



SLOVENSKI STANDARD

SIST EN 15977:2011

01-november-2011

Gumirane ali plastificirane tekstilije - Mehanske lastnosti - Ugotavljanje raztezka pri obremenitvi in rezidualne deformacije

Rubber or plastic coated fabrics - Mechanical properties - Determination of the elongation under load and the residual deformation

Mit Kautschuk oder Kunststoff beschichtete Textilien - Mechanische Eigenschaften - Bestimmung der Dehnung unter Last und der verbleibenden Verformung

Supports textiles revêtus de caoutchouc ou de plastique - Propriétés mécaniques - Détermination de l'allongement sous charge et de la déformation résiduelle

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Ta slovenski standard je istoveten z: **EN 15977:2011**

ICS:

59.080.40	Površinsko prevlečene tekstilije	Coated fabrics
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EUROPEAN STANDARD

EN 15977

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2011

ICS 59.080.40

English Version

Rubber or plastic coated fabrics - Mechanical properties - Determination of the elongation under load and the residual deformation

Supports textiles revêtus de caoutchouc ou de plastique -
Propriétés mécaniques - Détermination de l'allongement
sous charge et de la déformation résiduelle

Mit Kautschuk oder Kunststoff beschichtete Textilien -
Mechanische Eigenschaften - Bestimmung der Dehnung
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This European Standard was approved by CEN on 8 January 2011.

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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.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 15977:2011) has been prepared 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of an identical text or by endorsement, at the latest by August 2011, and conflicting national standards shall be withdrawn at the latest by August 2011.

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

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EN 15977:2011 (E)

Introduction

This European Standard has been developed from the normative Annex C of EN 15619.

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1 Scope

This European standard describes the method of determination of the elongation under load and the residual deformation of coated fabrics.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 12280-1:1997, *Rubber- or plastics- coated fabrics — Accelerated ageing tests — Part 1: Heat ageing*

EN ISO 2231, *Rubber- or plastics-coated fabrics — Standard atmospheres for conditioning and testing (ISO 2231:1989)*

3 Principle

Marked strips of coated fabric are loaded for a specified duration; then after relaxation, the residual deformation is calculated based on the measurements of the distance between the marks of the strip before and after the loading stage. The appropriate testing parameters are based on the use of the coated fabrics.

Test specimen can be aged by heat exposure prior to the loading stage.

4 Apparatus

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4.1 Ruler, calibrated metal ruler with 0,5 mm graduated marks!

4.2 Calliper, calibrated to 0,1 mm.

4.3 Loading device

Only a manual loading device shall be used. An automatic device shall be avoided because of the force regulation of the machine.

The clamping devices shall be positioned with the centre in line with the applied force.

The clamps shall be capable of holding the test specimen without allowing it to slip and designed so that they do not cut or otherwise weaken the test specimen.

The clamps shall consist of two jaws of steel plate. The clamping faces shall be in the same plane. Jaws shall preferably be (70 ± 6) mm wide, but not less than the width of the test specimen.

The loads consist of calibrated masses ensuring the achievement of the determined load.

4.4 Hot air oven, according to EN 12280-1.

EN 15977:2011 (E)**5 Preparation of test specimens**

Three strips of 50 mm width shall be tested in both directions (for example: in warp and weft direction for woven coated fabric).

The length of the strips shall be at least 200 mm or 400 mm, according to the selected testing parameters as determined in Table 1.

Each strip shall be prepared as follows (in order to be sure that the final strips follow exactly the direction of the yarn):

Cut a strip of:

- a) directly (50 ± 1) mm width for coated fabrics other than woven coated fabrics, or
- b) 55 mm width as precisely as possible in the direction of the yarns for woven coated fabrics; then, reduce the width of the strips from 55 to (50 ± 1) mm, by removing some yarns on both sides in order to be sure that the yarns follow continuously the length of the sample on both sides.

Two small lines (perpendicular to the length of sample) shall be marked on each strip at a distance of (100 ± 1) mm or (200 ± 1) mm — according to the selected testing parameters as determined in Table 1. The distance between these lines shall be measured at $\pm 0,1$ mm (4.2) or at $\pm 0,5$ mm (4.1) — see instruction in Clause 6.

6 Mechanical loading test

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Tests shall be carried out in atmosphere B according to EN ISO 2231.

Place the test specimen in the jaws so that the distance between each marked line and its respective clamp of the loading device is 50 mm.

Set the testing parameters according to Table 1.

Each specimen shall be loaded under the determined load during the determined load time.

Just before removing the load, the length under load shall be measured between the two marks at $\pm 0,1$ mm, when using the calliper (4.2), or at $\pm 0,5$ mm, when using the ruler (4.1) in order to calculate the elongation under load.

Choose the length measurement devices (4.1 or 4.2) such as the resolution represents $1/10^{\text{th}}$ of the measurement of the elongation.

After removing the load, each specimen shall be left on a flat surface for the determined relaxation time without any effort before measuring the residual length between the two marks.

Table 1 — Testing parameters

Testing parameters	Coated fabrics intended for architectural structure, for example	Coated fabrics intended for upholstery, for example
Mark distance	(200 ± 1) mm	(100 ± 1) mm
Length of the strips	at least 300 mm, plus the length in relation to the type of the clamps	at least 200 mm, plus the length in relation to the type of the clamps
Determined load	(10,00 ± 0,01) daN	(5,00 ± 0,01) daN
Load time	(24 h ± 30) min	(30 ± 3) min
Relaxation time	2 h ± 5 min	(30 ± 3) min
Residual deformation and under load deformation	Required	Required
Residual deformation and under load deformation after heat exposure and mechanical loading	Optional (Clause 7)	Not required

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7 Residual deformation after heat exposure and mechanical loading (optional)

After the preparation of the test specimens (Clause 5) and before mechanical loading test (Clause 6), the samples shall be exposed 24 h ± 30 min at (80 ± 2) °C in a hot air oven according to EN 12280-1:1997, method 1.

After removing from the oven, each sample shall be left on a table for 2 h in order to stabilize at atmospheric conditions before testing according to Table 1.

Calculation of the residual deformation after heat exposure and mechanical loading shall be carried out in accordance with formula (2) in Clause 8.

The test report shall mention that the sample has been exposed to heat before testing according to the present clause of this standard.