



SLOVENSKI STANDARD

SIST EN 15382:2013

01-september-2013

Geosintetične ovire - Zahtevane lastnosti za uporabo v infrastrukturi transporta

Geosynthetic barriers - Characteristics required for use in transportation infrastructure

Geosynthetische Dichtungsbahnen - Eigenschaften, die für die Anwendung in Verkehrsbauten erforderlich sind

Barrières géosynthétiques - Caractéristiques requises pour l'utilisation dans l'infrastructure des voies de transport

Ta slovenski standard je istoveten z: **EN 15382:2013**

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ICS:

59.080.70	Geotekstilije	Geotextiles
93.080.20	Materiali za gradnjo cest	Road construction materials

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EUROPEAN STANDARD

EN 15382

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2013

ICS 59.080.70; 93.080.20

Supersedes EN 15382:2008

English Version

Geosynthetic barriers - Characteristics required for use in transportation infrastructure

Barrières géosynthétiques - Caractéristiques requises pour
l'utilisation dans l'infrastructure des voies de transport

Geosynthetische Dichtungsbahnen - Eigenschaften, die für
die Anwendung in Verkehrsbauten erforderlich sind

This European Standard was approved by CEN on 16 May 2013.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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

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Contents

Page

Foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms, definitions and abbreviations.....	8
3.1 Terms and definitions	8
3.2 Abbreviations.....	8
4 Required characteristics and corresponding methods of test	9
4.1 General.....	9
4.2 Types of applications	9
4.3 Relevant characteristics	11
4.4 Characteristics relevant to specific conditions of use	16
4.4.1 General.....	16
4.4.2 Tear strength	16
4.4.3 Friction characteristics (direct shear and inclined plane tests)	16
4.4.4 Chemical resistance	16
4.4.5 Low temperature behaviour.....	16
4.4.6 Weathering	16
4.4.7 Resistance to wetting and drying	17
4.4.8 Freeze-thaw cycle resistance	17
4.4.9 Resistance to root penetration.....	17
4.5 Release of dangerous substances.....	17
5 Evaluation of conformity.....	17
5.1 General.....	17
5.2 Verification of values.....	18
5.3 Initial type tests.....	18
5.4 Factory production control.....	19
5.5 Inspection	19
6 Marking	19
Annex A (normative) Factory production control — Factory production control scheme	20
A.1 General.....	20
A.2 Product design.....	20
A.3 Production	20
A.3.1 Raw or incoming materials	20
A.3.2 Production process	20
A.4 Finished products.....	20
A.4.1 Raw or incoming materials	20
A.4.2 Alternative tests	23
A.4.3 Equipment	23
A.5 Provisions applicable to A.2, A.3 and A.4 (to be used where appropriate)	24
A.5.1 Records.....	24
A.5.2 Assessment of results	24
A.5.3 Traceability	24
A.5.4 Corrective action for non-conforming materials and products	24
A.5.5 Personnel.....	24
A.5.6 Quality management	24
Annex B (normative) Durability of geosynthetic barriers	25
B.1 Introduction	25
B.1.1 Standards to which this annex is common.....	25
B.1.2 Mechanisms of degradation	25
B.1.3 Service life	26

B.1.4	Use of rework materials	26
B.2	Test requirements.....	26
B.2.1	General requirement.....	26
B.2.2	Requirements for repeat testing	26
B.2.3	Requirements for individual materials	27
B.3	Durability tests.....	28
B.3.1	Introduction.....	28
B.3.2	Weathering	28
B.3.3	Resistance to micro-organisms	30
B.3.4	Resistance to environmental stress cracking.....	30
B.3.5	Resistance to leaching.....	30
B.3.6	Resistance to oxidation	31
B.3.7	Chemical resistance.....	31
B.4	Evaluation tests and acceptance criteria.....	31
B.4.1	General.....	31
B.4.2	Evaluation by comparison of tensile properties	31
B.4.3	Evaluation by comparison of Oxidative Induction Time (OIT) values.....	32
B.4.4	Evaluation by change in mass	32
B.4.5	Evaluation by change in water permeability.....	32
Annex C	(informative) Major technical changes to previous edition.....	33
Annex ZA	(informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive	34
ZA.1	Scope and relevant characteristics	34
ZA.2	Procedure for the attestation of conformity for geosynthetic barriers used in transportation infrastructure	35
ZA.2.1	Systems of attestation of conformity.....	35
ZA.2.2	Certificate and declaration of conformity	36
ZA.3	CE marking and labelling.....	37
Bibliography	41

[SIST EN 15382:2013](https://standards.iteh.ai/catalog/standards/sist/59a59c0e-ce91-4fcb-9158-96131d259f8c/sist-en-15382-2013)

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EN 15382:2013 (E)**Foreword**

This document (EN 15382:2013) has been prepared by Technical Committee CEN/TC 189 “Geosynthetics”, the secretariat of which is held by NBN.

