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**Hidroizolacijski trakovi - Določevanje debeline in mase na enoto površine - 2. del:  
Polimerni in elastomerni trakovi za tesnjenje streh**

Flexible sheets for waterproofing - Determination of thickness and mass per unit area -  
Part 2: Plastics and rubber sheets for roof waterproofing

Abdichtungsbahnen - Bestimmung der Dicke und der flächenbezogenen Masse - Teil 2:  
Kunststoff- und Elastomerbahnen für Dachabdichtungen

Feuilles souples d'étanchéité - Détermination de l'épaisseur et de la masse surfacique -  
Partie 2 : Feuilles d'étanchéité de toiture plastiques et élastomères

**Ta slovenski standard je istoveten z: prEN 1849-2**

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**ICS:**

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

**oSIST prEN 1849-2:2017****en,fr,de**



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NORME EUROPÉENNE  
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**DRAFT**  
**prEN 1849-2**

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ICS 91.100.50

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English Version

**Flexible sheets for waterproofing - Determination of  
thickness and mass per unit area - Part 2: Plastics and  
rubber sheets for roof waterproofing**

Feuilles souples d'étanchéité - Détermination de  
l'épaisseur et de la masse surfacique - Partie 2 :  
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Abdichtungsbahnen - Bestimmung der Dicke und der  
flächenbezogenen Masse - Teil 2: Kunststoff- und  
Elastomerbahnen für Dachabdichtungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 254.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This document (prEN 1849-2:2017) has been prepared by Technical Committee CEN/TC 254 “Flexible sheets for waterproofing”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1849-2:2009.

**iTeh STANDARD PREVIEW**  
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SIST EN 1849-2:2019

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**prEN 1849-2:2017 (E)****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 (EN 13956).

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## 1 Scope

This European Standard specifies methods for the determination of the thickness and mass per unit area of plastic and rubber sheets for roof waterproofing.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 purposes of this document, the following terms and definitions apply.

### 3.1

#### **mechanical effective thickness (deffm)**

thickness of the sheet providing the waterproofing measured with a mechanical measuring device

### 3.2

#### **optical effective thickness (deffo)**

thickness of the sheet providing the waterproofing measured with an optical measuring device

Note to entry 1: The overall thickness is an indication to decide which method of thickness measurement is needed. If the optical method is used for the measurement the result of the effective thickness is the optical effective thickness

[SIST EN 1849-2:2019](https://standards.iteh.ai/catalog/standards/sist/4853bf82-dca4-4771-9f89-2074a92a0d91/sist-en-1849-2-2019)

### 3.3

#### **mechanical overall thickness (dm)**

thickness of the sheet measured with a mechanical measuring device

### 3.4

#### **optical overall thickness (do)**

thickness of the sheet measured with an optical measuring device

## 4 Sampling

Test samples shall be taken in accordance with EN 13416.

## 5 Determination of thickness

### 5.1 Principle

The effective thickness is determined by a mechanical measuring device unless there is a hindrance. In this case, an optical measuring device shall be used. The hindrance means that the difference between effective thickness and overall thickness is greater than or equal to 0,15 mm and/or that the weight of the backing is greater than or equal to 80 g/m<sup>2</sup>.

The overall thickness is determined by a mechanical measuring device unless there is a hindrance. In this case, an optical measuring device shall be used. The hindrance means that the measuring surfaces are disabled from a good contact with the 2 outer surfaces of the sheet.

## 5.2 Apparatus

### 5.2.1 Mechanical measuring device

Measuring device, capable of indicating the thickness to an accuracy of 0,01 mm. The measuring surfaces shall be planar and the measuring head has a diameter of  $(10 \pm 0,05)$  mm including rounded edges exerting a pressure of  $(20 \pm 10)$  kPa on the sheet surface.



Figure 1 — Typical measuring device with a sample of 1,80 mm

### 5.2.2 Optical measuring device

Measuring device, capable of indicating the thickness to an accuracy of 0,01 mm. The reproducibility for the whole optical measuring device (microscope, monitor, measuring software, ...) is smaller than 0,01 mm. The magnification of the optical measuring device is recommended to be greater or equal than 30.



