SLOVENSKI STANDARD
SIST EN 12311-2:2001

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Hidroizolacijski trakovi - Določevanje nateznih lastnosti - 2. del: Polimerni in elastomerni trakovi za tesnjenje streh

Flexible sheets for waterproofing - Determination of tensile properties - Part 2: Plastic and rubber sheets for roof waterproofing

Abdichtungsbahnen - Bestimmung des Zug-Dehnungsverhaltens - Teil 2: Kunststoff- und Elastomerbahnen für Dachabdichtungen

Feuilles souples d'étanchéité - Détermination des propriétés en traction - Partie 2: Feuilles d'étanchéité de toiture plastiques et élastomeres

Ta slovenski standard je istoveten z: **EN 12311-2:2000**

ICS:

91.060.20	Strehe	Roofs
91.100.50	Veziva. Tesnilni materiali	Binders. Sealing materials

SIST EN 12311-2:2001 **en**

EUROPEAN STANDARD

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EUROPÄISCHE NORM

EN 12311-2

September 2000

ICS 91.100.50

English version

Flexible sheets for waterproofing - Determination of tensile properties - Part 2: Plastic and rubber sheets for roof waterproofing

Feuilles souples d'étanchéité - Détermination des propriétés en traction - Partie 2: Feuilles d'étanchéité de toiture plastiques et élastomères

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This European Standard was approved by CEN on 17 August 2000.

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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 Central Secretariat has the same status as the official versions.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 254 "Flexible sheets for waterproofing ", 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of an identical text or by endorsement, at the latest by March 2001, and conflicting national standards shall be withdrawn at the latest by March 2001.

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 European Standard is intended for characterisation of plastic and rubber sheets as manufactured or supplied before use. This test method relates exclusively to products, or to their components where appropriate, and not to waterproofing membrane systems composed of such products and installed in the works.

This test is intended to be used in conjunction with European Standard "Definition and Characteristics" for plastic and rubber sheets for roof waterproofing.

1 Scope

This European Standard specifies two methods for the determination of the tensile properties of plastic and rubber sheets for roof waterproofing:

Method A based on EN ISO 1421, is the preferred method which should be used for all materials. If method A is not suited to the material, i. e. the material does not rupture, method B based on ISO 37 can then be used to determine tensile properties.

2 Normative references

This European Standard incorporates, by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest editions of the publication referred to apply.

prEN 1849-2:2000	Flexible sheets for waterproofing - Determination of thickness and mass per unit Area - Part 2: Plastic and rubber sheet for roof waterproofing
EN ISO 7500-1	Metallic materials – Verification of static uniaxial testing machines – Part 1: Tension/ compression testing machines (ISO 7500-1:1999)
prEN 13416:2000	Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Rules for sampling
EN ISO 1421	Rubber- or plastics-coated fabrics – Determination of tensile strength and elongation at break (ISO 1421:1998)
ISO 37	Rubber, vulcanised and thermoplastic - Determination of tensile stress-strain properties

3 Definitions

For the purpose of this standard, the following definitions apply:

3.1 Top surface: The upper side of the sheet, as used in situ. It is usually the inside of the roll.

3.2 Maximum tensile force: The largest value of tensile force recorded during testing.

3.3 Elongation at maximum tensile force: Elongation of the test specimen at the maximum tensile force.

3.4 Elongation at break: Elongation of the test specimen at rupture.

4 Principle

A test specimen is stretched at a constant speed until it ruptures. The force and elongation is continuously recorded throughout the test, and preferably with a permanent record of the maximum tensile force.

5 Apparatus

Tensile testing machine equipped with a continuous recording of force and corresponding elongation and capable of maintaining a uniform speed of grip separation as specified below.

The tensile testing machine shall have a sufficient loading capacity of at least 2000 N and a grip separation speed of (100 ± 10 and 500 ± 50) mm/min. The width of grips shall not be less than 50 mm.

The tensile testing machine shall be equipped with grips of a type which maintain or increase the clamping pressure as a function of the increase of the force applied to the test specimen. The test specimen shall be held so that it does not slip in the grips more than 1 mm for products up to and including 3 mm thick, and 2 mm for thicker products. A mark or tape on the test specimen where it enters the grips will help reveal any slip.

The method of gripping shall not induce premature rupture close to the grips.

If the slippage from the grips exceeds the stated limits the actual elongation of the test specimen shall be measured with an extensometer.

The force measuring system shall meet at least Class 2 of EN ISO 7500-1 (i.e. ± 2%)

6 Sampling

Samples shall be taken in accordance with prEN 13416:2000.

