

Corrugated bitumen sheets

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British Standard

ICS 75.140

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National foreword

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The UK participation in its preparation was entrusted by Technical Committee B/542, Roofing and cladding products for discontinuous laying, to Subcommittee B/542/4, Fibre-reinforced cement sheeting for roofing and cladding, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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CEN accepts this Standard should not have included obligatory third party intervention and that the following clauses will be modified when the Standard is revised to meet the Construction Products Directive (CPD).

- Clause 9 requiring compliance with EN 29000:1987;
- Clause 9.2 requiring an approved supervisory authority to check the inspection work of the manufacturer to all parameters in this Standard.

Compliance with the requirements for third party interventions is also contrary to policy agreed by the Standards Board in 1995.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Summary of pages

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English version

Corrugated bitumen sheets

Plaques ondulées bitumées

Bitumen Wellplatten

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CEN

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Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 128, Roof covering products for discontinuous laying and products for wall cladding, the Secretariat of which is held by IBN.

The following European Standard has been drawn up in the absence of any existing national standard, on the basis of existing Agreements and Technical Notices relating to corrugated bitumen sheets.

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of an identical text or by endorsement, at the latest by December 1998, and conflicting national standards shall be withdrawn at the latest by December 1998.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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.

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1 Scope

This European Standard specifies the geometrical, mechanical and physical properties and the characteristics of the constituents and of the finished product on leaving the factory, and also the test and inspection methods. It is applicable to all bitumen sheets with regular corrugations used for discontinuous roofing.

This European Standard is not applicable to bitumen sheets containing asbestos fibres.

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 any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 7892, *Vertical building elements — Impact resistance tests — Impact bodies and general test procedures*.

3 General

Corrugated bitumen sheets are produced using an intimate and homogeneous mixture of organic and/or inorganic fibres and bitumen. It is the homogeneity of the mixture which guarantees the properties of the sheets.

Sheets may be left in their natural colour or spun-dyed. They may also be given coloured or colourless adhesive surface coatings, granulated or mineralized, by applying granules or fine flakes.

The form of the sheet is defined by the width, length and depth of the corrugations and the pitch of the corrugation.

Sheets are produced in two thicknesses:

- type A: 3,0 mm;
- type B: 2,4 mm.

4 Symbols

- L length of the sheet in millimetres;
- l width of the sheet in millimetres;
- H depth of corrugation in millimetres;
- f deflection of the sheet under stress;
- e thickness in millimetres;
- P weight of the sheet in kilograms per square metre;
- F load in decanewtons;
- p pitch of corrugation;
- E squareness.

5 Requirements

Corrugated bitumen sheet is intended for use in roofing which, apart from its own weight and wind and snow loading, is not required to support any other load. The roof shall have uniform or curved slopes.

Corrugated bitumen sheets shall be fabricated in such a way as to guarantee complete impregnation of bitumen inside the sheet for guaranteeing lasting water tightness, no non-homogeneous or non-impregnated zone being permitted.

Sheets shall meet the requirements indicated in clause 5.

5.1 Geometrical properties

The manufacturer shall specify in his technical documentation the dimensional properties of his product.

5.1.1 Length

L length: limit deviation $-0,15\% + 0,5\%$.

5.1.2 Width

l width: limit deviation $\pm 1\%$.

5.1.3 Thickness

e thickness: the thickness shall be:
— type A: 3,0 mm $\pm 10\%$;
— type B: 2,4 mm $\pm 10\%$.

5.1.4 Depth of corrugation

H depth of corrugation: limit deviation $\pm 6\%$.

5.1.5 Pitch of corrugation

p pitch of corrugation: limit deviation $\pm 1\%$.

5.1.6 Squareness

E squareness: Tolerance 2 mm per metre of length.

The properties described in 5.1.3 and 5.1.4 are measured without the mineralized or granulated coating.

5.2 Mechanical properties

5.2.1 Bending under downward load

The minimum load for a deflection of 1/200 of the span shall be:

- 240 daN/m² for a centre distance of 620 mm;
- 350 daN/m² for a centre distance of 450 mm.

