SLOVENSKI STANDARD
SIST EN 14836:2019

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Nadomešča:
SIST EN 14836:2006
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Podloge za športne dejavnosti - Podloge iz umetnih snovi za zunanje športne dejavnosti - Preskusna metoda za umetno vremensko staranje

Surfaces for sports areas - Synthetic surfaces for outdoor sports areas - Test method for artificial weathering

Sportböden - Synthetische Sportböden für den Außenbereich - Künstliche Bewitterung

Surfaces sportives - Surfaces synthétiques pour terrains de sport en plein air - Méthode d'essai de vieillissement artificiel

Ta slovenski standard je istoveten z: **EN 14836:2018**

ICS:

97.150	Talne obloge	Floor coverings
97.220.10	Športni objekti	Sports facilities

SIST EN 14836:2019 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 97.150; 97.220.10

Supersedes EN 14836:2005

English Version

Surfaces for sports areas - Synthetic surfaces for outdoor sports areas - Test method for artificial weathering

Surfaces sportives - Surfaces synthétiques pour terrains de sport en plein air - Méthode d'essai de vieillissement artificiel

Sportböden - Synthetische Sportböden für den Außenbereich - Künstliche Bewitterung

This European Standard was approved by CEN on 9 November 2018.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 14836:2018) has been prepared by Technical Committee CEN/TC 217 “Surfaces for sports areas”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14836:2005.

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1 Scope

This document specifies a test method for an artificial weathering exposure, as a basis for a subsequent determination of property changes related to weathering resistance.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ASTM E1252-98, *Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis*

EN ISO 4892-1, *Plastics - Methods of exposure to laboratory light sources - Part 1: General guidance (ISO 4892-1)*

EN ISO 4892-3:2016, *Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps (ISO 4892-3:2016)*

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

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

3 Principle

Specimens are exposed to ultraviolet (UV) radiation under controlled environmental conditions. Two exposure periods are specified. Method 1 is for assessing products intended for installation in environments where high levels of UV exposure are unlikely. Method 2 is for assessing products intended for installation in environments where high levels of UV exposure might be expected.

NOTE 1 Guidance on the direct long-term average solar irradiation levels that any specific region may be expected to experience is available from numerous sources including: www.solargis.com. Typically northern Europe will receive between 400 kWh/m^2 and 1500 kWh/m^2 per year and southern Europe will receive between 1200 kWh/m^2 and 2000 kWh/m^2 per year.

NOTE 2 Fluorescent UV lamps use the emission from a low-pressure mercury arc to excite a phosphor that produces a continuous spectrum in a relatively narrow wavelength interval, which is generally distributed around a peak wavelength. The spectral distribution of the radiation from a fluorescent lamp is determined by the emission spectrum of the phosphor and the UV transmission properties of the glass tube. Fluorescent UV lamps are generally used to expose material to UV radiation in a limited spectral range. The use of alternative artificial weathering procedures, such as those specified in EN ISO 4892-2, might be used when developing products.

4 Apparatus

Artificial weathering cabinet using fluorescent UV lamps and environmental controls having the following features:

a) UVA-340 nm lamps (Type 1A) in accordance with EN ISO 4892-3, with a spectrum in accordance with EN ISO 4892-3 and capable of uniformly applying radiation to the test specimen at an irradiance of 0,80 W/m²/nm at 340 nm.

b) Exposure chamber, constructed from inert material and that provides uniform irradiance in accordance with item a), and that includes a means of controlling and measuring the relevant parameters.

c) Condensation wetting mechanism, to wet the exposed face of the specimen, in accordance with EN ISO 4892-3:2016, 4.5.2. The water vapour shall be generated by heating water in a container located beneath and extending across the whole area occupied by the test pieces. Test specimen holders (completely filled with specimens or blanking panels) shall constitute the sidewall of the exposure chamber, so that the backs of the holders are exposed to the cooling effect of the ambient room temperature.

d) Calibrated radiometer, conforming to EN ISO 4892-1, placed alongside the test specimens with the measuring sensor aligned to the same orientation as the test specimens so that it monitors the irradiance and radiant exposure experienced by the test specimens. If test specimens are mounted on the walls of the test chamber and also placed on the base of the chamber two radiometers shall be used.

e) Calibrated black-panel thermometer, conforming to EN ISO 4892-1.

f) Specimen holders, made from inert materials that will not affect the results of the exposure.

5 Exposure conditions

The exposure cycle shall comprise (240 ± 4) min of dry UV exposure at a black-panel temperature of (55 ± 3) °C, followed by (120 ± 2) min of condensation exposure, without radiation, at a black-panel temperature of (45 ± 3) °C.

6 Specimens

Specimens shall be of the size specified by the test methods for the properties to be measured after exposure, as detailed in the relevant product specification.