7 Preparation of test specimens

Unless otherwise specified, for a complete tensile test two sets of test specimens are to be prepared: a set of five for the longitudinal direction and a set of five for the transverse direction.

Test specimens are to be cut from a test piece not closer than (100 ± 10) mm from the edge of the sheet, with the aid of a template, or die cutter as follows:

Method A; rectangular type (50 ± 0,5) mm x 200 mm according to Figure 1 and Table 1

Method B; dumb-bell type (6 ± 0,4) mm x 115 mm according to Figure 2 and Table 1

Any non permanent surface layer should be removed.

Test specimens with a mesh or fabric internal layer, backing or laminated reinforcement shall have the same number of threads in their longitudinal and transversal direction. Cutting of threads should be avoided.

Condition the test specimens, prior to testing, for at least 20 h in a standard atmosphere of (23 ± 2) °C and (50 ± 5) % relative humidity.

8 Procedure

In the case of method B, the thickness is measured as the effective thickness of the sheet according to prEN 1849-2:2000.

The test specimen shall be tightly clamped in the tensile test machine grips (clause 5) taking care that the longitudinal axis of the test specimens and the axis of the testing machine and grips are correctly aligned. A preload of maximum 5 N before the start of the test is recommended to take out any slack in the test specimen.

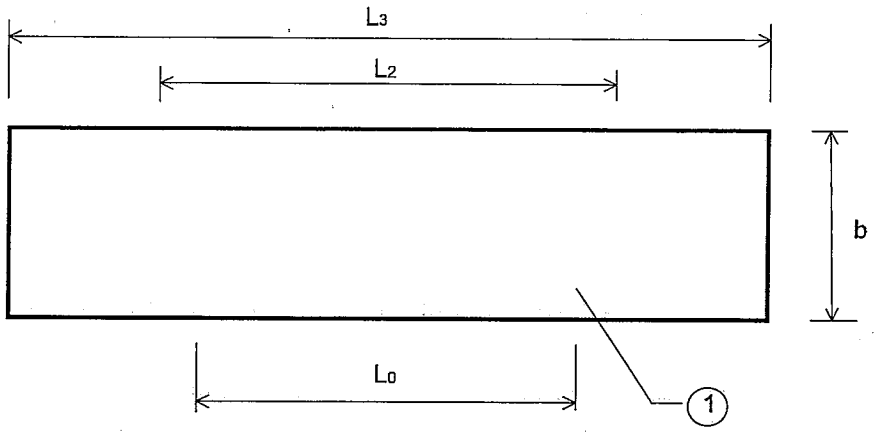
The test is carried out on a test specimen at a temperature of (23 ± 2)°C and at a constant separating speed for the grips of (100 ± 10) mm/min for method A, and (500 ± 50) mm/min for method B.

The applied tensile force and the distance of separation of the grips, or gauge marks when using extensiometer shall be recorded until the test specimen breaks.

NOTE The secant modulus E_{sc} between 1 % and 2 % strain may be deduced from the stress-strain curve when a testing speed of (5 ± 1) mm/min has been used.

The mode of failure of the specimen shall be noted.

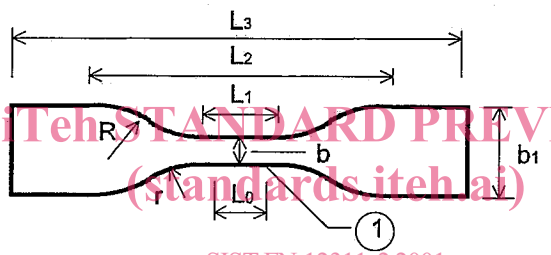
In the case of sheets with composite reinforcements, which give rise to two or more distinct peaks on the force/elongation curve, the force and elongation of the two greatest peaks and also the elongation at break shall be recorded.



Key

1 Gauge mark

Figure 1 - Rectangular test specimen for method A



Key

1 Gauge mark

Figure 2 - Dumb- bell test specimen for method B

Table 1 - Test specimen data

	Method A mm	Method B mm
Overall length, min (L_3)	> 200	> 115
Width of ends (b_1)		25 ± 1
Length of narrow parallel portion (L_1)		33 ± 2
Width (b)	50 ± 0,5	6 ± 0,4
Small radius (r)		14 ± 1
Large radius (R)		25 ± 2
Distance between gauge marks (L_0)	100 ± 5	25 ± 0,25
Initial distance between grips (L_2)	120	80 ± 5