



SLOVENSKI STANDARD

SIST EN 15330-1:2007

01-julij-2007

Podloge za športne dejavnosti – Umetne travnate podloge in iglane podloge predvsem za zunanjo uporabo – 1. del: Specifikacija za umetne travnate podloge

Surfaces for sports areas - Synthetic turf and needle-punched surfaces primarily designed for outdoor use - Part 1: Specification for synthetic turf

Sportböden - Überwiegend für den Außenbereich hergestellte Kunststoffrasenflächen und vernadelte Beläge - Teil 1: Festlegungen für Kunststoffrasen

Sols sportifs - Surfaces en gazon synthétique et surfaces aiguilletées principalement destinées à l'usage en extérieur - Partie 1: Spécifications pour le gazon synthétique

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Ta slovenski standard je istoveten z: EN 15330-1:2007

ICS:

97.220.10 Športni objekti Sports facilities

SIST EN 15330-1:2007 en

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ICS 97.220.10

English Version

Surfaces for sports areas - Synthetic turf and needle-punched
surfaces primarily designed for outdoor use - Part 1:
Specification for synthetic turf

Sols sportifs - Surfaces en gazon synthétique et surfaces
aiguilletées principalement destinées à l'usage en extérieur
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Sportböden - Überwiegend für den Außenbereich
hergestellte Kunststoffrasenflächen und vernadelte Beläge
- Teil 1: Festlegungen für Kunststoffrasen

This European Standard was approved by CEN on 10 February 2007.

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

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Foreword

This document (EN 15330-1:2007) 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of an identical text or by endorsement, at the latest by September 2007, and conflicting national standards shall be withdrawn at the latest by September 2007.

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 United Kingdom.

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1 Scope

This European Standard specifies performance and durability characteristics for synthetic turf sports surfaces used primarily outdoors. Five categories of surface are covered, each based on the principal sporting use of the surface, as follows:

surfaces designed primarily for hockey;

surfaces designed primarily for association football;

surfaces designed primarily for rugby union for training purposes;

NOTE Under the Laws of the Game of Rugby Union, surfaces for rugby union matches have to comply with IRB Regulation 22.

surfaces designed primarily for tennis; and

surfaces designed for multi-sports use.

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 level of performance for the level of competition 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.

Some of the surfaces covered by this European Standard are designed to allow users to wear footwear fitted with studs. An example of a typical stud is given in EN 15306. For the purposes of this European Standard, multi-dimpled shoe profiles often found on footwear used on sand-filled or non-filled synthetic turfs are not considered to be studs.

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 1177, *Impact absorbing playground surfacing – Safety requirements and test methods*

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

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

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

EN 12228:2002, *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 12616, *Surfaces for sports areas – Determination of water infiltration rate*

EN 13036-4:2003, *Road and airfield surface characteristics – Test methods – Part 4: Method for measurement of slip/skid resistance of a surface – The pendulum test*

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 13864, *Surfaces for sports areas - Determination of tensile strength of synthetic yarns*

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 15306, *Surfaces for outdoor sports areas — Exposure of synthetic turf to simulated wear*

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

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 48, *Rubber, vulcanized or thermoplastic – Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 1763, *Carpets – Determination of number of tufts and/or loops per unit length and per unit area*

ISO 2549, *Textile floor coverings – Hand-knotted carpets – Determination of tuft leg length above the woven ground*

ISO 4919, *Textile floor coverings – Determination of tuft withdrawal force*

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

synthetic turf surface

sports surface comprised of a carpet of tufted, knitted or woven construction whose pile is designed to replicate the appearance of natural grass

NOTE not necessarily in colour

3.2

non-filled synthetic turf

synthetic turf surface that does not contain any form of unbound particulate fill within the pile of the carpet

3.3

filled synthetic turf

synthetic turf surface whose pile is either totally filled or partly filled with an unbound particulate material

NOTE typically sand, rubber or sand and rubber mixes

3.4

surface for multi-sports

synthetic turf surface designed to be used for more than one sport

NOTE For further information see Annex B

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4 General

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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 synthetic turf compared with an unaged test specimen of the synthetic turf shall be Grey Scale 4 or greater.

4.1.2 Tensile strength

When tested in accordance with EN 13864 following artificial weathering in accordance with EN 14836, the tensile strength of the pile yarn(s) used to form the synthetic turf pile shall be within 50 % of the tensile strength of the unaged yarn.

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

4.3.1 Stitched joints

When tested in accordance with Method 1 of EN 12228:2002, following immersion in hot water in accordance with EN 13744, the strength of stitched joints shall be equal to or greater than 1 000 N/100 mm.

4.3.2 Bonded joints

When tested in accordance with Method 2 of EN 12228:2002, 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 except that, for surfaces intended for rugby, the minimum joint strength shall be 100 N/100 mm.