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 2014, and conflicting national standards shall be withdrawn at the latest by January 2014.

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 supersedes EN 15382:2008.

Annex C provides details of significant technical changes between this European Standard and the previous edition.

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.

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

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

This European Standard allows manufacturers to describe geosynthetic barriers 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 European Standard may also be used by designers, end-users and other interested parties as a tool to define relevant and appropriate characteristics for specifications and on-site quality control. It should be emphasised however that not all characteristics and test methods quoted in this European Standard are suitable for the purpose of on-site quality control.

Tests for several non-mandated characteristics are still under study and will be included when the standard is revised.

The term “product” used in this standard refers to a geosynthetic barrier, including polymeric geosynthetic barriers, clay geosynthetic barriers and bituminous geosynthetic barriers.

This European Standard is part of a group of standards, addressing the requirements for geosynthetic barriers when used in a specific application.

Particular application cases may contain requirements about additional properties and – preferably standardised – test methods, if they are technically relevant and not conflicting with European Standards.

The design life of the product should be determined, since its function may be temporary, as a construction expediency, or permanent, for the lifetime of the structure.

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EN 15382:2013 (E)**1 Scope**

This European Standard specifies the relevant characteristics of geosynthetic barriers (polymeric, clay and bituminous geosynthetic barriers), used as fluid barriers in infrastructure works, e.g. roads, railroads, runways of airports, and the appropriate test methods to determine these characteristics. Tunnels and underground structures are addressed in EN 13491.

The intended use of these products is to control the pathway of liquids through the construction and to limit any contamination, e.g. by de-icing products, of groundwater or water sources.

This European Standard is applicable to geosynthetic barriers, but not to geotextiles or geotextile-related products, as defined in EN ISO 10318.

This European Standard provides for the evaluation of conformity of the product to this European Standard.

This European Standard defines requirements to be met by manufacturers and their authorised representatives with regard to the presentation of product properties.

This European Standard does not cover applications where the geosynthetic barrier will be in contact with water that has been treated for human consumption. In these cases other relevant standards, requirements and/or regulations should be observed.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- iTech STANDARD PREVIEW
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SIST EN 15382:2013
http://standards.iteh.ai/catalog/standards/sist-en-15382-2013/96131d259f8c/sist-en-15382-2013
- EN 495-5, *Flexible sheets for waterproofing — Determination of foldability at low temperature — Part 5: Plastic and rubber sheets for roof waterproofing*
- EN 1109, *Flexible sheets for waterproofing — Bitumen sheets for roof waterproofing — Determination of flexibility at low temperature*
- EN 1844, *Flexible sheets for waterproofing — Determination of resistance to ozone — Plastic and rubber 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 1849-2, *Flexible sheets for waterproofing — Determination of thickness and mass per unit area — Part 2: Plastic and rubber sheets*
- EN 12224, *Geotextiles and geotextile-related products — Determination of the resistance to weathering*
- EN 12225, *Geotextiles and geotextile-related products — Method for determining the microbiological resistance by a soil burial test*
- 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 12311-2, *Flexible sheets for waterproofing — Determination of tensile properties — Part 2: Plastic and rubber sheets for roof waterproofing*
- EN 13361, *Geosynthetic barriers — Characteristics required for use in the construction of reservoirs and dams*

