SLOVENSKI STANDARD
SIST EN 13707:2005+A2:2009

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Hidroizolacijski trakovi - Ojačeni bitumenski trakovi za tesnjenje streh - Definicije in lastnosti

Flexible sheets for waterproofing - Reinforced bitumen sheets for roof waterproofing - Definitions and characteristics

Abdichtungsbahnen - Bitumenbahnen mit Trägereinlage für Dachabdichtungen - Definitionen und Eigenschaften

Feuilles souples d'étanchéité - Feuilles bitumineuses armées pour l'étanchéité de toiture - Définitions et caractéristiques

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01.040.91	Gradbeni materiali in gradnja (Slovarji)	Construction materials and building (Vocabularies)
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91.100.50	Veziva. Tesnilni materiali	Binders. Sealing materials

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

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English Version

Flexible sheets for waterproofing - Reinforced bitumen sheets for roof waterproofing - Definitions and characteristics

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This European Standard was approved by CEN on 30 July 2004 and includes Amendment 1 approved by CEN on 5 October 2006 and Amendment 2 approved by CEN on 12 June 2009.

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

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Foreword

This document (EN 13707:2004+A2:2009) 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of an identical text or by endorsement, at the latest by January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

This document includes Amendment 1, approved by CEN on 2006-10-05 and Amendment 2, approved by CEN on 2009-06-12.

This document supersedes EN 13707:2004.

The start and finish of text introduced or altered by amendment is indicated in the text by tags [A1] ⟨A1⟩ and [A2] ⟨A2⟩.

This document 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).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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, 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.

1 Scope

This document specifies definitions and characteristics for flexible reinforced bitumen sheets for which the intended use is roofing. This covers sheets used as top layers, intermediate layers and underlayers. It does not cover reinforced bitumen sheets for waterproofing used as underlays for discontinuous roofing.

It does not cover waterproofing sheets which are intended to be used fully bonded under bituminous products (e.g. asphalt) directly applied at high temperature, specified by prEN 14695.

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 1107-1, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for roof waterproofing — Determination of dimensional stability*

EN 1108, *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of form stability under cyclical temperature changes*

EN 1109, *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of flexibility at low temperature*

EN 1110, *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of flow resistance at elevated temperature*

EN 1296, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roofing — Method of artificial ageing by long term exposure to elevated temperature*

EN 1297, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Method of artificial ageing by long term exposure to the combination of UV radiation, elevated temperature and water*

EN 1848-1, *Flexible sheets for waterproofing — Determination of length, width and straightness — Part 1: Bitumen sheets for roof waterproofing*

EN 1849-1, *Flexible sheets for waterproofing — Determination of thickness and mass per unit area — Part 1: Bitumen sheets for roof waterproofing*

EN 1850-1, *Flexible sheets for waterproofing — Determination of visible defects — Part 1: Bitumen sheets for roof waterproofing*

EN 1928:2000, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness*

EN 1931, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of water vapour transmission properties*

EN 12039, *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of adhesion of granules*

EN 12310-1, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for waterproofing — Determination of resistance to tearing (nail shank)*

EN 12311-1, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for roof waterproofing — Determination of tensile properties*

EN 12316-1, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for roof waterproofing — Determination of peel resistance of joints*

EN 12317-1, *Flexible sheets for waterproofing — Part 1: Bitumen sheets for roof waterproofing — Determination of shear resistance of joints*

EN 12691, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to impact*

EN 12730:2001, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to static loading*

EN 13416:2001, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Rules for sampling*

EN 13501-1:2002, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

〈A1〉 EN 13501-5, *Fire classification of construction products and building elements — Part 5: Classification using data from external fire exposure to roofs tests* 〈A1〉

EN 13897, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness after stretching at low temperature*

prEN 13948, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to root penetration*

EN ISO 11925-2, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2:2002)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13416:2001 and the following apply.

3.1
waterproofing
action to prevent the passage of water from one plane to another

3.2
waterproofing system
assembly of one or more layers of roofing sheet in its applied and jointed form, which has certain performance characteristics, to be assessed as a whole

NOTE 1 Where only one layer is used this is usually referred to as a single layer system.

