SLOVENSKI STANDARD
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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 Kautschukbahnen für Dachabdichtungen

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

Ta slovenski standard je istoveten z: **EN 12311-2:2010**

ICS:

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

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EUROPEAN STANDARD

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English Version

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 12311-2:2010) 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of an identical text or by endorsement, at the latest by January 2011, and conflicting national standards shall be withdrawn at the latest by January 2011.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.

This document supersedes EN 12311-2:2000.

This European Standard “*Flexible sheets for waterproofing - Determination of tensile properties*” consists of two parts:

- *Part 1: Bitumen sheets for roof waterproofing;*
- *Part 2: Plastic and rubber sheets for roof waterproofing*.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and 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 EN 13956, *Flexible sheet for waterproofing — Plastic and rubber sheets for roof waterproofing — Definitions and characteristics*.

This document contains two methods of test. 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.

1 Scope

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

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 1548, *Flexible sheets for waterproofing — Plastic and rubber sheets for roof waterproofing — Method for exposure to bitumen*

EN 1847, *Flexible sheets for waterproofing — Plastics and rubber sheets for roof waterproofing — Methods for exposure to liquid chemicals, including water*

EN 1849-2, *Flexible sheets for waterproofing — Determination of thickness and mass per unit area — Part 2: Plastic and rubber sheets*

EN 13416, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Rules for sampling*

EN ISO 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system (ISO 7500-1:2004)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
top surface
upper side of the sheet, as used in situ

NOTE This is usually the inside of the roll.

3.2
maximum tensile force
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, 200 ± 20 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 tensile 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 EN 13416.

7 Preparation of test specimens

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

Test specimens shall 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 or rectangular type (15 ± 0,5) mm x 170 mm according to Figure 1 and Table 1.

Any non permanent surface layer should be removed.

A set of test specimens (longitudinal or transverse direction) with a mesh or fabric internal layer, backing or laminated reinforcement shall have the same number of threads. 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.

When determining tensile properties in accordance with EN 1548 and EN 1847 a 15 mm rectangular specimen shall be used.

8 Procedure

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

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 dumb-bell type and (200 ± 20) mm/min for method B rectangular type.

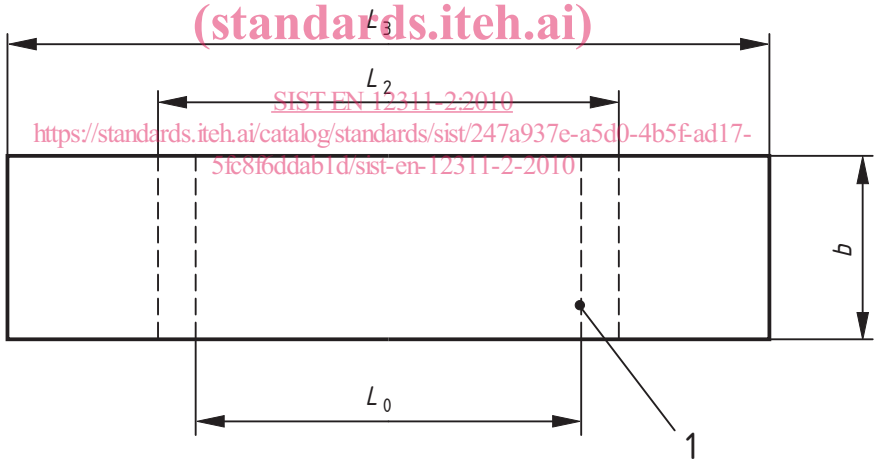
The applied tensile force and the distance between the grips or the distance between the gauge marker for the rectangular type, or the distance between the gauge marks for the dumb-bell types shall be recorded until the test specimen breaks.

NOTE The secant modulus 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.

When determining tensile properties in accordance with EN 1548 and EN 1847 a 15 mm rectangular specimen shall be used.



Key

1 gauge mark

Figure 1 — Rectangular test specimen for method A