SLOVENSKI STANDARD
oSIST prEN 15381:2018

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Geotekstilije in geotekstilijam sorodni izdelki - Zahtevane lastnosti za uporabo na voziščih in asfaltnih prevlekah

Geotextiles and geotextile-related products - Characteristics required for use in pavements and asphalt overlays

Geotextilien und geotextilverwandte Produkte - Eigenschaften, die für die Anwendung beim Bau von Fahrbahndecken und Asphaltdeckschichten erforderlich sind

Géotextiles et produits apparentés - Caractéristiques requises pour l'utilisation dans la construction de routes et de revêtements asphaltiques

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59.080.70	Geotekstilije	Geotextiles
93.080.20	Materiali za gradnjo cest	Road construction materials

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English Version

Geotextiles and geotextile-related products - Characteristics required for use in pavements and asphalt overlays

Géotextiles et produits apparentés - Caractéristiques requises pour l'utilisation dans la construction de routes et de revêtements asphaltiques

Geotextilien und geotextilverwandte Produkte - Eigenschaften, die für die Anwendung beim Bau von Fahrbahndecken und Asphaltdeckschichten erforderlich sind

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 189.

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
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 15381:2018) has been prepared by Technical Committee CEN/TC 189 “Geosynthetics”, the secretariat of which is held by NBN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15381:2008.

In comparison with the previous edition, the following technical modifications have been made:

— The template of the document was updated according to the recent status.

— Table 1a and 1b were updated, including the 'relevance', and re-designated as Table 1 and 2.

— The AVCP clause was introduced.

— All Durability aspects are covered in Annex A.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

For relationship with Regulation (EU) No. 305/2011, see informative Annex ZA, which is an integral part of this document.

Introduction

This document allows manufacturers to describe geotextiles and geotextile-related products on the basis of declared values for characteristics relevant to the intended use and if tested to the specified method. It also includes procedures for evaluation of conformity and factory production control.

This document may also be used by designers, end-users and other interested parties and enables them to define which functions and conditions of use are relevant.

Performance and index tests for several characteristics are still under study and will be included when the standard is revised.

The term “product” which is used in this standard refers to geotextiles and geotextile-related products.

This document is part of a series of standards, addressing the requirements for geotextiles and geotextile-related products when used in a specific application.

1 Scope

This document specifies the characteristics of metallic and non-metallic geotextiles and geotextile-related products used in the construction of pavements and asphalt overlays and the appropriate test methods to determine these characteristics.

The intended use of these geotextiles and geotextile-related products is to fulfil one or more of the following functions: reinforcement, stress relief and interlayer barrier. The use of geotextiles and geotextile-related products is to be considered as a part of an interlayer and asphalt overlay system.

This document is not applicable to geosynthetic barriers, as defined in EN ISO 10318.

This standard provides for the assessment and verification of constancy of performance (AVCP) of the product to this European Standard including factory production control procedures.

This document defines characteristics to be considered with regard to the presentation of performance.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1426:2015, *Bitumen and bituminous binders - Determination of needle penetration*

EN 10080:2005, *Steel for the reinforcement of concrete - Weldable reinforcing steel - General*

EN 10244-2:2009, *Steel wire and wire products - Non-ferrous metallic coatings on steel wire - Part 2: Zinc or zinc alloy coatings*

EN 12224:2000, *Geotextiles and geotextile-related products - Determination of the resistance to weathering*

EN 14030:2001, *Geotextiles and geotextile-related products - Screening test method for determining the resistance to acid and alkaline liquids (ISO/TR 12960:1998, modified)*

EN ISO 1460:1994, *Metallic coatings - Hot dip galvanized coatings on ferrous materials - Gravimetric determination of the mass per unit area (ISO 1460:1992)*

EN ISO 1461:2009, *Hot dip galvanized coatings on fabricated iron and steel articles - Specifications and test methods (ISO 1461:2009)*

EN ISO 3146:2000/AC:2003, *Plastics - Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers by capillary tube and polarizing-microscope methods (ISO 3146:2000)*

EN ISO 6892-1:2016, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1:2016)*

EN ISO 9862:2005, *Geosynthetics - Sampling and preparation of test specimens (ISO 9862:2005)*

EN ISO 10318-1:2015, *Geosynthetics - Terms and definitions (ISO 10318-1:2015)*

EN ISO 10319:2015, *Geosynthetics - Wide-width tensile test (ISO 10319:2015)*

EN ISO 10320:1999, *Geotextiles and geotextile-related products - Identification on site (ISO 10320:1999)*

