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**Hidroizolacijski trakovi - Bitumenski, polimerni in elastomerni trakovi za tesnjenje streh - Ugotavljanje tesnosti za vodo po raztegotavljanju na nizki temperaturi**

Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of watertightness after stretching at low temperature

Abdichtungsbahnen - Bitumen-, Kunststoff- und Elastomerbahnen für Dachabdichtungen - Bestimmung der Wasserdichtheit nach Dehnung bei niedriger Temperatur

Feuilles souples d'étanchéité - Feuilles d'étanchéité de toiture bitumineuses, plastiques et élastomères - Détermination de l'étanchéité après étirement à basse température

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EUROPEAN STANDARD

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## Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of watertightness after stretching at low temperature

Feuilles souples d'étanchéité - Feuilles d'étanchéité de toiture bitumineuses, plastiques et élastomères - Détermination de l'étanchéité après étirement à basse température

Abdichtungsbahnen - Bitumen-, Kunststoff- und Elastomerbahnen für Dachabdichtungen - Bestimmung der Wasserdichtheit nach Dehnung bei niedriger Temperatur

This European Standard was approved by CEN on 10 September 2004.

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.

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



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## Foreword

This document (EN 13897:2004) 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 May 2005, and conflicting national standards shall be withdrawn at the latest by August 2006.

This standard is one of a series of standards which specify test methods for determining dimensions and properties of flexible sheets, as factory made products.

This European Standard is applied in conjunction with European Standards specifying product characteristics for bitumen, plastic and rubber sheets for 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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## EN 13897:2004 (E)

### 1 Scope

This document specifies a test for determining the ability of flexible sheets to remain watertight after being stretched at low temperature.

This standard is applicable only for mechanically fastened single layer waterproofing.

This standard has been drafted for application in roofing, but it may also be used in other areas where it is relevant.

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

### 3 Terms and definitions

For the purpose of this document, the terms and definitions given in the European Standards on product specifications for waterproofing sheets apply.

### 4 Principle

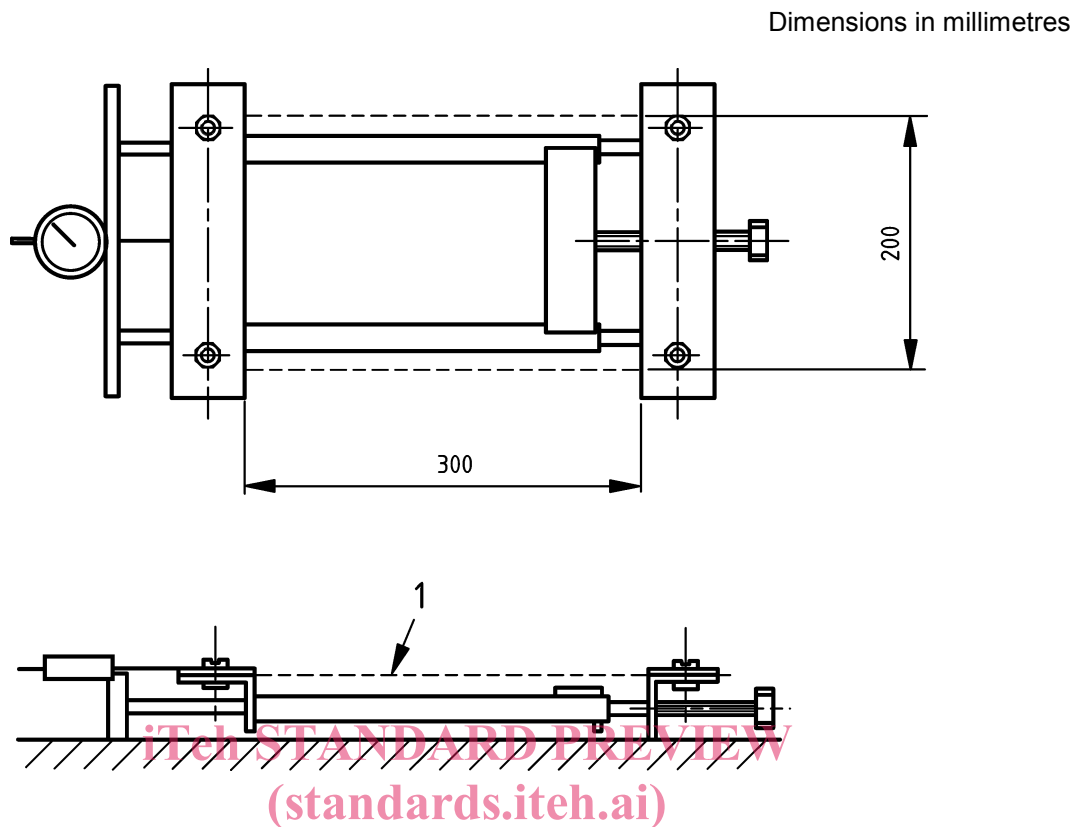
The test specimen is stretched at low temperature to a given elongation (percentage). Afterwards the specimen is tested at room temperature in the stretched state for watertightness by means of a vacuum pad and soap solution.

### 5 Apparatus

The apparatus consists of the parts given in 5.1 to 5.6.

#### 5.1 Tensioning device

A tensioning device (example shown in Figure 1) is equipped with two grips to hold one test specimen. One grip can be moved in the plane of the test specimen in order to induce elongation and fixed in position at a predetermined value. The test specimen shall be strained along its entire width without sliding in the grips.

