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Podloge za športne dejavnosti – Ugotavljanje odpornosti proti vrtenju

Surfaces for sports areas – Determination of rotational resistance

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Surfaces for sports areas - Determination of rotational resistance

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Contents

Page

Foreword

This document (prEN 15301:2005) has been prepared by Technical Committee CEN/TC 217 “Surfaces for sports areas”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

1 Scope

This European standard specifies methods for determining the shear strength of natural turf, synthetic turf and unbound mineral sports surfaces.

Method 1 is intended to be carried out on site. Method 2 is intended to be carried out in the laboratory but is applicable only to unbound mineral sports surfaces.

2 Method1: Determination of shear strength on site

2.1 Principle

The force required to initiate rotational movement of a studded or spiked disc in contact with the sports surface being tested is measured

2.2 Apparatus

The apparatus shall comprise the following components (see Figure 1).

a) Mild steel disc (145 ± 1) mm in diameter and (12 ± 2) mm thick, with its centre drilled and, if testing natural or synthetic turf, with six football studs (15 ± 1) mm long and 12 mm in diameter arranged on the bottom surface, each being set (46 ± 1) mm from the centre of the disc. If testing unbound mineral surfaces, spikes with dimensions as shown in Figure 2 shall be used instead of football studs.

b) Shaft (800 ± 25) mm long with attached lifting handles which threads into the centre of the studded disc.

c) Set of annular weights which rest centrally on a bearing on the upper surface of the studded disc allowing free movement of the disc beneath the weights.

d) Two-handled torque wrench with a scale up to 80 N which attaches to the top of the steel shaft.

The total mass of the apparatus, including the torque wrench, shall be (46 ± 1) kg.

2.3 Procedure

Assemble the apparatus and ensure that the bearing is operating correctly to allow free movement of the disc below the weights. Set the torque wrench indicator needle to zero, then drop the apparatus from a height of (60 ± 10) mm onto the surface, ensuring that the studs penetrate the surface. Without placing any vertical pressure on the torque wrench, turn the apparatus until movement of the studded disc occurs and it has rotated through an angle of at least 45°. Record the value displayed on the torque wrench to the nearest Newton-metre. Before conducting the next test, move the apparatus to a new position and clear the disc and studs cleared of any soil, turf or particulate and debris. Six readings shall be taken within each test area.

2.4 Number and distribution of readings

Unless otherwise specified, take at least six readings, at random, on areas less than 100 m^2, take 6 to 15 readings on areas of 100 m^2 to 1 000 m^2 and 15 to 20 readings for areas of 1 000 m^2 to 5 000 m^2. Larger areas should be subdivided into two or more areas for testing.

2.5 Expression of results

Calculate the mean traction value for each area.

2.6 Test report

The test report shall include the following particulars:

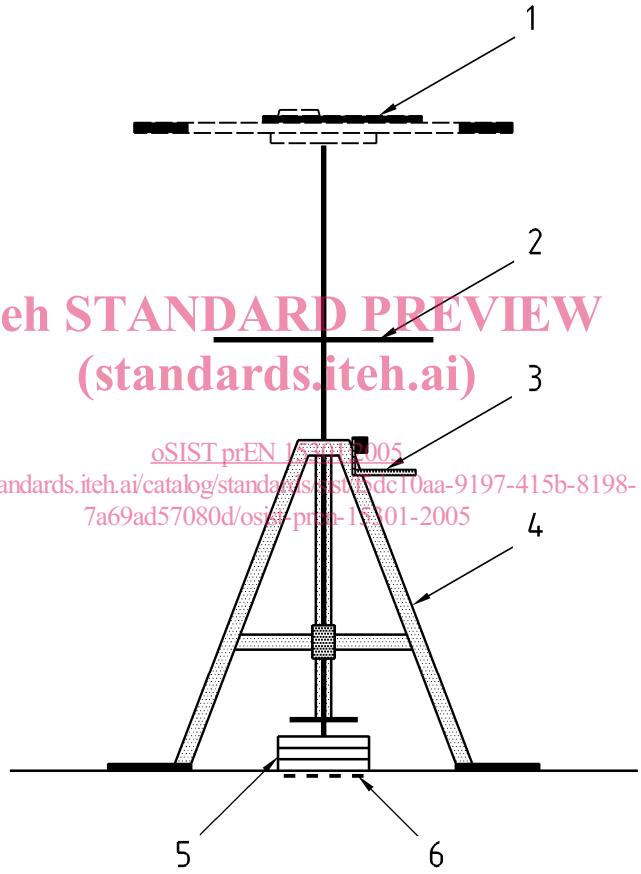
a) reference to this standard i.e. EN 15301:2005, method A;

b) complete identification of the surface tested, including its location, area and previous history;

c) the mean value of traction;

d) individual test results, if required;

e) details of any deviation from the procedure.