If a synthetic turf yarn is produced in a number of different thicknesses (e.g. 100 µm, 150 µm, 300 µm, etc.) but is manufactured from the same polymer and has the same cross sectional shape, only the thinnest version of the yarn need be tested. To validate yarns that are from the same family the characteristics of the yarn should be identified using:

a) Differential Scanning Calorimetry in accordance with EN ISO 11357-3. The main points of references being obtained from the second heating of the polymer sample and comprising the peak temperature, peak area and overall curve shape, all of which should be similar (peak temperature ± 3 °C);

b) Fourier Transform Infrared Spectroscopy (FTIR) in accordance with ASTM E1252-98. The main points of references to be used when comparing products shall be the peak locations and peak heights;

c) thickness – measured using the procedure described in Annex A;

d) shape – recorded photographically; and

e) colour – assessed using standard colour charts such as RAL Design (www.ral-farben.de).

7 Procedure

7.1 Mounting of test specimens

7.1.1 Synthetic turf yarns

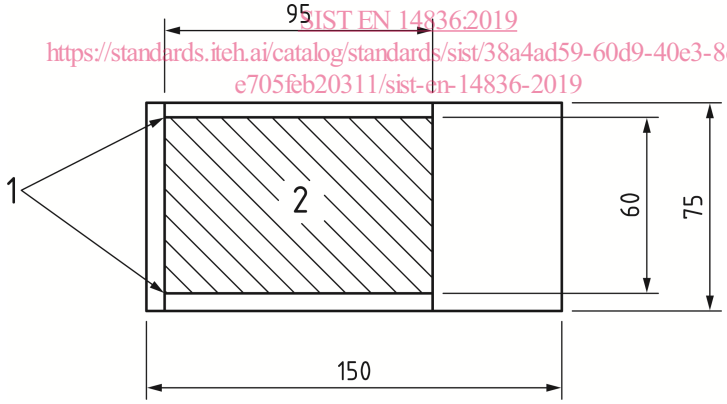
Wrap, without strain, a specimen of the yarn around the specimen holders so that the exposed strands do not overlap and mount in the test cabinet with the test surface facing the lamps. Fill any spaces, using blank panels, to ensure uniform exposure conditions.

7.1.2 Needle-punch surface and textile fibres

The exposure specimen holder upon which the fibres shall be mounted is required to provide an exposure area sufficient to allow the exposed fibres to subsequently undergo tensile strength testing in accordance with EN ISO 5079, including adequate provision for jaw gripping. See Figure 1.

Mark the margins of the actual exposure area on the specimen holder in indelible pencil, this being 60 mm × 95 mm, on a holder with overall dimensions 75 mm × 150 mm. Place a thin strip of double-sided tape along each of the two outer length sides of the panel in line with the markings, onto which the fibre ends shall be positioned. Pull back and retain the cover material of the double-sided tape.

Dimensions in millimetres



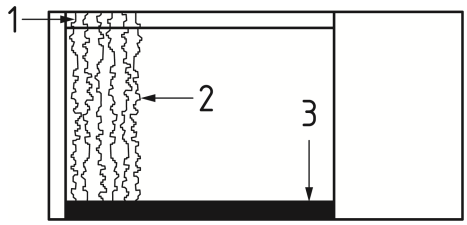
Key

1 thin strips of double-sided tape

2 exposure section

Figure 1 — Example of exposure panel prior to mounting fibres

Take a single fibre and without applying any lengthways tension, carefully place across the width of the test holder with its extreme ends overlapping onto the adhesive surface of the double-sided tape. Press the fibre ends down onto the adhesive. Leaving gaps between individual fibres to prevent any fibre overlap, mount subsequent fibres in the same manner until a maximum 150 fibres have been mounted (see Figure 2). When each holder is full, replace the cover strip of the double-sided tape back into position, to avoid the exposed adhesive sticking to other items or apparatus.



Key

1 fibre ends pressed onto double-sided tape

2 staple fibres

3 cover strip placed back onto double-sided tape

Figure 2 — Exposure panel with fibres mounted

7.1.3 Synthetic surfaces

Mount the specimen in suitably designed specimen holders so that the specimens are clamped in place, are not subjected to strain and do not overlap.

Mount the holders on the sides of the exposure chamber so that the wearing layer of the specimen faces the lamps. Fill any unused spaces using blanking panels, to ensure uniform exposure conditions.

7.1.4 Granular infill materials

Place the granular material in suitably designed free draining specimen holders, ensuing a uniform distribution and depth of sample material is used.

Place the holders on the base of the exposure chamber so that the granular material faces upwards. Ensure the side panels of the chamber are completely filled with either side mounted specimen holders or blanking panels, to ensure uniform exposure conditions.

7.2 Exposure period

7.2.1 Method 1

Expose the specimen, measuring the irradiance and radiant exposure at the surface of the specimen. After an exposure of (4 896 ± 125) kJ/m²/nm at 340 nm, carefully remove the specimen from the exposure cabinet and test as required by the product specification.

NOTE An exposure of (4 896 ± 125) kJ/m²/nm will require approximately 1 700 h UV exposure and takes approximately 2 550 h with cycling to complete.

7.2.2 Method 2

Expose the specimen, measuring the irradiance and radiant exposure at the surface of the specimen. After an exposure of (9 600 ± 125) kJ/m²/nm at 340 nm, carefully remove the specimen from the exposure cabinet and test as required by the product specification.

NOTE An exposure of (9600 ± 125) kJ/m²/340 nm will require approximately 3 400 h UV and takes approximately 5 200 h with cycling to complete.