

English Version

## Synthetic surfaces for outdoor sports areas - Exposure to artificial weathering

Surfaces synthétiques pour terrains de sport en plein air -  
Méthodes d'essai - Vieillissement artificiel

Synthetische Sportböden für den Außenbereich -  
Künstliche Bewitterung

This European Standard was approved by CEN on 28 November 2005.

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## Foreword

This European Standard (EN 14836:2005) 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of an identical text or by endorsement, at the latest by June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

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



## 1 Scope

This European Standard specifies a method for the exposure of synthetic surfaces for outdoor sports areas to artificial weathering in order that the resulting changes in properties can be determined as detailed in the relevant product specification.

## 2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 4892-1:2000, *Plastics – Methods of exposure to laboratory light sources – Part 1: General guidance (ISO 4892-1:1999)*

EN ISO 4892-2:1999, *Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc sources (ISO 4892-2:1994)*

EN ISO 4892-3, *Plastics – Methods of exposure to laboratory light sources – Part 3: Fluorescent UV lamps (ISO 4892-3:1994)*

## 3 Principle

Specimens are exposed to UV radiation under controlled environmental conditions.

NOTE 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 about 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.

## 4 Apparatus

Artificial weathering cabinet using fluorescent UV lamps and environmental control having the following features.

- a) UV-A 340 nm lamps, in accordance with EN ISO 4892-3 and capable of uniformly applying radiation to the test specimen at an irradiance of 0,80 W/(m<sup>2</sup>/nm) (at 340 nm).

NOTE 1 As many fluorescent lamps age significantly with extended use, the apparatus manufacturer's instructions on the procedure necessary to maintain the desired irradiance should be followed.

NOTE 2 The use of UV-B fluorescent UV lamps or exposure in a xenon arc artificial weathering cabinet is recommended when developing or assessing products intended for installation in environments where high levels of UV exposure might be expected.

- b) Exposure chamber, constructed from inert material and that provides uniform irradiance in accordance with item a) and that includes a means of controlling the temperature.
- c) Wetting mechanism, either condensation or water spray, to wet the exposed face of the specimen. In apparatus designed to wet the exposed faces of the specimens by means of a humidity-condensing mechanism, the water vapour shall be generated by heating water in a container located beneath and extending across the whole area occupied by the specimens. Specimen holders (completely filled with specimens) shall constitute the sidewall of the exposure chamber, so that the backs of the specimens are



exposed to the cooling effect of the ambient room air. If wetting is provided by spraying the specimens, the water shall conform to EN ISO 4892-2:1999, 4.6.

- d) Radiometer, conforming to EN ISO 4892-1:2000, 5.1.7, to monitor irradiance and radiant exposure.
- e) Black-panel thermometer, conforming to EN ISO 4892-1:2000, 5.2.2.
- f) Specimen holders, made from inert materials that will not affect the results of the exposure. The holders shall be mounted so that the exposed face of the specimen is located in accordance with the manufacturer's instructions, and shall be no more than 50 mm from the UV lamp bank plane.

## 5 Exposure conditions

The exposure cycle shall comprise  $(240 \pm 4)$  min of dry UV exposure at a black-standard temperature of  $(55 \pm 3)$  °C, followed by  $(120 \pm 2)$  min of condensation exposure, commencing once equilibrium has been attained, without radiation, at a black-standard temperature of  $(45 \pm 3)$  °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.

## 7 Procedure

Mount the specimen without strain in the specimen holders with the test surface facing the lamps. Fill any spaces, using blank panels, to ensure uniform exposure conditions.

Expose the specimen, measuring the irradiance and radiant exposure at the surface of the specimen. After an exposure of  $(4\,896 \pm 125)$  kJ, carefully remove the specimen from the exposure cabinet and test as required by the product specification.

NOTE An exposure of  $(4\,896 \pm 125)$  kJ will require approximately 2 000h UV exposure and takes approximately 3 000 h with cycling to complete.