EN ISO 12236:2006, *Geosynthetics - Static puncture test (CBR test) (ISO 12236:2006)*

EN ISO 13433:2006, *Geosynthetics - Dynamic perforation test (cone drop test) (ISO 13433:2006)*

EN ISO 13934-1:2013, *Textiles - Tensile properties of fabrics - Part 1: Determination of maximum force and elongation at maximum force using the strip method (ISO 13934-1:2013)*

EN ISO 15630-2:2010, *Steel for the reinforcement and prestressing of concrete - Test methods - Part 2: Welded fabric (ISO 15630-2:2010)*

ASTM D6637 / D6637M-15, *Standard test method for determining tensile properties of geogrids by the single or multi-rib tensile method (2015)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
asphalt overlay
upper layers of an asphalt pavement, i.e. binder course and/or surface course

3.2
course
structural element of an asphalt pavement, laid in one or more layers, i.e. base course, binder course and/or surface course

3.3
pavement
structure, composed of one or more courses, to support the passage of traffic

3.4
specification
any document in which the work, functions and specific conditions of use of the product are described

3.5
interlayer system
geotextiles or geotextile-related products bonded in between two courses

3.6
bond coat / tack coats
bituminous emulsion, hot bitumen, polymer modified bitumen emulsion or polymer modified hot bitumen used to fix and/or impregnate a geotextile or geotextile-related product between the layers of a pavement.

3.7
stress relief
STR
function provided by an adequately bitumen-saturated layer, e.g. paving fabric (SAMI non-woven or purpose-built composite), which – when properly installed between a road surface and a new asphalt overlay – allows for slight differential movements between the two layers and thus provides stress relief, which delays or arrests crack propagation in the asphalt overlay

3.8
interlayer barrier
function provided by bitumen impregnated paving fabrics, which act – in conjunction with a bitumen layer – as a barrier to the ingress of water and thus prevent or delay the deterioration of the pavement

3.9
steel
material with iron as the predominant element, having a carbon content generally less than 2,0 % and containing other elements

Note 1 to entry: A limited number of chromium steels may have more than 2,0 % carbon, but 2,0 % is the usual dividing line between steel and cast iron.

[SOURCE: ISO 4948-1:1982, modified]

3.10
paving fabric
conventional geotextile fabric adequately saturated with bitumen providing a stress relief function (STR) and acting as an interlayer barrier

Note 1 to entry: Usually a paving fabric has a minimum weight of 130 g/m² and can retain a minimum of 1,1 kg/m² of residual bitumen when tested according to Annex B.

3.11
composite grid
product that combines a paving fabric and an asphalt reinforcement

3.12
Stress Absorbing Membrane Interlayer
SAMI
adequate amount of bitumen which may incorporate a geotextile or geotextile related product in order to act as a STR (see 3.7)

4 Product characteristics, testing, assessment and sampling method

4.1 General

The main function of geotextiles and geotextile-related products used in the construction and rehabilitation of roads and pavements subjected to thermal, fatigue and reflective cracking is to reduce the amount of cracking in a new pavement or asphalt overlay.

In addition, a barrier to top-down water ingress to the subbase and/or subgrade may be provided for. This is achieved by reinforcement, stress relief, (interlayer) barrier or a combination of these functions.

The producer of the geotextile or geotextile-related product shall provide the data based on the results of tests specified in this standard, as described in Tables 1 and 2.

For the assessment of durability aspects (weathering, alkaline resistance or corrosion resistance) the tests described in Annex A shall be observed.

The characteristics shall be declared as described in the test methods given in Tables 1 and 2.

Table 1 — Non-metallic geotextiles and geotextile-related products used in pavements and asphalt overlays – Functions, function-related characteristics and test methods to be used

Characteristic	Test method	Function

		Reinforcement	Stress relief	Interlayer barrier
(1) Tensile strength [d]	EN ISO 10319 [a]	A	A	A
(2) Elongation [d, e]	EN ISO 10319 [a]	A	A	A
(3) Dynamic perforation resistance [b]	EN ISO 13433	A	A	A
(4) Resistance to static puncture [b]	EN ISO 12236	A	A	A
(5) Durability	Annex A	A	A	A
(5.1) Resistance to weathering	EN 12224 Subclause A.1 of this standard	A	A	A
(5.2) Alkaline resistance	EN 14030 Subclause A.2 of this standard	S	S	S
(6) Bitumen retention	Annex B	--	A	A
(7) Melting point [c]	EN ISO 3146	S	S	S

Relevance

A: relevant to all conditions of use, but not mandatory for design or specifications

S: relevant to specific conditions of use

"- - " indicates that the characteristic is not relevant for that function.

