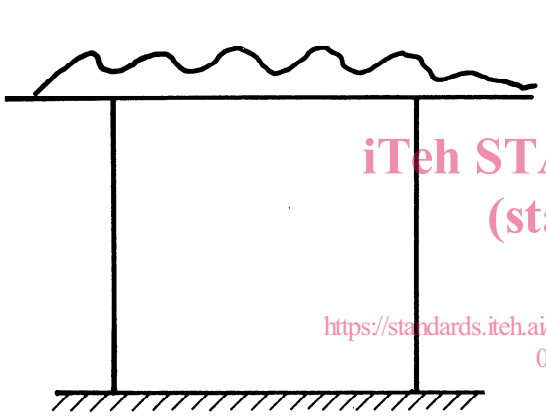

FIGURE 1 — **Loose folding**

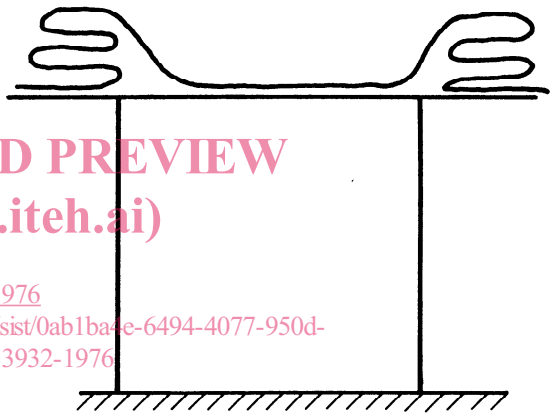

FIGURE 2 — **Cuttle-folding**

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