NOTE 2 A bituminous roofing system is formed on site by connecting and sealing one or more superimposed layers of bitumen sheets to form a single composite waterproof layer for use over flat, pitched or vertical surfaces according to building application requirements.

3.3
roofing
waterproofing used in the roof of a building including roofs used for parking of vehicles and for roof gardens

NOTE Waterproofing sheets which are intended to be fully bonded and bituminous products directly applied at high temperature are specified by the European Standard on flexible reinforced bitumen sheets for concrete bridge decks and other concrete surfaces trafficable by vehicles (see prEN 14695 ([6])).

3.4
roofing sheet
factory made flexible sheet including any carriers, facings, surface texture and/or backing

3.5
carrier
material incorporated into or onto the factory-made roofing sheet to ensure its stability and/or mechanical resistance

3.6
backing
material incorporated onto the factory-made roofing sheet without a permanent mechanical function

3.7
surfacing
material applied on one or both sides of roofing sheets, either as a permanent light surface protection against weathering on the upper surface or as an anti-sticking substance of the roofing sheets

3.8
batch
amount of product manufactured to the same specification within a maximum period of 24 h

3.9
manufacturer's limiting value (MLV)
value stated by the manufacturer to be met during testing. The manufacturer's limiting value can be a minimum or a maximum value according to statements made under product characteristics of this document

3.10
manufacturer's declared value (MDV)
value declared by the manufacturer accompanied by a declared tolerance

3.11
reinforced bitumen sheet
factory made flexible layer of bitumen with internal or external incorporation of one or more carriers, supplied in roll form ready for use

3.12
oxidized bitumen
straight run petroleum bitumen or a fluxed bitumen which has been hardened and rendered less temperature susceptible by blowing with air at high temperature with or without the use of a catalyst

3.13
elastomeric bitumen
petroleum bitumen and/or oxidized bitumen modified by the addition of thermo-plastic rubbers

3.14
plastomeric bitumen
petroleum bitumen and/or oxidized bitumen modified by the addition of polyolefin or polyolefin copolymer compound

3.15
sampling
procedure used to select or constitute a sample

3.16
sample
sheet from which a test piece is taken

3.17
test piece
part of the sample from which test specimens are taken

3.18
test specimen
piece of precise dimensions taken from the test piece

4 System-related characteristics

System-related characteristics with respect to multilayer systems, sheets for single layer application, mechanically fastened systems and roof gardens or under heavy protection are given in Annex A.

5 Product characteristics

5.1 General

5.1.1 Where a tolerance is limited by this standard it does not have to be declared by the manufacturer.

5.1.2 When tested for purposes other than initial type testing or factory production control, the tests to determine product characteristics indicated in this standard shall be started within 1 month of delivery from the manufacturer.

5.2 Characteristics

5.2.1 Visible defects

The product shall be free of visible defects, as determined in accordance with EN 1850-1.

5.2.2 Dimensions, tolerances and mass per unit area

The length, width and straightness of the sheet shall be determined in accordance with EN 1848-1. The length and width shall not be shorter than the manufacturer's limiting value. The maximum deviation from straightness shall not exceed 20 mm per 10 m length or in proportion for other lengths (e.g. 10 mm per 5 m length).

Where a product is specified by mass per unit area, it shall be measured in accordance with EN 1849-1, except that the sample shall be 100 mm × 100 mm, and the results shall lie within the declared tolerance of the manufacturer's declared value.

Where a product is specified by thickness, it shall be measured in accordance with EN 1849-1 and the results shall lie within the declared tolerance of the manufacturer's declared value.

Where sheets with incorporated mineral protection are specified by thickness, the measurement of thickness may be carried out on the granule-free selvedge. This shall be declared in the report.

5.2.3 Watertightness

The watertightness shall be determined in accordance with EN 1928:2000 using method A or B at an applied water pressure of 10 kPa (0,1 bar) and shall give a pass result.

5.2.4 Effects of water

Not specified.

NOTE Experience has shown that water has little or no effect upon the in-service performance of reinforced bitumen sheets. See also Annex C.

5.2.5 Fire performance

5.2.5.1 External fire performance

Where the manufacturer wishes to declare external fire performance (e.g. when subject to regulatory requirements), the product shall be tested and classified in accordance with [A1] EN 13501-5 [A1]. Where the defined system meets the deemed to satisfy criteria[1] no testing is required.

