

SVENSK STANDARD

SS-EN ISO 20932-2:2020

Textil – Bestämning av tygers elasticitet –
Del 2: Fleraxiella provningar (ISO 20932-2:2018)

Textiles – Determination of the elasticity of fabrics –
Part 2: Multiaxial tests (ISO 20932-2:2018)



sis Svenska
Institutet för
Standarder

Language: engelska/English

Edition: 1

This preview is downloaded from www.sis.se. Buy the entire standard via <https://www.sis.se/std-80020536>

Den här standarden kan hjälpa dig att effektivisera och kvalitetssäkra ditt arbete. SIS har fler tjänster att erbjuda dig för att underlätta tillämpningen av standarder i din verksamhet.

SIS Abonnemang

Snabb och enkel åtkomst till gällande standard med SIS Abonnemang, en prenumerationstjänst genom vilken din organisation får tillgång till all världens standarder, senaste uppdateringarna och där hela din organisation kan ta del av innehållet i prenumerationen.

Utbildning, event och publikationer

Vi erbjuder även utbildningar, rådgivning och event kring våra mest sålda standarder och frågor kopplade till utveckling av standarder. Vi ger också ut handböcker som underlättar ditt arbete med att använda en specifik standard.

Vill du delta i ett standardiseringsprojekt?

Genom att delta som expert i någon av SIS 300 tekniska kommittéer inom CEN (europeisk standardisering) och/eller ISO (internationell standardisering) har du möjlighet att påverka standardiseringsarbetet i frågor som är viktiga för din organisation. Välkommen att kontakta SIS för att få veta mer!

Kontakt

Skriv till kundservice@sis.se, besök [sis.se](https://www.sis.se) eller ring 08 - 555 523 10

© Copyright/Upphovsrätten till denna produkt tillhör Svenska institutet för standarder, Stockholm, Sverige. Upphovsrätten och användningen av denna produkt regleras i slutanvändarlicensen som återfinns på [sis.se/slutanvandarlicens](https://www.sis.se/slutanvandarlicens) och som du automatiskt blir bunden av när du använder produkten. För ordlista och förkortningar se [sis.se/ordlista](https://www.sis.se/ordlista).

© Copyright Svenska institutet för standarder, Stockholm, Sweden. All rights reserved. The copyright and use of this product is governed by the end-user licence agreement which you automatically will be bound to when using the product. You will find the licence at [sis.se/enduserlicenseagreement](https://www.sis.se/enduserlicenseagreement).

Upplysningar om sakinnehållet i standarden lämnas av Svenska institutet för standarder, telefon 08 - 555 520 00. Standarder kan beställas hos SIS som även lämnar allmänna upplysningar om svensk och utländsk standard.

Standarden är framtagen av kommittén för Mekaniska egenskaper, SIS/TK 160/AG 04.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

Europastandarden EN ISO 20932-2:2020 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 20932-2:2020.

Denna standard ersätter SS-EN 14704-2:2007, utgåva 1

The European Standard EN ISO 20932-2:2020 has the status of a Swedish Standard. This document contains the official version of EN ISO 20932-2:2020.

This standard supersedes the SS-EN 14704-2:2007, edition 1

EUROPEAN STANDARD

EN ISO 20932-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2020

ICS 59.080.30

Supersedes EN 14704-2:2007

English Version

Textiles - Determination of the elasticity of fabrics - Part 2: Multiaxial tests (ISO 20932-2:2018)

Textiles - Détermination de l'élasticité des étoffes
- Partie 2: Essais multiaxiaux (ISO 20932-2:2018)

Textilien - Bestimmung der Elastizität von
textilen Flächegebilden - Teil 2: Multiaxiale
Prüfungen (ISO 20932-2:2018)

This European Standard was approved by CEN on 11 November 2019.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents		Page
European foreword		vii
Introduction		viii
1	Scope	9
2	Normative references	9
3	Terms and definitions	9
4	Principle	10
5	Sampling	10
6	Atmosphere for conditioning and testing	10
7	Preparation of test specimens	11
8	Method A — Dynamic test	11
8.1	Apparatus.....	11
8.2	Test specimen preparation.....	11
8.3	Procedure for loading test specimen in clamping ring.....	12
8.4	Recording.....	12
8.5	Expressions and calculations of test results	12
8.6	Test report	13
9	Method B — Static test	13
9.1	Preliminary test.....	13
9.1.1	Apparatus	13
9.1.2	Preparation of test specimens	13
9.1.3	Procedure	14
9.2	Actual static test.....	14
9.2.1	Apparatus	14
9.2.2	Selection of testing parameters	14
9.2.3	Preparation of test specimens	14
9.2.4	Procedure	14
9.2.5	Setting of the hemispherical shape	14
9.2.6	Measurement of the residual deformation	15
9.2.7	Recording.....	15
9.2.8	Expressions and calculations of test results.....	15
9.2.9	Test report.....	15
Annex A (informative) Example of a typical cycling graph		17
Annex B (informative) Procedure for sampling		18
Annex C (informative) Example of a pattern for cutting test specimens from a laboratory sample		19
Annex D (informative) Method A — Dynamic test equipment		20
Annex E (informative) Method B — Static test equipment		23
Bibliography		25

European foreword

The text of ISO 20932-2:2018 has been prepared by Technical Committee ISO/TC 38 "Textiles" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 20932-2:2020 by Technical Committee CEN/TC 248 "Textiles and textile products" the secretariat of which is held by BSI.

