

**Flexibla tätskikt – Bitumen-, plast- och gummi-
baserade tätskikt för tak – Bestämning av
permeabilitet för vattenånga**

**Flexible sheets for waterproofing – Bitumen,
plastic and rubber sheets for roof waterproofing –
Determination of water vapour transmission
properties**

Europastandarden EN 1931:2000 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 1931:2000.

The European Standard EN 1931:2000 has the status of a Swedish Standard. This document contains the official English version of EN 1931:2000.

Dokumentet består av 14 sidor.

Upplysningar om **sakinnehållet** i standarden lämnas av SIS, Swedish Standards Institute, tel 08 - 555 520 00.

Standarder kan beställas hos SIS Förlag AB som även lämnar **allmänna upplysningar** om svensk och utländsk standard.

Postadress: SIS Förlag AB, 118 80 STOCKHOLM
Telefon: 08 - 555 523 10. *Telefax:* 08 - 555 523 11
E-post: sis.sales@sis.se. *Internet:* www.sis.se

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1931

July 2000

ICS 91.100.50

English version

Flexible sheets for waterproofing - Bitumen, plastic and rubber
sheets for roof waterproofing - Determination of water vapour
transmission properties

Feuilles souples d'étanchéité - Feuilles d'étanchéité de
toiture bitumineuses, plastiques et élastomères -
Détermination des propriétés de transmission de la vapeur
d'eau

Abdichtungsbahnen - Bitumen-, Kunststoff- und
Elastomerbahnen für Dachabdichtungen - Bestimmung der
Wasserdampfdurchlässigkeit

This European Standard was approved by CEN on 10 June 2000.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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

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

Contents

	Page
Foreword	3
Introduction	4
1 Scope	4
2 Normative references	4
3 Definitions	5
4 Principle	6
5 Apparatus	6
6 Sampling	8
7 Preparation of test specimens	8
8 Procedure	9
9 Expression of Results and Precision of Test Method	10
10 Test report	11
Bibliography	12

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 January 2001, and conflicting national standards shall be withdrawn at the latest by January 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 draft European Standard has been prepared by the Technical Committee CEN/TC 254 to determine the water vapour transmission properties of flexible sheets for waterproofing.

This standard has been prepared for applications in roofing but it may also be used in other areas where it is relevant.

This standard is intended for characterisation of flexible sheets for waterproofing as manufactured or supplied before use. This standard relates exclusively to products and not to waterproofing membrane systems composed of such products and installed in the works.

1 Scope

This European Standard specifies a method for the determination of the water vapour transmission properties and for the calculation of the density of moisture flow rate g and of the moisture resistance factor μ of waterproofing sheets. It is applicable to factory made bitumen, plastic and rubber sheets for roof waterproofing.

2 Normative references

This European Standard incorporates by dated or undated reference, 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 these publications apply to this draft European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

prEN 13416:1998

Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Rules for sampling.

EN 12591

Bitumen and bituminous binders - Specifications of paving grade bitumen

3 Definitions

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

3.1 Density of moisture flow rate: The mass of water vapour transmitted through a unit area of the sheet of specified thickness in a unit time under specified conditions of temperature and humidity, quantity defined by the following relation:

$$g = \frac{\Delta m}{A \times \Delta t}$$

Where A is the exposed area of the test specimen in m^2 and Δt is the time interval between two corresponding weighings of the test assembly in s.

3.2 Moisture permeance: Quantity defined by the following relation:

$$w_p = \frac{g}{(p_1 - p_2)}$$

where p_1 and p_2 are ambient partial vapour pressures at the two faces of the specimen during the test.

3.3 Moisture permeability: Quantity defined by the following relation:

$$\delta_p = w_p \times d$$

where d is the thickness of the test specimen in m.

3.4 Moisture resistance factor: Quantity defined by the following relation:

$$\mu = \frac{\lambda_{ma}}{\delta_p}$$

where λ_{ma} is the moisture conductivity of air and may be calculated as given under 9.1.

3.5 Water vapour diffusion-equivalent air layer thickness: Quantity defined by the following relation:

$$s_d = \mu \times d$$

Where d is the thickness of the test specimen in m.

Symbol	Unit
g	kg/(m ² .s)
w_p	kg/(m ² .s.Pa)
δ_p	kg/(m.s.Pa)
μ	
λ_{ma}	kg/(m.s.Pa)
s_d	m

4 Principle

The test specimen is sealed to the open flange of a test cup containing a desiccant. The assembly is then placed in an atmosphere with a controlled temperature and humidity. When mass take-up is linear over a period of time, the assembly is weighed periodically to determine the density of moisture flow rate through the test specimen into the desiccant.

Due to the nature of the bitumen, plastic or rubber sheets concerned, the test procedure given in this standard consists of two methods:

- 4.1 **Method A:** test procedure for bitumen sheets.
- 4.2 **Method B:** test procedure for plastic or rubber sheets.

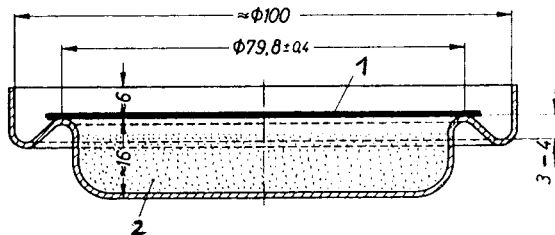
The technical content of the Standard is, where relevant, adapted to these parts accordingly (e.g. clause Preparation of test specimens).

5 Apparatus

5.1 Cups (Absorption atmosphere)

Use cups of pure, cold drawn aluminium of 1 mm thickness, which guarantee a free test area of 0,005 m², total weight of specimen-mounted cup and desiccant must not exceed capability of the analytical balance used (accuracy ± 0,1 mg), as represented in figure 1.

Dimensions in millimetres



Key

- 1 Test specimen
- 2 Desiccant

Figure 1 - Aluminium cup with absorption atmosphere

- 5.2 Mechanical gauge to determine the thickness *d* of specimen to the nearest 0,05 mm.
- 5.3 Analytical balance, capable of weighing the specimen-mounted cup (5.1) with an accuracy of ± 0,1 mg.
- 5.4 Constant-temperature, constant-humidity chamber capable of maintaining a relative humidity of (75 ± 2) % and a temperature of (23 ± 1)°C.

Alternatively, use a room or chamber that can be maintained at (23 ± 1)°C together with a desiccator containing a sodium chloride solution, saturated at 23 °C and containing a large excess of undissolved sodium chloride.

The relative humidity at the upper test specimen surface must be kept constant during test. An air movement of 0,02 m/s to 0,3 m/s in the vaporising atmosphere shall be produced by a propeller.