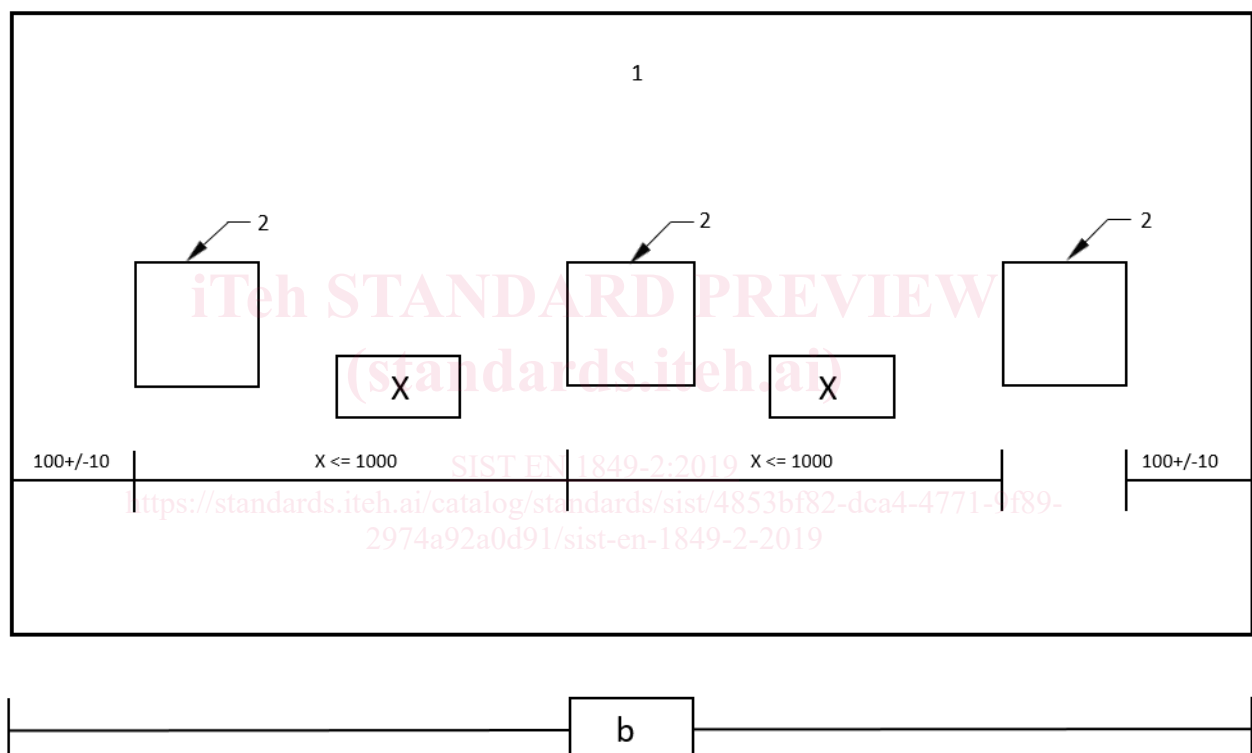
### 5.3 Test specimens

The test specimens shall be square or circular in form, and have an area of  $(10\,000 \pm 100) \text{ mm}^2$ . Cut from the sheet  $n$  test specimens evenly divided over the width  $b$  of the sheet, the outer specimens  $(100 \pm 10) \text{ mm}$  from the edges.

For the optical measurement a small specimen shall be cut with a razor-sharp knife from each specimen. This small specimen should not be longer than 15 mm and is cut from the middle of the test specimen. The cut should be even perpendicular to the surface  $90^\circ \pm 10^\circ$ . Use a template and cutting from the top side of the membrane is recommended.

The minimum number of test specimens is 2. The maximum distance between 2 test specimens is 1 000 mm.

Dimensions in millimetres



#### Key

- 1 sample
- 2 test specimen
- b width of the sheet
- X constant distance between test specimens

Figure 2 — Cutting plan for e.g. 3 test specimens, example

### 5.4 Procedure

Condition the sample for at least 2 h at  $(23 \pm 2) ^\circ\text{C}$  and  $(50 \pm 5) \%$  relative humidity immediately before measuring.

**prEN 1849-2:2017 (E)**

Ensure that the sample and the faces of the measuring device are free from contamination for example dust.

Check if the measuring device is calibrated and working properly.

Determine if the mechanical measurement applies. In case of doubt an indicative optical measurement will be done.

Record all relevant thicknesses of the sheet once per test specimen to 0,01 mm. Calculation of the mean value and standard deviation is based on the readings of all test specimens.

**5.4.1 Mechanical measurement**

Check the zero point of the measuring device before each measurement.

When determining the thickness, lower the measuring head gently to avoid deforming the material.

**5.4.2 Optical measurement**

The cut cross section of the small specimen must be installed in an angle of  $90^\circ \pm 5^\circ$  to the direction of viewing, using a microscope. Under the microscope a distance of 5mm is indicated. Within this 5 mm the highest and lowest thickness is determined. The thickness from that specimen is the average between these 2 values. A single fibres penetrating from the backing into the sheet are not relevant for the determination of the thickness.

**5.5 Expression of results**

The overall thickness (dm or do) is indicated as the mean thickness of all test specimens.

The effective thickness (deffm or deffo) shall be stated as the mean thickness of all test specimens.

If relevant the thickness of the different layers (d1/d2/...) shall be stated as the mean thickness of all specimens.

State all the results of sheet thickness and standard deviation to the nearest 0,01 mm.

**6 Determination of mass per unit area****6.1 Principle**

The mass per unit area is determined by weighing a test specimen of known area. (The same test specimens as used for the determination of thickness may be used.)

**6.2 Apparatus**

Balance capable of indicating sample weight to an accuracy of 0,01 g.

**6.3 Test specimens**

The test specimens shall be square or circular in form, and have an area of  $(10\,000 \pm 100)$  mm<sup>2</sup>. Cut from the sheet  $n$  test specimens evenly divided over the width  $b$  of the sheet, the outer specimens  $(100 \pm 10)$  mm from the edges (see Figure 1).

**6.4 Procedure**

Condition the test specimens for a minimum of 20 h at  $(23 \pm 2)$  °C and  $(50 \pm 5)$  % relative humidity immediately before weighing.

Weigh the test specimens to the nearest 0,01 g and calculate the mass per unit area, in g/m<sup>2</sup>.