



SLOVENSKI STANDARD

SIST EN 14695:2010

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Hidroizolacijski trakovi - Ojačeni bitumenski trakovi za tesnjenje betonskih premostitvenih objektov in drugih betonskih povoznih površin - Definicije in lastnosti

Flexible sheets for waterproofing - Reinforced bitumen sheets for waterproofing of concrete bridge decks and other trafficked areas of concrete - Definitions and characteristics

Abdichtungsbahnen - Bitumenbahnen mit Trägereinlage für Abdichtungen von Betonbrücken und andere Verkehrsflächen aus Beton - Definitionen und Eigenschaften

Feuilles souples d'étanchéité - Feuilles bitumineuses armées pour l'étanchéité de ponts et autres surfaces en béton circulables par les véhicules - Définitions et caractéristiques

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EUROPEAN STANDARD

EN 14695

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English Version

Flexible sheets for waterproofing - Reinforced bitumen sheets for waterproofing of concrete bridge decks and other trafficked areas of concrete - Definitions and characteristics

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This European Standard was approved by CEN on 21 November 2009.

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Foreword

This document (EN 14695:2010) 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of an identical text or by endorsement, at the latest by July 2010, and conflicting national standards shall be withdrawn at the latest by October 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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, Croatia, 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 the United Kingdom.

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1 Scope

This European Standard specifies characteristics and performance of reinforced bitumen sheets for waterproofing of concrete bridge decks and other trafficked areas of concrete where the waterproofing system is bonded to the concrete deck and overlaid by asphalt. The standard also specifies the test methods used for verifying the characteristics and performance.

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 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 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 12039:1999, *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of adhesion of granules*

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

EN 13375:2004, *Flexible sheets for waterproofing — Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles — Specimen preparation*

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

EN 13596, *Flexible sheets for waterproofing — Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles — Determination of bond strength*

EN 13653, *Flexible sheets for waterproofing — Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles — Determination of shear strength*

EN 14223, *Flexible sheets for waterproofing — Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles — Determination of water absorption*

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EN 14224, *Flexible sheets for waterproofing — Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles — Determination of crack bridging ability*

EN 14691, *Flexible sheets for waterproofing — Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles — Compatibility by heat conditioning*

EN 14692:2005, *Flexible sheets for waterproofing — Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles — Determination of the resistance to compaction of an asphalt layer*

EN 14693, *Flexible sheets for waterproofing — Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles — Determination of the behaviour of bitumen sheets during application of mastic asphalt*

EN 14694, *Flexible sheets for waterproofing — Waterproofing of concrete bridge decks and other concrete surfaces trafficable by vehicles — Determination of resistance to dynamic water pressure after damage by pre-treatment*

EN ISO 9001, *Quality management systems — Requirements (ISO 9001:2008)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13375:2004, EN 13416:2001 and the following apply.

3.1 waterproofing

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

3.2 bridge waterproofing system

assembly of layers between a concrete bridge deck (or other trafficked areas of concrete) and an overlay

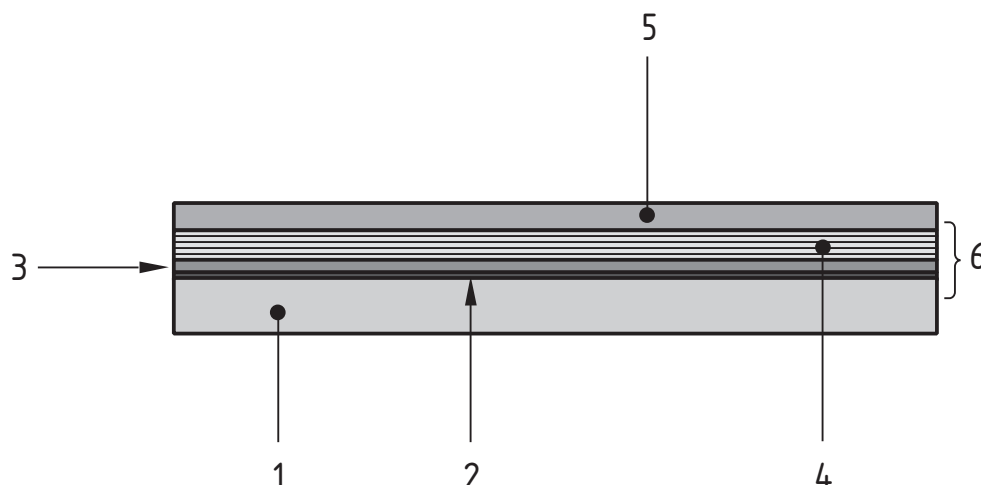
NOTE 1 See Figure 1.

NOTE 2 Generally comprises a primer, the reinforced bitumen sheet (or the assembly of several reinforced bitumen sheets) and the protection layer if specified by the manufacturer.

