



**SLOVENSKI STANDARD**  
**SIST EN ISO 13934-1:1999**  
**01-julij-1999**

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Textiles - Tensile properties of fabrics - Part 1: Determination of maximum force and elongation at maximum force using the strip method (ISO 13934-1:1999)

Textilien - Zugeigenschaften von textilen Flächengebilden - Teil 1: Bestimmung der Höchstzugkraft und Höchstzugkraft-Dehnung mit dem Streifen-Zugversuch (ISO 13934-1:1999)

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Textiles - Propriétés des étoffes en traction - Partie 1: Détermination de la force maximale et de l'allongement à la force maximale par la méthode sur bande (ISO 13934-1:1999)

**Ta slovenski standard je istoveten z: EN ISO 13934-1:1999**

**ICS:**

59.080.30 Tkanine Textile fabrics

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN ISO 13934-1

February 1999

ICS 59.080.30

Descriptors: textiles, textile products, fabrics, mechanical tests, tension tests, determination, breaking load, elongation at break, specimen preparation

English version

Textiles - Tensile properties of fabrics - Part 1: Determination of maximum force and elongation at maximum force using the strip method (ISO 13934-1:1999)

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Höchstzugkraft-Dehnung mit dem Streifen-Zugversuch  
(ISO 13934-1:1999)

This European Standard was approved by CEN on 21 November 1998.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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## Foreword

The text of EN ISO 13934-1:1999 has been prepared by Technical Committee CEN/TC 248 "Textiles and textile products", the secretariat of which is held by BSI, in collaboration with Technical Committee ISO/TC 38 "Textiles".

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 1999, and conflicting national standards shall be withdrawn at the latest by August 1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## Introduction

This part of EN ISO 13934 has been prepared in the context of several test methods for determination of certain mechanical properties of textiles using mainly tensile testing machines, e.g. tensile properties, seam tensile properties, tear properties, seam slippage. The procedure for these standards agree where appropriate. The results obtained by one of the methods should not be compared with those obtained by the other methods.

ISO 13934 consists of the following parts, under the general title Textiles - Tensile properties of fabrics:

- Part 1: Determination of maximum force and elongation at maximum force using a strip method
- Part 2: Determination of maximum force using a grab method

Annexes A, B and C of this part of EN ISO 13934 are for information only.

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## 1 Scope

This part of EN ISO 13934 specifies a procedure to determine the maximum force and elongation at maximum force of textile fabrics using a strip method.

Note: Part 2 of EN ISO 13934 describes the method known as the grab method. For informative references see annex C.

The method is mainly applicable to woven textile fabrics. It can be applicable to fabrics produced by other techniques. It is not normally applicable to woven elastic fabrics, geotextiles, nonwovens, coated fabrics, textile-glass woven fabrics and fabrics made from carbon fibres or polyolefin tape yarns (see annex C).

The method specifies the determination of the maximum force and elongation at maximum force of test specimens in equilibrium with the standard atmosphere for testing, and of test specimens in the wet state.

The method is restricted to the use of constant rate of extension (CRE) testing machines.

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## 2 Normative references

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The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were 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 editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

EN 20139	Textiles - Standard atmospheres for conditioning and testing (ISO 139:1973)
ISO 3696	Water for analytical laboratory use - Specification and test methods
EN 10002-2	Metallic materials - Tensile testing - Part 2: Verification of the force measuring system of the tensile testing machines
EN 30012-1	Quality assurance requirements for measuring equipment - Part 1: Metrological confirmation system for measuring equipment (ISO 10012-1:1992)

### 3 Definitions

For the purposes of this part of EN ISO 13934 the following definitions apply:

#### 3.1 Constant-rate-of-extension (CRE) testing machine

Tensile-testing machine provided with one clamp which is stationary and another clamp which moves with a constant speed throughout the test, the entire testing system being virtually free from deflection.

#### 3.2 Strip test

Tensile test in which the full width of the test specimen is gripped in the jaws of the testing machine.

#### 3.3 Gauge length

Distance between the two effective clamping points of a testing device.

Note : The effective clamping points (or lines) of jaws can be checked by clamping a test specimen under defined pretension with carbon copy paper to produce a gripping pattern on the test specimen and/or the jaw faces.

#### 3.4 Initial length

Length of a test specimen under specified pretension between the two effective clamping points at the beginning of certain tests (see also 3.3).

#### 3.5 Pretension

Force applied to a test specimen at the beginning of certain tests.