[a] For low strain products (e,g, Glassfibre) less or equal to 5 %, a constant test speed can be selected to give a strain rate of (20+/-5) % per minute. The test speed needs to be documented in the test report. A determination by EN ISO 13934-1 or ASTM D6637M-15 and correlation to EN ISO 10319 can be used for these products for factory production control.

[b] The principle of this test may not be relevant for all materials (e.g. grids).

[c] Data on the melting point of the reinforcing polymer is needed if the temperature of the installed asphalt is higher than the melting point itself.

[d] In the two main directions, as defined in EN ISO 10319 .

[e] At maximum load.

Table 2 — Metallic geotextile-related products used in pavements and asphalt overlays – Functions, function-related characteristics and test methods to be used

Characteristic	Product type	Orientation during testing	Test method	Function: Reinforcement
(1) Tensile strength				
	Hexagonal steel mesh			
		Parallel to mesh orientation	EN ISO 10319	A
		Transversal to mesh orientation	ISO 6892-1 [a]	A
	Steel welded fabric [b]		EN ISO 15630-2	A
	Other metallic products [c]		ISO 6892-1 [a]	A
(2) Elongation				
	Hexagonal steel mesh			
		Parallel to mesh orientation	EN ISO 10319	
		Transverse to mesh orientation	ISO 6892-1 [a]	
	Steel welded fabric [b]		EN ISO 15630-2	
	Other metallic products [c]		ISO 6892-1 [a]	
(3) Dynamic perforation resistance [d]			EN ISO 13433	A
(4) Resistance to static puncture [d]			EN ISO 12236	A
(5) Durability				
(5.1) Corrosion			Subclause A.3	A

Relevance

A: relevant to all conditions of use, but not mandatory for design or specifications

S: relevant to specific conditions of use

"- - " indicates that the characteristic is not relevant for that function.

[a] The number of specimens and minimum length needed is determined according to ASTM D6637M-15 method 1, single rib testing. The clamping shall be adapted in order not to have clamp failure.

[b] As defined in EN 10080.

[c] Examples: a non-welded woven steel mesh or a hexagonal mesh with additional reinforcement parallel to the mesh direction.

[d] The principle of this test may not be relevant for all materials.

4.2 Presentation of characteristics

The characteristics specified in Tables 1 or 2 – except for durability – shall be expressed as mean values and tolerance value(s) corresponding to the 95 % confidence level. They shall be given by the manufacturer, based on the statistical interpretation of his internal quality control measurements. Information on durability (weathering, alkaline resistance or corrosion resistance) shall be expressed in accordance with the guidelines of Annex A.

4.3 Verification of Values

The compliance of characteristics with the values defined in Tables 1 and 2 shall be based on measurements made on two representative samples (A and B), taken from two different rolls. Sampling shall be made in accordance with EN ISO 9862.

The characteristics given in Table 1 or 2 shall be measured in accordance with the corresponding standards on specimens prepared from sample A.

If the test results for a particular characteristic are within the tolerance value(s) given by the manufacturer, the product is accepted as complying with respect to this characteristic.

If the test results for a particular characteristic are outside 1,5 times the tolerance value(s), the product does not comply with respect to that characteristic.

If the test results for a particular characteristic are within 1 and 1,5 times the tolerance value(s), specimens prepared from sample B shall be tested.

NOTE The 95 % confidence level corresponds to the mean value minus (and/or plus) 1,0 tolerance value(s).

If the test results of the sample B specimens for the same characteristic are within the given tolerance value(s), the product is accepted as complying with respect to that characteristic. If the test results are outside the tolerance value(s), the product is not accepted.

4.4 Characteristics relevant to specific conditions of use

The specification shall define which functions and conditions of use are relevant (see Tables 1 and 2). The producer of the product shall provide the necessary data based on the requirements and test methods described in this standard.

4.5 Dangerous substances

Regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this European Standard are placed on those markets.

In the absence of European harmonized test methods, verification and declaration on release/content should be done taking into account provisions in the place of use.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction website on EUROPA accessed through: https://ec.europa.eu/growth/tools-databases/cp-ds.