**Key**

- 1 Test specimen

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**Figure 1 — Device for tensoning of test specimen**

**5.2 Dial gauge**

The dial gauge for recording the state of tensoning shall have an accuracy of at least 0,1 mm.

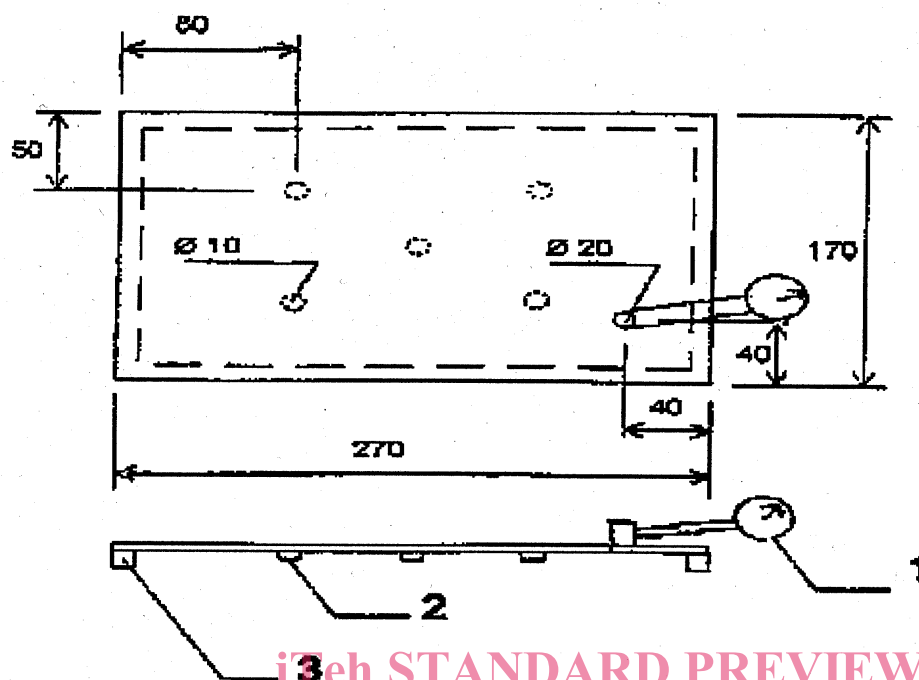
**5.3 Conditioning space**

A conditioning space maintained at  $(-10 \pm 2) ^\circ\text{C}$  in which the tensoning device is conditioned and operated.

**5.4 Vacuum pad**

The vacuum pad for checking watertightness after stretching as shown in Figure 2 can be made of e.g. 5 mm thick acrylate plastic.

Dimensions in millimetres



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## Key

- 1 Pressure gauge
- 2 Support of height 2-3 mm
- 3 Rubber gasket of height 5 mm

Figure 2 — Vacuum pad for control of tightness after stretching

### 5.5 Vacuum pump

The vacuum pump shall maintain a negative pressure of  $(15 \pm 3)$  kPa.

### 5.6 Pressure gauge

A pressure gauge with an accuracy of 0,2 kPa and mounted on the vacuum pad.

## 6 Sampling

Test samples shall be taken in accordance with EN 13416.



## 7 Preparation of test specimens

Two test specimens cut in the direction of the manufacture of the material, and two test specimens cut perpendicularly to this shall be taken from the test piece. The test specimens shall be taken evenly spaced over the test piece and at least 100 mm from edges. The size of the test specimens shall be approximately: 200 mm × 420 mm.

The test specimens shall be stored for at least 24 h at  $(23 \pm 2)$  °C and 30 % RH to 70 % RH.

## 8 Procedure

Each test specimen is installed in the tensioning device, with a negligible strain, so that the clear gauge length between the grips is  $(300 \pm 2)$  mm. In order to facilitate fixing, the test specimen shall be supported underneath its entire length with a metal sheet during this operation.

The temperature of the test specimen and the tensioning device shall be  $(23 \pm 2)$  °C during installation.

After installation the tensioning device with the test specimen is moved to the conditioning space at  $(-10 \pm 2)$  °C and kept there for  $2 \text{ h} \pm 10 \text{ min}$ .

Keeping the tensioning device with the test specimen in the conditioning space, the straining is then carried out at a separation speed of the grips of  $(15 \pm 3)$  mm/min to the specified level of elongation as given in Table 1.

**Table 1 — Stages of elongation**

Gauge length mm	Elongation %	Dial gauge reading mm
300	1	3
300	5	15
300	10	30

The tensioning device is then moved from the conditioning space to a room at  $(23 \pm 2)$  °C.

Within 5 min to 10 min the test specimen is examined for a possible leakage by coating the upper side with a soap solution and by attaching the vacuum pad to the top, applying a pressure difference to the underside of the test specimen of  $(15 \pm 3)$  kPa. If after 60 s no air bubbles are visible, the test specimen is considered to have no leakage.

Tests with a breakage of the test specimen close to the grips of the tensioning device shall not be taken into account. In such case the test shall be repeated.

## 9 Expression of results

The watertightness following stretching at low temperature is expressed as the elongation, in percent, which has not caused leakage of the flexible sheet for roofing in four out of four test specimens.