SLOVENSKI STANDARD

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Podloge za športne dejavnosti - Umetne travnate podloge in iglane podloge predvsem za zunanjo uporabo - 2. del: Specifikacija za iglane podloge

Surfaces for sports areas - Synthetic turf and needle-punched surfaces primarily designed for outdoor use - Part 2: Specification for needle-punched surfaces

Sportböden - Überwiegend für den Außenbereich hergestellte Kunststoffrasenflächen und vernadelte Beläge - Teil 2: Festlegungen für Nadelfilze

Sols sportifs - Surfaces en gazon synthétique et en textile aiguilleté principalement destinées a l'usage en extérieur - Partie 2 : Spécifications relatives aux surfaces en textile aiguilleté

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This European Standard was approved by CEN on 22 December 2007.

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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 15330-2:2008) has been prepared by Technical Committee CEN/TC 217 “Surfaces for sports areas”, 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of an identical text or by endorsement, at the latest by July 2008, and conflicting national standards shall be withdrawn at the latest by July 2008.

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.

EN 15330 consists of the following parts, under the general title *Surfaces for sports areas — Synthetic turf and needle-punched surfaces primarily designed for outdoor use*:

— *Part 1: Specification for synthetic turf*

— *Part 2: Specification for needle-punched surfaces*

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.

1 Scope

This European Standard specifies performance and durability characteristics of needle-punched sports surfaces primarily used outdoors. Two categories of surfaces are covered, based on the principal sporting use of the surface, as follows:

— surfaces designed for multi-sports use; and

— surfaces designed primarily for tennis.

The requirements are intended to apply to surfaces used for community, educational and recreational sport. For professional and elite levels of competition, many sports governing bodies have published their own specifications; the requirements of the sports governing bodies might differ from those detailed in this European Standard and facility developers are advised to ensure that they select surfaces offering the correct levels of performance for the levels of competition to be played on the pitch or court.

This European Standard is based on type approval testing of products in the laboratory. Selected requirements may also be used on-site to assess the suitability of installed surfaces. Guidance on the testing of installations is given in Annex A.

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 430, *Resilient floor coverings – Determination of mass per unit area*

EN 933-1, *Tests for geometrical properties of aggregates – Part 1: Determination of particle size distribution – Sieving method*

EN 1097-3, *Tests for mechanical and physical properties of aggregates - Part 3: Determination of loose bulk density and voids*

EN 1969, *Surfaces for sports areas – Determination of thickness of synthetic sports surfaces*

EN 12616, *Surfaces for sports areas – Determination of water infiltration rate*

EN 12230, *Surfaces for sports areas – Determination of tensile properties of synthetic sports surfaces*

EN 12235, *Surfaces for sports areas – Determination of vertical ball behaviour*

EN 12228, *Surfaces for sports areas – Determination of joint strength of synthetic surfaces*

EN 12229, *Surfaces for sports areas – Procedure for the preparation of synthetic turf and needle-punch test pieces*

EN 12234, *Surfaces for sports areas – Determination of ball roll behaviour*

EN 13036-7, *Road and airfield surface characteristics – Test methods – Part 7: Irregularity measurement of pavement courses: the straightedge test*

EN 13672, *Surfaces for sports areas – Determination of resistance to abrasion of non-filled synthetic turf*

EN 13744, *Surfaces for sports areas – Procedure for accelerated ageing by immersion in hot water*

EN 13865, *Surfaces for sports areas – Determination of angled ball behaviour – Tennis*

EN 14808, *Surfaces for sports areas – Determination of shock absorption*

EN 14809, *Surfaces for sports areas – Determination of vertical deformation*

EN 14836, *Synthetic surfaces for outdoor sports areas - Exposure to artificial weathering*

EN 14955, *Surfaces for sports areas – Determination of composition and particle shape of unbound mineral surfaces for outdoor sports areas*

EN 15301-1, *Surfaces for sports areas – Part 1: Determination of rotational resistance*

EN 20105-A02, *Textiles – Tests for colour fastness – Part A02: Grey scale for assessing change in colour (ISO 105-A02:1993)*

EN ISO 5079, *Textiles – Fibres - Determination of breaking force and elongation at break of individual fibres (ISO 5079:1995)*

EN ISO 13934-1, *Textiles – Tensile properties of fabrics – Part 1: Determination of maximum force and elongation at maximum force using the strip method (ISO 13934-1:1999)*