4.4 Abrasion resistance of 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 %.

5 Surfaces designed primarily for hockey

5.1 General

Synthetic turf surfaces designed primarily for hockey 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 the manufacturer instructions prior to testing.

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

5.2 Vertical ball rebound

NOTE See also Annex D.

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 70 %.

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5.3 Ball roll

When tested in accordance with EN 12234 using a hockey ball under both dry and wet conditions, the ball roll shall be at least 8,0 m.

5.4 Shock absorption

When tested in accordance with EN 14808 under both dry and wet conditions, the shock absorption shall be at least 40 %.

5.5 Vertical deformation

When tested in accordance with EN 14809 under both dry and wet conditions, the vertical deformation shall be between 3 mm and 10 mm.

5.6 Rotational resistance

When tested in accordance with EN 15301-1 using the dimpled rubber test sole profile under both dry and wet conditions, the rotational resistance shall be between 25 Nm and 50 Nm.

6 Surfaces designed primarily for football

6.1 General

Synthetic turf surfaces designed primarily for football shall conform to the requirements given in clause 4 and those in 6.2 to 6.7.

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

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

6.2 Vertical ball rebound

NOTE See also Annex D.

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 75 %.

6.3 Ball roll

When tested in accordance with EN 12234 using a football under both dry and wet conditions, the ball roll shall be between 4,0 m and 10,0 m.

6.4 Shock absorption

When tested in accordance with EN 14808 under both dry and wet conditions, the shock absorption shall be between 55 % and 70 %.

6.5 Vertical deformation

When tested in accordance with EN 14809 under both dry and wet conditions, the vertical deformation shall be between 4 mm and 10 mm.

6.6 Rotational resistance

When tested in accordance with EN 15301-1 using a studded test foot under both dry and wet conditions, the rotational resistance shall be between 25 Nm and 50 Nm.

6.7 Resistance to simulated use

Following simulated use conditioning for 5 200 cycles in accordance with EN 15306 using the studded roller, the surface shall conform to the requirements of 6.2, 6.4 and 6.6.

Following simulated use conditioning for 12 200 cycles in accordance with EN 15306 using the studded roller, the vertical ball rebound, shock absorption and rotational resistance values of the surface, when measured using the test methods detailed in 6.2, 6.4 and 6.6, shall be recorded and provided by the manufacturer or supplier (see clause 10).

Separate tests pieces shall be used to assess the effects of 5 200 and 12 200 cycles simulated use.

As the size of the test pieces produced by the apparatus described in EN 15306 is smaller than the test pieces specified to be used in EN 12234, EN 14808 and EN 15301-1, the test pieces used shall conform to the requirements given in EN 15306. No test shall be carried out within 50 mm of the edge of the test piece or within 50 mm of where another test has been carried out.

7 Surfaces designed primarily for rugby union

7.1 General

Synthetic turf surfaces designed primarily for rugby union shall conform to the requirements given in clause 4 and those in 7.2 to 7.8.

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

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

7.2 Vertical ball rebound

NOTE See also Annex D.

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 75 %.

7.3 Critical fall height

When tested in accordance with EN 1177 as a loose particulate material under both dry and wet conditions, the critical fall height of the surface shall be equal to or greater than 1,0 m.

7.4 Shock absorption

When tested in accordance with EN 14809 under both dry and wet conditions, the shock absorption shall be between 60 % and 80 %.

7.5 Vertical deformation

When tested in accordance with EN 14808 under both dry and wet conditions, the vertical deformation shall be between 4 mm and 10 mm.

7.6 Rotational resistance

When tested in accordance with EN 15301-1 using a studded test foot under both dry and wet conditions, the rotational resistance shall be between 30 Nm and 50 Nm.

7.7 Resistance to simulated use

Following simulated use conditioning for 5 200 cycles in accordance with EN 15306 using the studded rollers, the surface shall conform to the requirements of 7.2, 7.4 and 7.6.

Following simulated use conditioning for 12 200 cycles in accordance with EN 15306 using the studded rollers, the vertical ball rebound, shock absorption and rotational resistance values of the surface, when measured using the test methods detailed in 7.2, 7.4 and 7.6, shall be recorded and provided by the manufacturer or supplier (see clause 10).

Separate tests pieces shall be used to assess the effects of 5 200 cycles and 12 200 cycles simulated use.

As the size of the test pieces produced by the apparatus described in EN 15306 is smaller than the test pieces specified to be used in EN 12234, EN 14808 and EN 15301-1, the test pieces used shall conform to the requirements given in EN 15306. No test shall be carried out within 50 mm of the edge of the test piece or within 50 mm of where another test has been carried out.