- EN 13362, *Geosynthetic barriers — Characteristics required for use in the construction of canals*
- EN 13491, *Geosynthetic barriers — Characteristics required for use as a fluid barrier in the construction of tunnels and underground structures*
- EN 13492, *Geosynthetic barriers — Characteristics required for use in the construction of liquid waste disposal sites, transfer stations or secondary containment*
- EN 13493, *Geosynthetic barriers — Characteristics required for use in the construction of solid waste storage and disposal sites*
- EN 14150, *Geosynthetic barriers — Determination of permeability to liquids*
- EN 14196, *Geosynthetics — Test methods for measuring mass per unit area of clay geosynthetic barriers*
- EN 14414:2004, *Geosynthetics — Screening test method for determining chemical resistance for landfill applications*
- EN 14415, *Geosynthetic barriers — Test method for determining the resistance to leaching*
- CEN/TS 14416, *Geosynthetic barriers — Test method for determining the resistance to roots*
- CEN/TS 14417, *Geosynthetic barriers — Test method for the determination of the influence of wetting-drying cycles on the permeability of clay geosynthetic barriers*
- CEN/TS 14418, *Geosynthetic barriers — Test method for the determination of the influence of freezing-thawing cycles on the permeability of clay geosynthetic barriers*
- EN 14575, *Geosynthetic barriers — Screening test method for determining the resistance to oxidation*
- EN 14576, *Geosynthetics — Test method for determining the resistance of polymeric geosynthetic barriers to environmental stress cracking*
- EN 16416, *Geosynthetic clay barriers — Determination of water flux index — Flexible wall permeameter method at constant head*
- EN ISO 527-1:2012, *Plastics — Determination of tensile properties — Part 1: General principles (ISO 527-1:2012)*
- EN ISO 527-3:1995, *Plastics — Determination of tensile properties — Part 3: Test conditions for films and sheets (ISO 527-3:1995)*
- EN ISO 527-4:1997, *Plastics — Determination of tensile properties — Part 4: Test conditions for isotropic and orthotropic fibre-reinforced plastic composites (ISO 527-4:1997)*
- EN ISO 9862, *Geosynthetics — Sampling and preparation of test specimens (ISO 9862)*
- EN ISO 9863-1, *Geosynthetics — Determination of thickness at specified pressures — Part 1: Single layers (ISO 9863-1)*
- EN ISO 9864, *Geosynthetics — Test method for the determination of mass per unit area of geotextiles and geotextile-related products (ISO 9864)*
- EN ISO 10318:2005, *Geosynthetics — Terms and definitions (ISO 10318:2005)*
- EN ISO 10319, *Geotextiles — Wide-width tensile test (ISO 10319)*
- EN ISO 10320, *Geotextiles and geotextile-related products — Identification on site (ISO 10320)*
- EN ISO 12236, *Geosynthetics — Static puncture test (CBR test) (ISO 12236)*
- EN ISO 12957-1, *Geosynthetics — Determination of friction characteristics — Part 1: Direct shear test (ISO 12957-1)*

EN 15382:2013 (E)

EN ISO 12957-2, *Geosynthetics — Determination of friction characteristics — Part 2: Inclined plane test (ISO 12957-2)*

EN ISO 13438:2004, *Geotextiles and geotextile-related products — Screening test method for determining the resistance to oxidation (ISO 13438:2004)*

ISO 34-1:2010, *Rubber, vulcanized or thermoplastic — Determination of tear strength — Part 1: Trouser, angle and crescent test pieces*

EN ISO 11357-6, *Plastics — Differential scanning calorimetry (DSC) — Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT) (ISO 11357-6)*

ASTM D 696, *Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C With a Vitreous Silica Dilatometer*

ASTM D 1434, *Standard test method for determining gas permeability characteristics of plastic film and sheeting*

ASTM D 5890, *Standard test method for swell index of clay mineral component of geosynthetic clay liners*

3 Terms, definitions and abbreviations**3.1 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN ISO 10318:2005 and the following apply.

3.1.1**product**

geosynthetic barrier, including polymeric, bituminous and clay barriers

3.1.2**specification**

document in which the works, functions, specific conditions and required material property values of the geosynthetic barrier of use are described

3.1.3**infrastructure**

basic transportation system that is necessary for the operation of any kind of traffic

3.1.4**embankment shoulder**

slope extending from the edge of a pavement to a linear ditch made of packed soil built above the natural ground

3.2 Abbreviations

For the purposes of this document, the abbreviations given in EN ISO 10318:2005 and the following apply.