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 2020, and conflicting national standards shall be withdrawn at the latest by August 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14704-2:2007.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 20932-2:2018 has been approved by CEN as EN ISO 20932-2:2020 without any modification.

Introduction

This document was developed as a result of technical advancements in yarn and fabric structures and properties, which increase product range and developments.

This document is based on EN 14704-2^[1].

Textiles — Determination of the elasticity of fabrics —

Part 2: Multiaxial tests

1 Scope

This document specifies the test methods which can be used to measure elasticity and related properties of fabrics when they undergo a deformation of their surface. Two methods are specified: a dynamic method (method A) and a static method (method B). This document does not apply to narrow fabrics.

The results obtained cannot be compared. The choice of test method are agreed between parties and indicated in the test report.

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*

ISO 7500-1, *Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system*

ISO 10012, *Measurement management systems — Requirements for measurement processes and measuring equipment*

ISO 20932-1, *Textiles — Determination of the elasticity of fabrics — Part 1: Strip tests*

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

narrow fabric

woven or knitted construction intended for use as a trim, binding, edging, strapping or harness, and designed to be used in its full width

[SOURCE: ISO 20932-1:2018, 3.1]

3.2

elasticity

<material> ability to recover original size and shape immediately after the removal of the force causing deformation

[SOURCE: ISO 20932-1:2018, 3.2]

SS-EN ISO 20932-2:2020 (E)

3.3 constant-rate-of-extension testing machine 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

[SOURCE: ISO 20932-1:2018, 3.3]

3.4 bagging

residual deformation (3.6) between the original state and the state of the surface when it has undergone a multidirectional force, which by repetition creates a “bag”

Note 1 to entry: Bagging is expressed in units of the length.

3.5 maximum deformation

deformation developed when a specified force is applied to the surface of the test specimen compared to the original state of a test specimen

Note 1 to entry: Maximum deformation is expressed in units of the length.

3.6 residual deformation

deformation after the removal of the hemispherical probe and an agreed recovery time

Note 1 to entry: Residual deformation is expressed in units of the length.

3.7 maximum force

force at the position when a test specimen is taken to a fixed distension

Note 1 to entry: Maximum force is expressed in newtons.

3.8 modulus

force measured at a given distension on either the load or unload curves

3.9 cycle

process whereby a fabric is taken from the original position to a fixed load or fixed distension and returned to the original position

4 Principle

A fabric test specimen of specified dimensions is distended at a constant rate to either a specified force or distension for an agreed number of cycles, and its elasticity determined by measuring certain characteristics.

5 Sampling

Fabric samples shall be selected in accordance with the product specification. In the absence of a product specification for the fabric, the sampling method given in [Annex B](#) may be used.

6 Atmosphere for conditioning and testing

The atmospheres for preconditioning, conditioning and testing shall be as specified in ISO 139.

The fabric samples shall be conditioned for a minimum of 20 h in a tension-free state. The prepared test specimens shall be conditioned in a tension-free state for a further 4 h after preparation, to minimize the effects of handling during preparation.

7 Preparation of test specimens

From each laboratory sample, prepare a minimum of five test specimens. For Method A, no test specimens shall be cut from within 150 mm of either edge of the laboratory sample. No test specimen taken from the sample shall contain the same ends and picks or wales and courses.

NOTE An example of a suitable pattern for cutting test specimens from the laboratory sample is given in [Figure C.1](#).

Avoid selecting test specimens from folded or creased areas, selvages and areas not representative of the fabric.

8 Method A — Dynamic test

8.1 Apparatus

8.1.1 CRE testing machine.

Metrological confirmation system of the tensile testing machine shall be in accordance with ISO 10012.

The constant-rate-of-extension (CRE) testing machine shall conform to the following.

- a) The tensile testing machine shall be provided with the means for indicating or recording the force and deformation values when cycling between the original position and either a fixed load or fixed deformation. Under conditions of use, the accuracy of the apparatus shall be at least class 1 of ISO 7500-1. The error of the indicated or recorded maximum force at any point in the range in which the machine is used shall not exceed 1 % and the error of the indicated or recorded jaw separation shall not exceed 1 mm.
- b) If recording of force or elongation is obtained by means of data acquisition boards and software, the frequency of data collection shall be at least eight per second.
- c) The machine shall be capable of constant rates of distension including 20 mm/min to 500 mm/min, with an accuracy of ± 10 %.
- d) The machine shall be capable of variable gauge length settings including 0 mm to 100 mm, to an accuracy of ± 1 mm.
- e) The clamping ring and probe shall be positioned with the centre in line with the applied force. The machine shall be calibrated with the clamp and probe in position.

The clamping ring shall be capable of holding the test specimen without allowing it to slip and designed so that it does not cut or otherwise weaken the test specimen (see [Annex D](#), [Figures D.1](#) to [D.3](#)).

8.1.2 Equipment for cutting circular test specimens to the required dimensions.

8.1.3 Calibrated metal rule graduated in millimetres.

8.2 Test specimen preparation

Each test specimen shall be cut (145 ± 2) mm in diameter (see [Annex C](#)).