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EUROPEAN STANDARD

EN 14877

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 97.150; 97.220.10

Supersedes EN 14877:2006

English Version

Synthetic surfaces for outdoor sports areas - Specification

Revêtements synthétiques pour terrains de sport en plein
air - Spécification

Kunststoffflächen auf Sportanlagen im Freien -
Anforderungen

This European Standard was approved by CEN on 25 July 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.

CEN members are the national standards bodies of 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 United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 14877:2013) 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of an identical text or by endorsement, at the latest by March 2014, and conflicting national standards shall be withdrawn at the latest by March 2014.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 14877:2006.

Compared with EN 14877:2006, the text has been clarified and editorial errors have been corrected.

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, 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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EN 14877:2013 (E)**1 Scope**

This European Standard specifies the requirements for synthetic (polymeric) surfaces (installed *in situ* and prefabricated) for outdoor sports facilities. It covers synthetic surfaces for the following applications:

- athletics, track and field;
- tennis;
- multi-sports.

The European Standard has two parts. The first describes the requirements for the testing of products in the laboratory to ensure they are capable of providing the required levels of sports performance and player/surface interaction required for their intended use and that they are manufactured from materials of acceptable quality. The second section describes the requirements for installed surfaces to ensure that the sports performance and player/surface interaction properties are suitable for the intended use.

When independent third party testing of synthetic sports surfaces is required to assess compliance with this standard, it is recommended the laboratory is certified to EN ISO/IEC 17025 for the relevant test methods specified in this standard.

NOTE 1 Examples of types of surface and their fields of application are given in Annex A.

NOTE 2 'Multi-sports' will be defined by appropriate national provisions.

NOTE 3 Minimum requirements for the thickness of the synthetic sports surface are specified which means that this European Standard is not applicable to certain coatings used for sports surfaces.

This European Standard is not designed to cover the performance requirements of top-level athletics facilities; these should follow the requirements of the International Association of Athletics Federations (IAAF).

NOTE 4 This European Standard does not include requirements for synthetic turf surfaces; these are specified in EN 15330-1.

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.

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*

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

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

EN 13036-4, *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 13744, *Surfaces for sports areas — Procedure for accelerated ageing by immersion in hot water*

EN 13817, *Surfaces for sports areas — Procedure for accelerated ageing by exposure to hot air*

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 14810, *Surfaces for sports areas — Determination of spike resistance*

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

EN ISO 5470-1, *Rubber- or plastics-coated fabrics — Determination of abrasion resistance — Part 1: Taber abrader (ISO 5470-1)*

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

3 Terms and definitions

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

3.1

multi-sports facilities (standards.iteh.ai)

facilities where more than one sport is played on the surface

Note 1 to entry: These facilities normally enable sports such as handball, basketball, volleyball and small-sided football to be played, and they can also be used for physical education and many other sporting activities.

4 Laboratory test requirements

4.1 Synthetic surfaces intended for athletic facilities shall satisfy the requirements of Table 1.

4.2 Synthetic surfaces intended for tennis facilities shall satisfy the requirements of Table 2.

4.3 Synthetic surfaces intended for multi-sports facilities shall satisfy the requirements of Table 3. If multi-sports areas are to include athletics activities involving the use of athletics running spikes, the synthetic surfacing shall also satisfy the requirements of Table 1, 1.2.5 – Spike Resistance.

4.4 Wet test specimens shall be prepared using the procedure detailed in Annex B.

4.5 Shock Absorption and Vertical Deformation measurements shall be made in three positions each at least 100 mm apart and the mean result calculated.

4.6 Slip Resistance shall be measured in at least two directions at 90° to each other.

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Table 1 — Laboratory test requirements for synthetic surfaces intended for athletics facilities