GBR-P: polymeric geosynthetic barrier

GBR-B: bituminous geosynthetic barrier

GBR-C: clay geosynthetic barrier

4 Required characteristics and corresponding methods of test

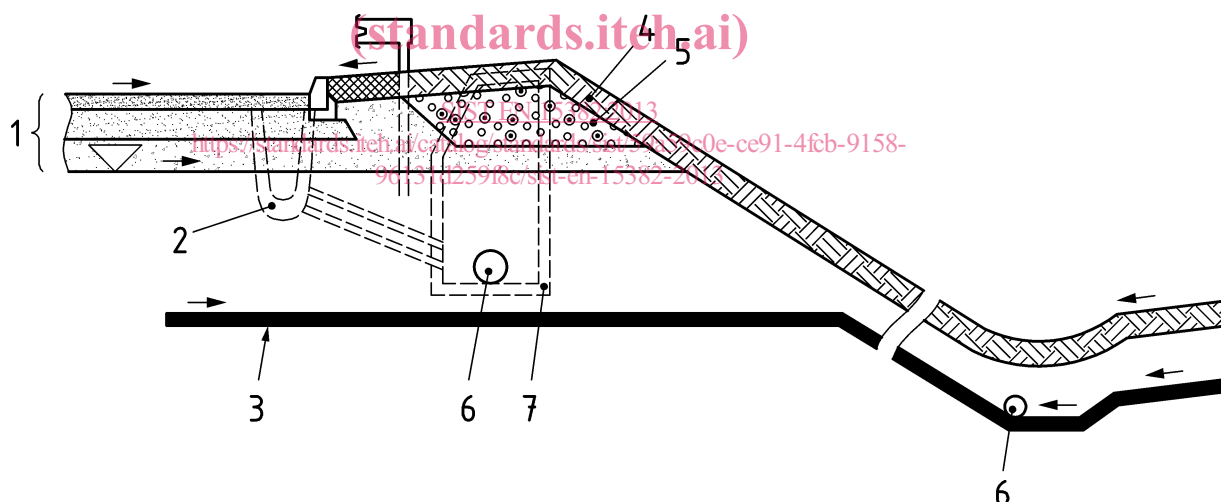
4.1 General

The main function of geosynthetic barriers used in these types of application is to control the pathway of liquids through the construction and to limit contamination of groundwater or water sources. Damage during installation has not been addressed in this document.

4.2 Types of applications

The following types of application can be distinguished:

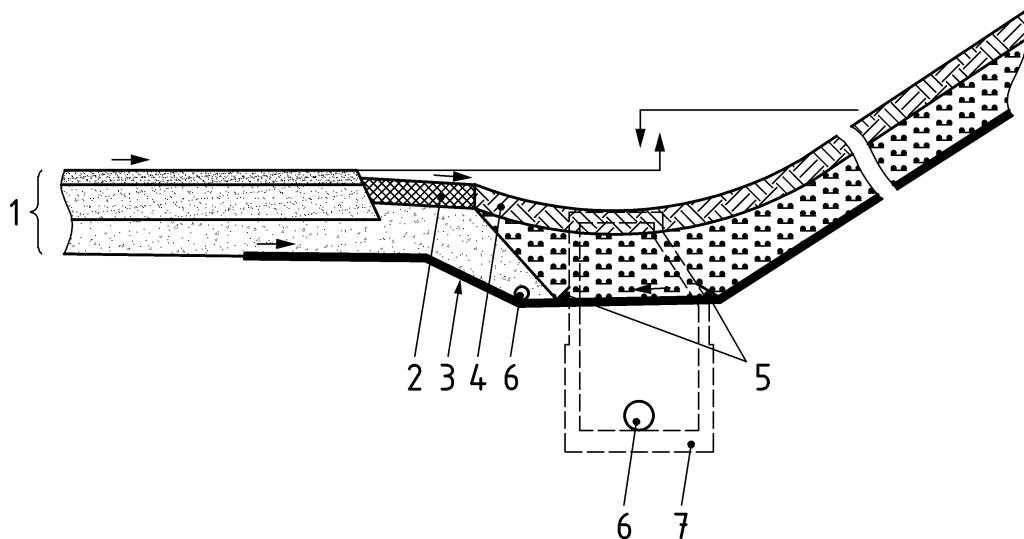
- deep laying GBR on side slopes: application where the GBR is installed under the drainage collection system and covers the entire slope as well as the ditch area (see Figure 1);
- high laying GBR on side slopes: application where the GBR is installed above the drainage collection system as a high laying sealing system and covers the opposite side slope of the road to prevent an overflow of the road surface run-off (see Figure 2);
- deep laying GBR between two roads: application where the GBR is installed under the drainage collection system and covers the section between two roads, where a sealing is required (see Figure 3);
- high laying GBR between two roads: application where the GBR is installed above the drainage collection system as a high laying sealing system and covers the section between two roads where sealing is required (see Figure 4).