Note : Pretension is used to determine the initial length of the test specimen (see also 3.4 and 3.7).

#### 3.6 Extension

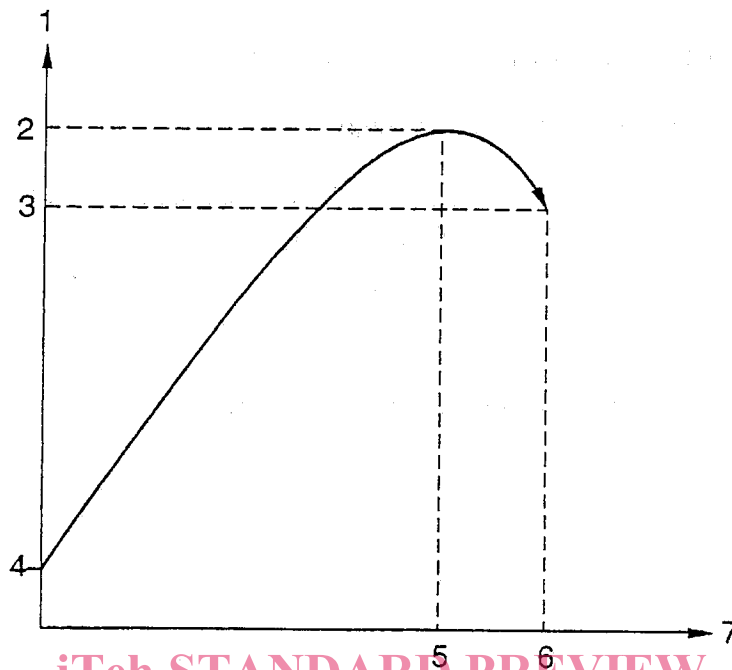
Increase in length of a test specimen produced by a force. It is expressed in units of length.

#### 3.7 Elongation

Ratio of the extension of a test specimen to its initial length, expressed as a percentage.

#### 3.8 Elongation at maximum force

Elongation of a test specimen produced by the maximum force (see figure 1).



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1. Force
2. Maximum force
3. Force at rupture
4. Pretension

5. Elongation at max. force
6. Elongation at rupture
7. Elongation

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Figure 1 : Example of force-elongation curve

### 3.9 Elongation at rupture

Elongation of a test specimen corresponding to the force at rupture (see figure 1).

### 3.10 Force at rupture

Force recorded at the point of rupture of a test specimen during a tensile test (see figure 1).

### 3.11 Maximum force

The maximum force recorded when a test specimen is taken to rupture during a tensile test under the specified conditions (see figure 1).



## 4 Principle

A fabric test specimen of specified dimensions is extended at a constant rate until it ruptures. The maximum force and the elongation at maximum force and, if required, the force at rupture and the elongation at rupture are recorded.

## 5 Sampling

Select samples either in accordance with the procedure laid down in the material specification for the fabric, or as agreed between the interested parties.

In the absence of an appropriate material specification the example of a suitable sampling procedure given in annex A may be used.

An example of a suitable pattern for cutting test specimens from the laboratory sample is given in annex B. Avoid test specimens from folded or creased areas, selvages and areas not representative of the fabric.

## 6 Apparatus

### 6.1 CRE machine

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Metrological confirmation system of the tensile-testing machine shall be in accordance with EN 30012-1.

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The constant-rate-of-extension (CRE) machine shall have the general characteristics given in 6.1.1 to 6.1.6.

**6.1.1** The tensile-testing machine shall be provided with means for indicating or recording both the force applied to the test specimen in stretching it to rupture and the corresponding extension of the test specimen. Under conditions of use, the accuracy of the apparatus shall be class 1 of EN 10002-2. The error of the indicated or recorded maximum force at any point in the range in which the machine is used shall not exceed  $\pm 1\%$ , and the error of the indicated or recorded jaw separation shall not exceed  $\pm 1$  mm.

**6.1.2** If a class 2 tensile-testing machine according to EN 10002-2 is to be used, this shall be stated in the test report.

**6.1.3** If recording of force and elongation is obtained by means of data acquisition boards and software, the frequency of data collection shall be at least eight per second.

**6.1.4** The machine shall be capable of constant rates of extension of 20 mm/min and 100 mm/min, with an accuracy of  $\pm 10\%$ .

**6.1.5** The machine shall be capable of setting the gauge length to 100 mm and 200 mm, to within  $\pm 1$  mm.