	Property	Test method	Test Condition		Requirement	
1.1	Sports performance					
1.1.1	Friction	EN 13036-4 (CEN rubber)	(23 ± 2) °C	Dry	80 to 110	
				Wet	55 to 110	
1.1.2	Shock Absorption	EN 14808	(10 ± 2) °C (23 ± 2) °C (40 ± 2) °C	Dry	Force Reduction	Classification
					25 % to 34 %	SA 25 to 34
					35 % to 50 %	SA 35 to 50
					The performance of the surface shall be classified by the lowest result obtained under any of the test conditions.	
1.1.3	Vertical Deformation	EN 14809	(10 ± 2) °C (23 ± 2) °C (40 ± 2) °C	Dry	≤ 3 mm	
1.2	Material characteristics					
1.2.1	Water permeability	EN 12616	(23 ± 2) °C	—	≥ 150 mm/h	
1.2.2	Resistance to wear	EN ISO 5470-1 using H18 abrasive wheels and a (1 ± 0,001) kg load at 60 hz/min	(23 ± 2) °C	Unaged	Mass loss between 500 and 1 500 cycles shall be less than 4,0 g.	
			After artificial weathering in accordance with EN 14836.			
1.2.3	Colour loss	EN ISO 20105-A02	After artificial weathering in accordance with EN 14836.		Colour fastness shall be no less than grey scale 3.	

1.2.4	Tensile properties	EN 12230	Unaged	Tensile strength	≥ 0,4 MPa
			After accelerated ageing by exposure to hot air in accordance with EN 13817, immediately followed by immersion in hot water in accordance with EN 13744. The maximum tensile strength to be measured between 24 h and 36 h following removal at a laboratory temperature of (23 ± 2) °C.		
1.2.5	Spike Resistance	EN 14810	Following spike abrasion.	The change in tensile strength and elongation at break compared to a new sample, when tested in accordance with EN 12230, shall not differ by more than 20 % of the unaged values and shall not be less than the values detailed in 1.2.4.	
			After accelerated ageing by exposure to hot air in accordance with EN 13817, immediately followed by immersion in hot water in accordance with EN 13744.		
1.2.6	Absolute Thickness	EN 1969 (method A)	(23 ± 2) °C		≥ 10 mm

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Table 2 — Laboratory test requirements for synthetic surfaces intended for tennis facilities

	Property	Test method	Test Condition		Requirement	
2.1	Sports performance					
2.1.1	Friction	EN 13036–4 (CEN rubber)	(23 ± 2) °C	Dry	80 to 110	
				Wet	55 to 110	
2.1.2	Shock Absorption	EN 14808	(23 ± 2) °C	Dry	Force Reduction	Classification
					11 % to 19 %	SA 11 to 19
					20 % to 30 %	SA 20 to 30
					≥ 31 %	SA 31+
					The performance of the surface shall be classified by the lowest result obtained under any of the test conditions.	
2.1.3	Vertical Deformation	EN 14809	(23 ± 2) °C	Dry	≤ 3 mm	
2.1.4	Vertical ball rebound	EN 12235 using a tennis ball	(23 ± 2) °C	Dry	≥ 85 % (≥ 1,19 m)	
2.1.5	Angle ball behaviour (surface pace)	EN 13865	(23 ± 2) °C	Dry	Tennis coefficient	Classification
					≤ 29	Slow
					30 to 34	Medium slow
					35 to 40	Medium
					41 to 45	Medium fast
					≥ 45	Fast

2.2	Material characteristics					
2.2.1	Water permeability	EN 12616	(23 ± 2) °C	—	≥ 150 mm/h	
2.2.2	Resistance to wear	EN ISO 5470-1 using H18 abrasive wheels and a (1 ± 0,001) kg load at 60 hz/min	(23 ± 2) °C	Unaged at (23 ± 2) °C	Mass loss between (500 and 1 500) cycles shall be less than 4,0 g.	
			After artificial weathering in accordance with EN 14836.			
2.2.3	Colour loss	EN ISO 20105-A02	After artificial weathering in accordance with EN 14836.		Colour fastness shall be no less than grey scale 3.	
2.2.4	Tensile properties	EN 12230	Unaged at (23 ± 2) °C		Tensile strength	≥ 0,4 MPa
			After accelerated ageing by exposure to hot air in accordance with EN 13817, immediately followed by immersion in hot water in accordance with EN 13744. Tensile strength to be measured between 24 h and 36 h following removal at a laboratory temperature of (23 ± 2) °C.		Elongation at break	≥ 40 %
2.2.5	Absolute Thickness	EN 1969 (method A)	(23 ± 2) °C		≥ 7 mm	

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