Key

1 dial indicating torque wrench
2 lifting handles
3 release mechanism
4 tripod
5 weights
6 studded foot

Figure 1 — Vertical section of apparatus for measuring traction

Dimensions in millimetres

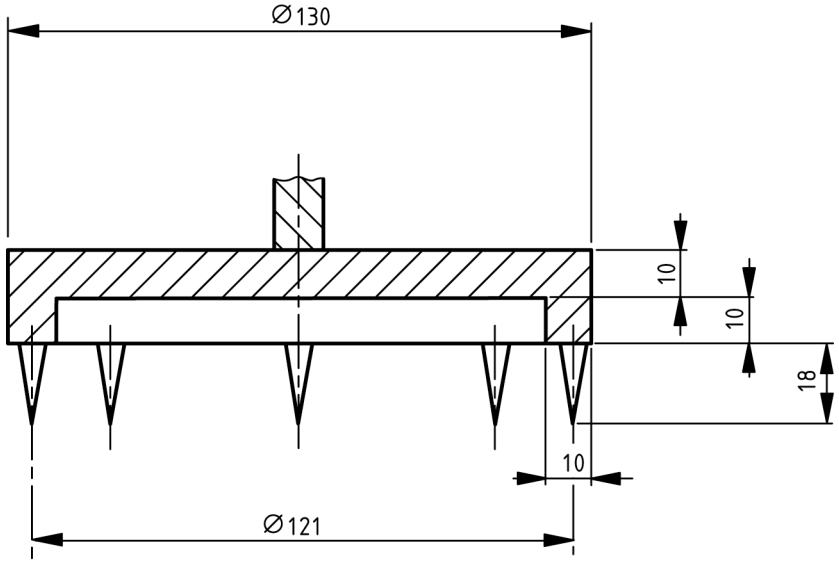


Figure 2 — Dimensions of spikes

3 Method 2: Dynamic and top layer testing of unbound mineral surfaces in the laboratory

3.1 Apparatus

The apparatus shall comprise the following components.

a) 250 mm diameter mould with removable base (Figures 3, 5 and 6);

b) steel plate used to distribute the compaction force (Figure 3);

c) compaction hammer with drop weight (Figure 3);

- mass of weight: 15,17 kg;
- drop height: 62 cm;

d) shearing disk (Figures 4, 5 and 6);

e) two shearing disk alignment gauges (Figures 4 and 5):

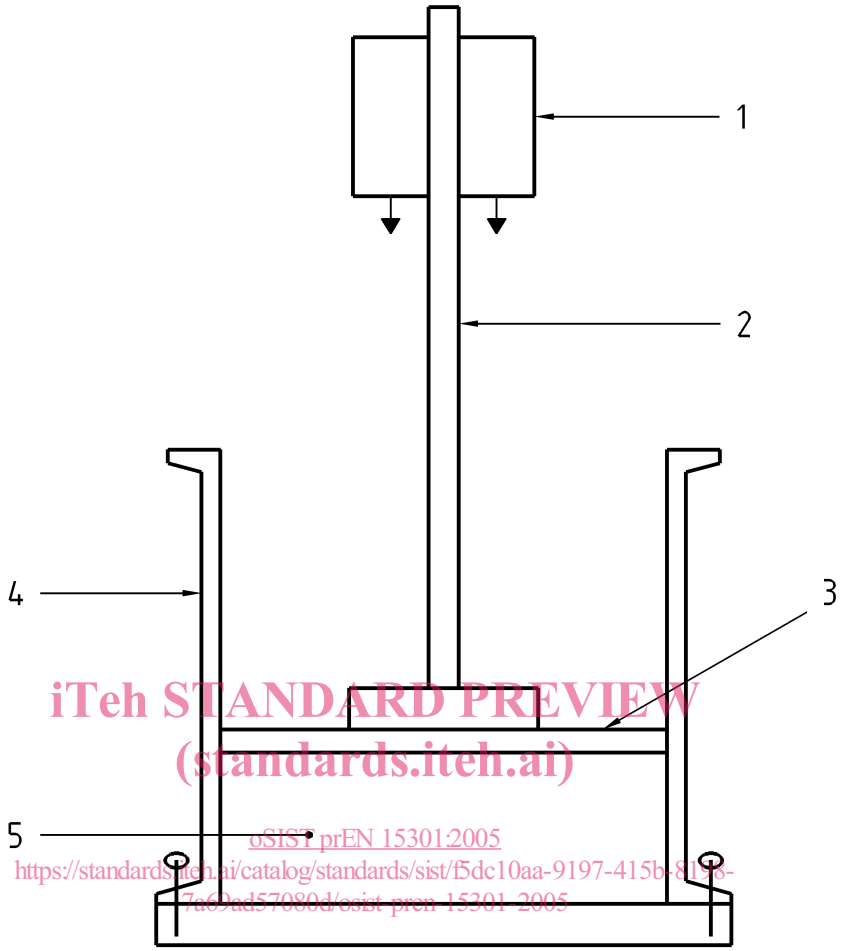
- a centring gauge;
- a vertical alignment gauge;