Key

- 1 pavement and/or track bed
- 2 rain water collection
- 3 geosynthetic barrier (GBR)
- 4 cover soil
- 5 fill soil
- 6 collection pipe
- 7 manhole

Figure 1 — Deep laying GBR on side slopes

**Key**

- 1 pavement and/or track bed
- 2 side embankment
- 3 geosynthetic barrier (GBR)
- 4 cover soil
- 5 sealing connection
- 6 collection pipe
- 7 manhole

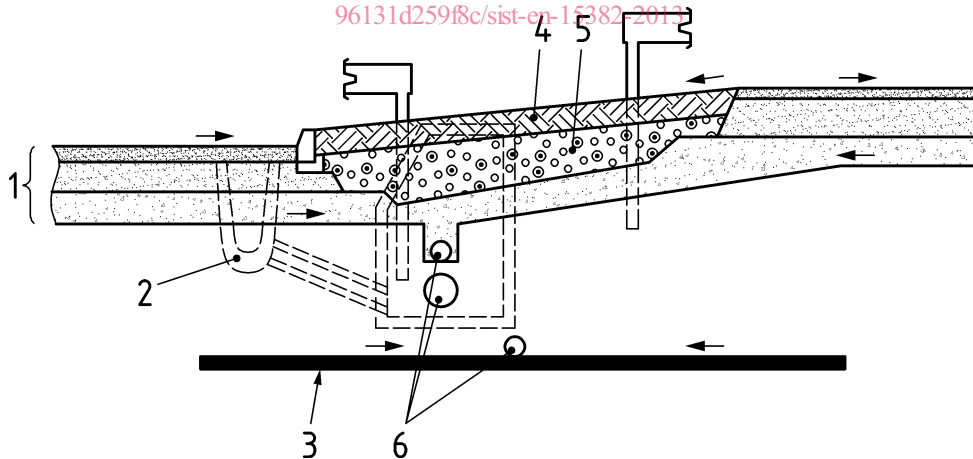
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Figure 2 — High laying GBR on side slopes

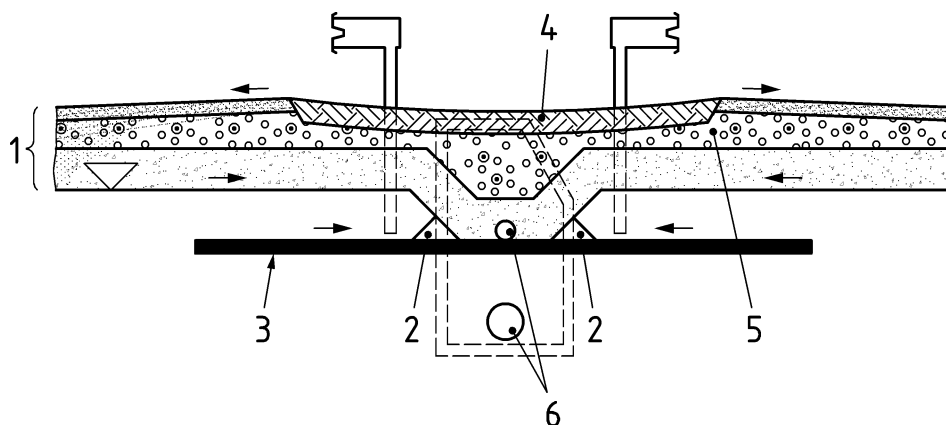
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**Key**

- 1 pavement and/or track bed
- 2 rain water collection
- 3 geosynthetic barrier (GBR)
- 4 cover soil
- 5 fill soil
- 6 collection pipe

Figure 3 — Deep laying GBR between two roads



Key

- 1 pavement and/or track bed
- 2 sealing connection
- 3 geosynthetic barrier (GBR)
- 4 cover soil
- 5 fill soil
- 6 manhole

Figure 4 — High laying GBR between two roads

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4.3 Relevant characteristics

The characteristics and the test methods to be used are given in Table 1. The list of characteristics in Table 1 includes those relevant to all conditions of use and subject to regulation (H), those relevant to all conditions of use and not subject to regulation (A), and those relevant to specific conditions of use and not subject to regulation (S).

The functions and conditions of use, corresponding with the characteristics, marked with “S” in Table 1, are specified in 4.4.

The manufacturer shall provide the data based on the results of tests specified in this standard and where relevant, in accordance with 5.1.

The manufacturer shall provide information on how functioning joints can be made. Where products are jointed in the factory the water permeability and, if relevant, the strength of the joints shall be tested and data presented.