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BRITISH STANDARD

BS EN
14810:2006

Surfaces for sports areas — Determination of spike resistance

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ICS 97.220.10

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Summary of pages

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EUROPEAN STANDARD

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English Version

Surfaces for sports areas - Determination of spike resistance

Sols sportifs - Détermination de la résistance aux pointes

Sportböden - Bestimmung der Beständigkeit gegen Spikes

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Foreword

This document (EN 14810:2006) has been prepared by Technical Committee CEN/TC 217 “Surfaces for sports areas”, the secretariat of which is held by BSI.

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1 Scope

This European Standard specifies a method for the determination of the resistance of a synthetic sports surface to spikes.

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

3 Principle

A test specimen of the sports surface is exposed to a wearing process by a metal roller fitted with spikes. The differences in tensile strength and elongation at break of the synthetic sports surface, measured before and after the wearing process, are a measure of the resistance of the surface to spikes.

4 Apparatus

4.1 Spike apparatus, comprising a platform fitted with a rotating vertical shaft powered by an electric motor with adjustable speed.

4.2 Roller with spikes (see Figure 1), consisting of a horizontal spindle fitted with 12 wheels having a thickness of (10 ± 1) mm and a diameter of (36 ± 1) mm. 10 of the wheels shall be fitted with six spikes each, the spikes having a length of (9 ± 1) mm and a diameter at the base of (5 ± 1) mm. Each of the 12 wheels shall be completely free to rotate, both on the spindle and relative to its neighbours. The roller shall be centrally mounted on the vertical shaft of the spike apparatus, in such a way that it rotates with the shaft but is able to move freely in the vertical direction. The total mass of the roller shall be adjusted to (10 ± 0,1) kg.

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Dimensions in millimetres

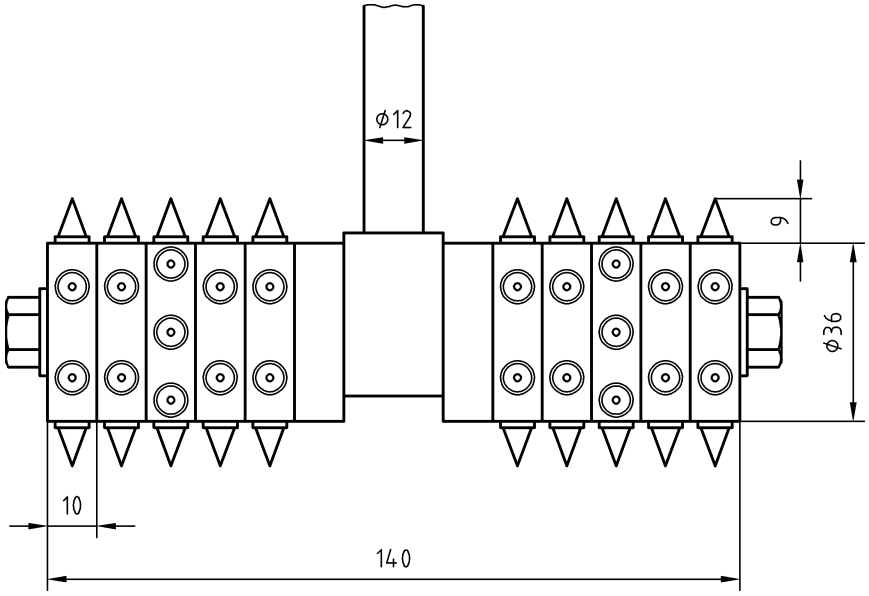

Figure 1 — Metal roller fitted with spikes

5 Test specimen

Prepare four test specimens of the synthetic sports surface each having dimensions of 180 mm × 220 mm.

One specimen shall be used for the initial determination of tensile properties.

Two specimens shall be subjected to the wear process and shall then be used for determining the tensile properties after wear.

The fourth specimen shall be set aside as a reference.

6 Conditioning

The test shall be carried out under laboratory conditions at a temperature of (23 ± 2) °C and a relative humidity of (50 ± 10) %.

7 Procedure

Carry out tensile tests according to EN 12230 on five tensile test pieces cut from one test specimen.

Adjust the speed of the electric motor to (20 ± 2) rev/min. Fasten the second test specimen in the holder on the platform of the spike apparatus. Switch on the motor and let it run for (1 200 ± 20) rev. Remove the test specimen from the platform.

Repeat this procedure on a third test specimen.

Carry out tensile tests according to EN 12230 on five tensile test pieces from the areas of a diameter of (140 ± 10) mm of the second and third test specimens affected by the spikes.

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Visually examine the worn third specimen with the naked eye. Bend the third test specimen affected by the spikes over a mandrel with a diameter of (70 ± 5) mm. Describe obvious changes, such as cracks, clear removal of material particles from the surface, wear of the surface, in the specimen in comparison to the specimen not affected by spikes. Denote such changes as visual damage.

8 Expression of results

The resistance to spikes shall be expressed in terms of the changes in tensile strength T and elongation at break E resulting from the effects of spikes.

Calculate the average tensile strength and elongation at break before wear T_1 and E_1 and after wear T_2 and E_2.

Calculate the change of tensile strength, X, using the formula:

$$X = \left(\frac{T_1 - T_2}{T_1} \right) \times 100 \quad (1)$$

where

X is the change in tensile strength, expressed as a percentage (%);

T_1 is the initial tensile strength, expressed in kilopascal (kPa);

T_2 is the tensile strength after wear, expressed in kilopascal (kPa).

Calculate the change of elongation at break, Y, using the formula:

$$Y = \left(\frac{E_1 - E_2}{E_1} \right) \times 100 \quad (2)$$

where:

Y is the change in elongation at break expressed as a percentage (%);

E_1 is the initial elongation at break, expressed in millimetres (mm);

E_2 is the elongation at break after wear, expressed in millimetres (mm).

9 Test report

The test report shall include the following information:

a) reference to this European Standard, i.e. EN 14810:2006;

b) description of the nature of the test surface;

c) description of visual damage, as described in Clause 7;

d) test results X and Y expressed in accordance with Clause 8;

e) details of any deviation from this procedure and additional relevant observations.

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