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Key

- 1 concrete bridge deck
- 2 primer
- 3 reinforced bitumen sheet(s)
- 4 protection layer
- 5 overlay
- 6 bridge waterproofing system (2 + 3 and 4 if specified)

Figure 1 — Schematic section of bridge waterproofing system

3.3

carrier

material incorporated into or onto a factory-made reinforced bitumen sheet to ensure its stability and/or mechanical resistance

3.4

backing

material incorporated onto a factory-made reinforced bitumen sheet without a permanent mechanical function

3.5

surfacing

material applied on one or both sides of reinforced bitumen sheets, either as a permanent light surface protection on the upper surface or as an anti-sticking substance of the reinforced bitumen sheets

3.6

batch

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

3.7

manufacturer's limiting value

MLV

value stated by the manufacturer to be met during testing

NOTE The MLV can be a minimum or a maximum value according to statements made under product characteristics of this European Standard.

EN 14695:2010 (E)**3.8
manufacturer's declared value****MDV**

value declared by the manufacturer accompanied by a declared tolerance

**3.9
primer**

initial coating applied directly to the prepared concrete deck prior to the bridge waterproofing system being installed to achieve adhesion to the concrete surface

NOTE The primer can be made up by one or more layers of bituminous products or resin based products.

**3.10
reinforced bitumen sheet**

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

**3.11
protection layer**

first layer above the reinforced bitumen sheet, the aim of which being to protect the sheet from mechanical damage

NOTE Depending on the bridge waterproofing system, this layer can have an additional waterproofing function.

**3.12
overlay**

asphalt layer immediately above the bridge waterproofing system

NOTE Typically, the overlay can be made up of asphalt concrete, sand asphalt or coarse aggregate mastic asphalt.

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4 Product characteristics**4.1 General**

Where a tolerance is defined by this European Standard it does not have to be declared by the manufacturer.

When tested for purposes other than initial type testing or factory production control (see 5.1), the tests to determine product characteristics indicated in this European Standard shall be started within one month of delivery from the manufacturer.

4.2 Sheet characteristics**4.2.1 Visible defects**

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

4.2.2 Dimensions, tolerances and mass per unit area

The length, width and straightness 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, 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 additionally be carried out on the granule-free selvedge. This shall be declared in the report.

4.2.3 Initial amount of mineral surface protection

The initial amount of mineral surface protection shall be determined in accordance with EN 12039:1999, Annex B, except that a 125 µm sieve shall be used. If a distinction is to be made between the different sides of the sheet the initial amount of mineral surface protection shall be determined in accordance with Annex D. The results for the test used shall lie within the declared tolerance of the manufacturer's declared value.

4.2.4 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.

4.2.5 Water absorption

The content of water absorbed shall be determined in accordance with EN 14223. The water absorption shall be less than or equal to the manufacturer's limiting value.

4.2.6 Flexibility at low temperature

The flexibility at low temperature shall be determined in accordance with EN 1109. The result shall be less than or equal to the manufacturer's limiting value.

NOTE This test does not give results that directly correspond to the application conditions in practice. Results should only be used to compare products of similar thickness and construction.

4.2.7 Flow resistance at elevated temperature

The flow resistance at elevated temperature shall be determined in accordance with EN 1110. The result shall be greater than or equal to the manufacturer's limiting value.

4.2.8 Dimensional stability at elevated temperatures

The dimensional stability at elevated temperature shall be determined in accordance with EN 1107-1 (24 h at 80 °C). The result shall be less than or equal to the manufacturer's limiting value.

For reinforced bitumen sheets to be used with a layer of coarse aggregate mastic asphalt directly on the reinforced bitumen sheet, the dimensional stability at elevated temperatures (1 h at 160 °C) shall be evaluated in accordance with Annex B when subject to regulatory requirements, and may be evaluated when not subject to such requirements. The test result shall be less than or equal to the manufacturer's limiting value.

NOTE The test at 80 °C is intended to determine the dimensional changes as a result of production-induced internal stresses under the effect of heat. When combined with a coarse aggregate mastic asphalt layer, the effect of heat is much larger and can cause severe shrinkage to the reinforced bitumen sheet. This effect is therefore declared as well for sheets intended for use in combination with a coarse aggregate mastic asphalt layer.

4.2.9 Thermal ageing behaviour

In order to verify the thermal ageing behaviour of the product, characteristics shall be determined before and after exposure in accordance with EN 1296 for a period of 12 weeks. The relevant characteristics are the flexibility at low temperature and the flow resistance at elevated temperature. The flexibility at low temperature shall be determined in accordance with EN 1109 (see 4.2.6) and the results shall be less than or equal to the