5.2.2 Impact strength

The 50 kg sack (as described in 7.2.2) shall not fall through the sheet.

5.2.3 Tearing of the sheet by the attachment head

The tear threshold shall be greater than 20 daN by the attachment head.

5.3 Physical properties

5.3.1 Impermeability to water

No drop of water may be underneath the sheet after 48 h.

5.3.2 Proportion of constituents

Bitumen (48 ± 3) %.

Substrate of organic or inorganic fibres, filler and colorants: (52 ± 3) %.

5.3.3 Mass

Weight per square metre of developed surface:

- type A: $2,6 \text{ kg/m}^2 \pm 8$ %;
- type B: $2,2 \text{ kg/m}^2 \pm 8$ %.

5.3.4 Homogeneity of the product

No non-impregnated fibrous area is permitted.

5.3.5 Water absorption

Less than or equal to 16 % of the weight of the sheet.
The properties described in 5.3.2, 5.3.3 and 5.3.5 are measured without the mineralized or granulated coating.

5.4 Durability

5.4.1 Frost resistance

No cracks or signs of surface damage.

5.4.2 Dimensional variation as a function of temperature

Less than or equal to 0,1 % for a temperature difference of 50 °C.

5.4.3 Resistance to UV radiation

No superficial deterioration.

6 Sampling

The test pieces are taken from at least three sheets of the daily production. The test pieces to be tested, marked with the date of sampling, shall be cut by knife or saw.

In order to test the geometrical properties described in 7.1.1, 7.1.2 and 7.1.3, two whole sheets shall be sampled per week for each product.

In order to test the mechanical properties described in 7.2.1 and 7.3.1, four whole sheets shall be sampled once a month.

In order to test the tear threshold described in 7.2.3, four test pieces three corrugations wide and 150 mm long shall be taken, cut approximately 100 mm from the edge of different sheets, once a month.

In order to carry out the impact strength test described in 7.2.2, 15 sheets shall be sampled once a month every three months.

In order to test the homogeneity of the product described in 7.3.4, two whole sheets shall be sampled once a week.

In order to test the proportion of the constituents, the minimum mass and the water absorption described in 7.3.2, 7.3.3 and 7.3.5, one whole sheet per test shall be sampled at least twice a week for each product.

In order to test the dimensional variation described in 7.4.2, four whole sheets shall be sampled once every three months.

In order to test the frost resistance and resistance to UV radiation described in 7.4.1 and 7.4.3, the test pieces taken shall be cut from different sheets at least every three months.

These are the minimum sampling requirements. They are distinct from the internal inspections described in 9.1.

7 Test methods

The tests described in 7.1.2, 7.1.3.1, 7.3.2, 7.3.3 and 7.3.5 shall be carried out without the mineralized or granulated coating.

7.1 Geometrical properties

7.1.1 Length, width

The length shall be measured using a precision rule with mm divisions.

The whole sheet shall be supported on a horizontal plane.

The length shall be measured at the crown of the corrugation and in the valley of the corrugation on the second and penultimate corrugations.

The result is the arithmetic mean of the four measured values.

The width shall be measured in the same position 100 mm from the two ends of the sheet.

The result is the arithmetic mean of the measured values. (See Figure 1).

7.1.2 Thickness

The thickness shall be measured using a 0,1 mm graduated dial gauge, with a force of 1 N to 1,2 N and with flat contact surfaces of 10 mm diameter.

Take the measurement on the flank of the corrugation 50 mm from the edge of the sheet on 10 different flanks, divided into 5 for each end of the sheet.

The result is the arithmetic mean of 10 measurements taken. (See Figure 2).

7.1.3 Shapes

7.1.3.1 Depth of corrugation

The depth of corrugation shall be measured at both ends of the sheet on each corrugation using a slide gauge with 0,1 mm divisions. The sheet is placed on a flat non-ductile surface.

The result is the arithmetic mean of the measurements taken. (See Figure 3).