



SLOVENSKI STANDARD
SIST EN 15381:2009
01-januar-2009

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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

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Géotextiles et produits apparentés - Caractéristiques requises pour l'utilisation dans les chaussées et couches de roulement en enrobés

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Ta slovenski standard je istoveten z: EN 15381:2008

ICS:

59.080.70	Geotekstilije	Geotextiles
93.080.20	Materiali za gradnjo cest	Road construction materials

SIST EN 15381:2009 en,fr,de

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EUROPEAN STANDARD

EN 15381

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2008

ICS 59.080.70; 93.080.20

English Version

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

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This European Standard was approved by CEN on 18 July 2008.

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

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EN 15381:2008 (E)**Foreword**

This document (EN 15381:2008) has been prepared by Technical Committee CEN/TC 189 “Geosynthetics”, the secretariat of which is held by IBN.

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of an identical text or by endorsement, at the latest by February 2009, and conflicting national standards shall be withdrawn at the latest by May 2010.

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, 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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Introduction

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

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EN 15381:2008 (E)**1 Scope**

This European Standard specifies the relevant 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 barrier. The use of geotextiles and geotextile-related products is to be considered as a part of an interlayer and asphalt overlay system.

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

This standard provides for evaluation of conformity of the product to this European Standard and for factory production control procedures.

This standard defines requirements to be met by manufacturers and distributors with regard to the presentation of product properties.

NOTE 1 Particular application cases or national specifications may contain additional requirements regarding product application or installation and specifying preferably standardized test methods, if they are technically relevant and not conflicting with European Standards.

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 1426, *Bitumen and bituminous binders – Determination of needle penetration*
- EN 10002-1, *Metallic materials – Tensile testing – Part 1: Method of test at ambient temperature*
- EN 10080, *Steel for the reinforcement of concrete – Weldable reinforcing steel – General*
- EN 10223-3, *Steel wire and wire products for fences – Part 3: Hexagonal steel wire netting for engineering purposes*
- EN 10244-2, *Steel wire and wire products – Non ferrous metallic coatings on steel wire – Part 2: Zinc or zinc alloy coatings*
- prEN 10348, *Steel for the reinforcement of concrete – Galvanized reinforcing steel*
- EN 12224, *Geotextiles and geotextile-related products – Determination of the resistance to weathering*
- EN 14030, *Geotextiles and geotextile-related products – Screening test method for determining the resistance to acid and alkaline liquids (ISO/TR 12960:1998, modified)*
- EN ISO 1043-1:2001, *Plastics – Symbols and abbreviated terms – Part 1: Basic polymers and their special characteristics (ISO 1043-1:2001)*
- EN ISO 3146, *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 9862, *Geosynthetics – Sampling and preparation of test specimens (ISO 9862:2005)*
- EN ISO 10318:2005, *Geosynthetics – Terms and definitions (ISO 10318:2005)*

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between the two layers and thus provides stress relief, which delays or arrests crack propagation in the asphalt overlay

3.1.8**interlayer barrier**

function provided by 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

3.1.9**product**

geotextile or geotextile-related product

3.2 Abbreviations

For the purposes of this document the following abbreviations from EN ISO 1043-1:2001 apply:

PA: polyamide

PE: polyethylene

PET: polyethylene terephthalate (“polyester”)

PP: polypropylene

PVA: polyvinyl alcohol

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Furthermore the following abbreviations apply:

MD: machine direction

CMD: cross machine direction
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4 Required characteristics and corresponding test methods**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 geotextiles and geotextile-related products shall provide the data based on the results of tests specified in this standard.

The characteristics, their relevance to the conditions of use, and the test methods to be used, are given in Tables 1 and 2. The list of characteristics in these tables includes those needed for regulatory purposes (H) (see also [1]), those relevant to all conditions of use (A), and those relevant to specific conditions of use (S). “-” indicates that the characteristic is not relevant for that function.

Where, for the same property, data for more than one function shall be provided, the following ranking order shall be observed: H overrules A, A overrules S, and S overrules “-”.

The functions and conditions of use, corresponding with the characteristics, marked with “S” in Table 1, are specified in 4.2.

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 5.1.

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

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		
		Reinforce- ment	Stress relief	Interlayer barrier
(1) Tensile strength	EN ISO 10319 ^a	H	H	H
(2) Elongation at maximum load	EN ISO 10319 ^a	H	H	H
(3) Dynamic perforation ^b	EN ISO 13433	H	--	H
(4) Static puncture strength ^b	EN ISO 12236	H	H	H
(5) Durability	Annex B	H	H	H
(6) Resistance to weathering ^c	EN 12224 B.1 of this standard	S	S	S
(7) Bitumen retention	Annex C	--	H	A
(8) Melting point	EN ISO 3146	S	S	S
(9) Alkaline resistance (see remark 3)	EN 14030 B.2 of this standard	S	S	S

Relevance

H: required for regulatory purposes

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 EN ISO 10319 may not be suitable for specific products (e.g. glass fibre grids). In these cases the more appropriate methods EN ISO 13934-1 or ASTM D6637-01 shall be used. In any case, tensile tests shall be performed on finished products.

^b The principle of this test may not be applicable for all materials and the validity of the test for some types of products, e.g. grids, should be considered. If tensile strength and static puncture are coded "H" in this table, the producer shall be able to provide data for both. In a specification the use of only one property – either tensile strength or static puncture – is sufficient.

^c Required for regulatory purposes (H) if relevant to conditions of use (see 4.2).

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

Characteristic	Test method	Function
		Reinforcement
(1) Tensile strength - steel wire mesh ^a - parallel to mesh orientation - transverse to mesh orientation - steel welded fabric ^b	Annex D EN 10002-1 EN ISO 15630-2	H
(2) Elongation at maximum load - steel wire mesh - parallel to mesh orientation - transverse to mesh orientation - steel welded fabric	Annex D EN 10002-1 EN ISO 15630-2	H
(3) Dynamic perforation ^c	EN ISO 13433	--
(4) Static puncture strength ^c	EN ISO 12236	--
(5) Durability	Annex B3	H
<p>Relevance</p> <p>H: required for regulatory purposes [1].</p> <p>-- " indicates that the characteristic is not relevant for that function.</p> <p>^a As defined in EN 10223-3.</p> <p>^b As defined in EN 10080.</p> <p>^c The principle of this test characteristic is not applicable.</p>		

4.2 Characteristics relevant to specific conditions of use

4.2.1 General

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.

The list of characteristics in Tables 1 and 2 includes those required for regulatory purposes (H), those relevant to all conditions of use (A), and those relevant to specific conditions of use (S). These specific conditions of use are listed from 4.2.2 to 4.2.4.

NOTE "Damage during installation" is being influenced by the paving procedure and by the compaction of the asphalt. Relevant test methods are under preparation.

4.2.2 Alkaline resistance

Data on the alkaline resistance is needed for all functions if the product is to be used in direct contact with an unprotected concrete or cement stabilised surface.