ISO 1766, *Textile floor coverings — Determination of thickness of pile above the substrate*

ISO 8543, *Textile floor coverings — Methods for determination of mass*

ISO 11357-3, *Plastics – Differential scanning calorimetry (DSC) – Part 3: Determination of temperature and enthalpy of melting and crystallization*

3 Terms and definitions

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

3.1
non-filled needle-punched surface
needle-punched or fibre bonded surface that does not contain any form of unbound particulate fill within the pile of the carpet

3.2
filled needle-punched surface
needle-punched or fibre bonded surface whose pile is either totally filled or partly filled with an unbound particulate material (typically sand)

3.3
surface for multi-sports
needle-punched or fibre bonded surface designed to be used for more than one sport

4 General

4.1 Resistance to artificial weathering

4.1.1 Colour fastness

When tested in accordance with EN 20105-A02 following artificial weathering in accordance with EN 14836, the change in colour of the weathered needle-punched surface compared to an unaged test specimen of the needle-punched surface shall be Grey Scale 4 or greater.

4.1.2 Tensile strength

When tested in accordance with EN ISO 5079, but at a laboratory temperature of (23 ± 2) °C following artificial weathering in accordance with EN 14836, the tensile strength of the fibres used to form the pile of the needle-punched surface shall be within 50 % of the tensile strength of the unaged yarn fibres.

4.2 Water permeability

When tested in accordance with EN 12616, the water infiltration rate of surfaces designed to be permeable shall be equal to or greater than 180 mm/h.

4.3 Joint strength

When tested in accordance with Method 2 of EN 12228, following immersion in hot water in accordance with EN 13744, the strength of bonded joints shall be equal to or greater than 25 N/100 mm.

4.4 Abrasion resistance

4.4.1 Non-filled surfaces

When tested in accordance with EN 13672, the percentage mass loss after 2 000 cycles shall be equal to or less than 2 %.

4.4.2 Filled surfaces

When tested in accordance with EN 13672, but modified so that each wheel is acting under a load of 250 g, the percentage mass loss after 2 000 cycles shall be equal to or less than 2 %.

4.5 Tensile properties of carpet

When tested in accordance with EN ISO 13934-1, the maximum force shall be greater than 7,5 N/mm.

5 Surfaces designed for multi-sports use

5.1 General

Needle-punched surfaces designed for multi-sports use shall conform to the requirements given in clause 4 and those in 5.2 to 5.6.

Test pieces shall be prepared in accordance with EN 12229 and with the manufacturer's instructions prior to testing.

Wet test pieces shall be prepared in accordance with the procedure given in Annex B.

5.2 Vertical ball rebound

NOTE See also Annex C.

5.2.1 General

The surface shall conform to the requirements given in 5.2.2, 5.2.3 or 5.2.4, as appropriate, depending on the sports to be played on the surface.

5.2.2 Football

When tested in accordance with EN 12235 using a football under both dry and wet conditions, the vertical ball rebound shall be between 45 % and 85 %.

5.2.3 Hockey

When tested in accordance with EN 12235 using a hockey ball under both dry and wet conditions, the vertical ball rebound shall be less than 90 %.

5.2.4 Tennis

When tested in accordance with EN 12235 using a tennis ball under both dry and wet conditions, the vertical ball rebound shall be greater than 80 %.

5.3 Ball roll and velocity change

When tested in accordance with EN 12234 using a hockey ball under both dry and wet conditions, the ball roll shall be between 5,0 m and 15,0 m.

When tested in accordance with EN 12234 using a football under both dry and wet conditions, the velocity change shall be between 0,10 m/s and 0,75 m/s.

5.4 Shock absorption

When tested in accordance with EN 14809 under both dry and wet conditions, the shock absorption shall be classified as in Table 1.

Table 1 — Classification of shock absorption for multi-sports surfaces

Force reduction (%)	Classification
<15	SANP 1
15 to 29	SANP 2
30 to 44	SANP 3
≥ 45	SANP 4

NOTE 1 If tennis is to be played, the shock absorption should typically be Class SANP 1.

NOTE 2 For general sports training (non-contact) and physical education, the shock absorption should typically be Class SANP 2 or SANP 3.

NOTE 3 If hockey is the priority sport or general sports training (contact) is to be undertaken, the shock absorption should typically be Class SANP 3 or SANP 4.

NOTE 4 If football is to be played, the shock absorption should typically be Class SANP 4.