[A2] *deleted text* [A2]

5.2.5.2 Reaction to fire

Where required, the product shall be tested and classified in accordance with EN 13501-1:2002, Table 1. When tested according to EN ISO 11925-2, the products shall be tested under conditions of surface flame attack.

NOTE It is currently considered that the Euroclasses Classification system at Classes D and above requires investigation to determine its appropriateness to the products covered by this document (the SBI test may be inappropriate for products covered by the standard). Pending results of such an investigation and discussions in the Fire Regulators Group, products covered by this document are tested to EN ISO 11925-2. If and when a new fire test scenario and test method are developed for the products, this document will be amended to refer to them.

[A2] Reaction to fire is by definition a product test, as distinct from Resistance to fire, which is a system test. Therefore, it is considered important to provide guidance in order to reduce the number of tests required.

According to EN ISO 11925-2, the test is required to be undertaken on the exposed surface without any substrate, in one direction only, and the reinforcement has to be stated by the manufacturer as “organic” or “inorganic”.

a) Test results from EN ISO 11925-2 for a product with a given reinforcement and a bituminous compound having a certain percentage of organic content shall apply to the same product having a lower organic content.

b) Test results from EN ISO 11925-2 for a product with a given organic reinforcement and a bituminous compound shall apply to a product having the same bituminous compound and an inorganic reinforcement.

c) Test results from EN ISO 11925-2 for a product with a given reinforcement and bituminous compound, with a thickness of above 2 mm or a mass per unit area of above 2 kg/m², shall apply to any product with the same type of reinforcement and the same type of bituminous compound but lower thickness or mass per unit area, down to a limit of 2 mm or 2 kg/m² respectively.

d) Test results from EN ISO 11925-2 for a product with a given reinforcement and bituminous compound , with a thickness or mass per unit area below 2 mm or 2kg/m², shall apply to any product with the same type of reinforcement and the same type of bituminous compound but with higher thickness or mass per unit area, up to a limit of 2 mm or 2 kg/m² respectively. [A2]

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[1] See Commission Decision 2000/553/EC [5]

5.2.6 Resistance to hail

Not specified.

NOTE Experience has shown that hail has little or no effect upon the in-service performance of reinforced bitumen sheets.

5.2.7 Watertightness after stretching at low temperature

Where required, the watertightness after stretching at low temperature shall only be determined for mechanically fastened single layer applications in accordance with EN 13897 and the results shall be greater than or equal to the manufacturer's limiting value.

5.2.8 Joint strength

5.2.8.1 The peel resistance of joints shall only be determined for mechanically fastened single layer applications in accordance with EN 12316-1 and the results shall lie within the declared tolerance of the manufacturer's declared value.

5.2.8.2 The shear resistance of joints shall be determined for all single layer applications in accordance with EN 12317-1 and the results shall lie within the declared tolerance of the manufacturer's declared value.

5.2.9 Water vapour properties

If necessary, the moisture resistance factor μ of reinforced bitumen sheets may be determined in accordance with EN 1931. If the factor μ is not determined, a value of 20 000 may be used for calculation purposes.

5.2.10 Tensile properties

The tensile properties shall be determined in accordance with EN 12311-1 and the results (for the longitudinal and transverse directions) shall lie within the declared tolerance of the manufacturer's declared value.

5.2.11 Resistance to impact

〚A2〛 Where required, the resistance to impact shall be determined in accordance with EN 12691 and shall be expressed as the maximum drop height of the puncturing tool in millimetres, which has not caused leakage of the flexible sheet, which shall be greater than or equal to the manufacturer's limiting value.

Products shall be tested in accordance with EN 12691, method A.

Where subject to regulatory requirements or where the manufacturer wishes to make such a declaration, products shall also be tested in accordance with EN 12691, method B.

The method(s) used shall be stated in the product data sheet. 〚/A2〛

5.2.12 Resistance to static loading

The resistance to static loading shall be determined in accordance with EN 12730:2001, method A and shall be greater than or equal to the manufacturer's limiting value.

5.2.13 Resistance to tearing (nail shank)

The resistance to tearing (nail shank) shall be determined in accordance with EN 12310-1 and the results shall lie within the declared tolerance of the manufacturer's declared value.