f) cardan shaft transmitting the force produced onto the disk (Figure 6);

g) device used to attach the measuring instrument to be installed on the test mould, with a vertical pin for the transmission of shear force by free rotation (Figure 6);

h) instrument for the dynamometric measurement of shear force by rotation (Figure 6);

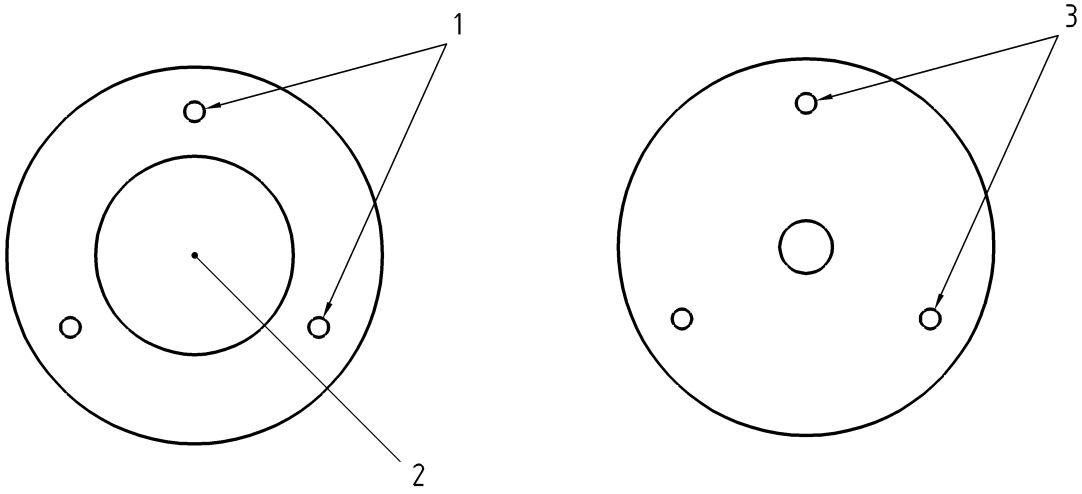
i) scales weighing up to 10 kg, to an accuracy of within ± 1 g.



Key

1 drop weight
2 mass guide pin
3 steel plate
4 mould with removable baseplate
5 material

Figure 3 — Compaction of the sample in the test mould



Shearing disk centring gauge

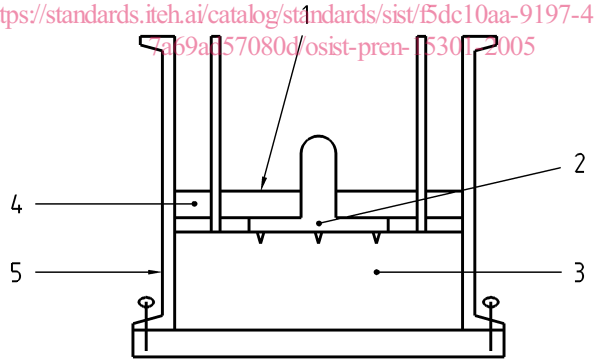
Vertical alignment gauge

Key

1 metal rod
2 shearing disk
3 positioning tube

NOTE The vertical alignment gauge tubes fit over the metal rods on the centring gauge.

Figure 4 — Centring and adjustment gauges



Key

1 vertical alignment gauge
2 shearing disk
3 compacted material
4 centring gauge
5 mould

Figure 5 — Shearing disk centring and adjustment