SLOVENSKI STANDARD
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Sports mats - Part 6: Determination of the top friction

Sportmatten - Teil 6: Bestimmung der Reibungseigenschaften der Oberseite

Tapis de sport - Partie 6: Détermination des caractéristiques antidérapantes de la face supérieure

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Tapis de sport - Partie 6: Détermination des caractéristiques antidérapantes de la face supérieure

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This European Standard was approved by CEN on 21 January 2001.

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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 Management Centre has the same status as the official versions.

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

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Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 136 "Sports, playground and other recreational equipment", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by October 2001, and conflicting national standards shall be withdrawn at the latest by October 2001.

This standard EN 12503 "Sports mats" consists of:

Part 1:
Gymnastic mats, safety requirements

Part 2:
Pole vault and high jump mats, safety requirements

Part 3:
Judo mats, safety requirements

Part 4:
Determination of shock absorption

Part 5:
Determination of the base friction

Part 6:
Determination of the top friction

Part 7:
Determination of static stiffness

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

1 Scope

This European Standard specifies a method of test for the determination of the top friction of sports mats types 1 to 8 of EN 12503-1:2001 and type 12 of EN 12503-3:2001.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 12503-1:2001
Sports mats – Part 1: Gymnastic mats, safety requirements

EN 12503-3:2001
Sports mats – Part 3: Judo mats, safety requirements

ISO 48
Rubber, vulcanized or thermoplastic – Determination of hardness (Hardness between 10 IRHD and 100 IRHD)

ISO 4662
Rubber – Determination of rebound resilience of vulcanizates

3 Principle

A gradually increasing torque is applied to a motionless weighted foot positioned on a mat and the torque required to cause initial movement is measured.

4 Apparatus

A rigid disc of diameter (150 ± 2) mm with a central shaft concentrically loaded with annular weights to give a total mass, including the torque wrench of (46 ± 2) kg. To the bottom of the disc is bonded a rubber test sole of diameter (150 ± 2) mm complying with the requirements of table 1.

A rigid stabilising frame with bearings or bushes for the shaft such that the sole remains in the plane of the surface during test and the legs of the frame do not contact the mat.

Dial indicating torque wrench, calibrated in maximum increments of 2,0 Nm with a maximum indicating pointer.

The apparatus is shown schematically in figure 1.

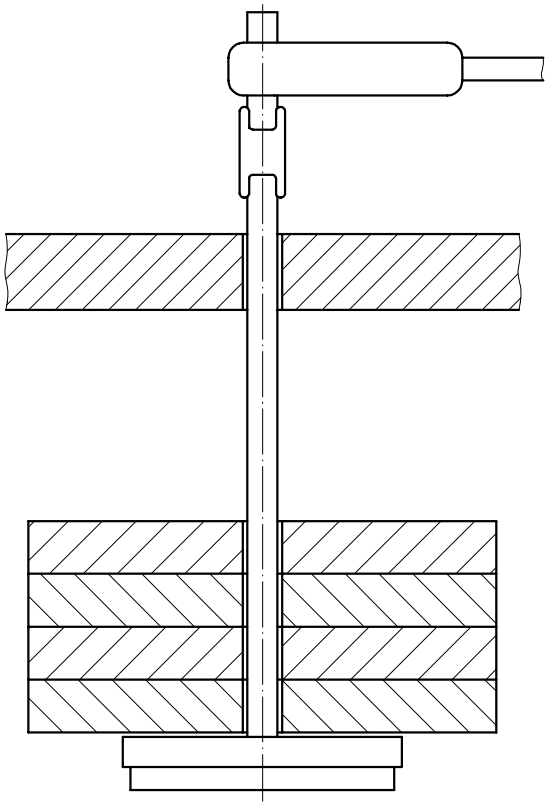

Figure 1 - Apparatus

Table 1 - Properties of rubber sole

Property	Test procedure	Requirement
Resilience	ISO 4662	(21 ± 2) % at 5 °C (24 ± 2) % at 23 °C (28 ± 2) % at 40 °C
Hardness	ISO 48	(96 ± 2) IRHD at (23 ± 2) °C

5 Test piece

The test piece shall be the complete mat.

6 Conditioning and test temperature

Condition the test piece for a minimum of 24 h at (21 ± 3) °C immediately before the test and carry out the test at the same temperature.

7 Procedure

Position the apparatus over the test piece. Place the weighted disc on the test piece and gradually and smoothly apply an increasing rotational force to the torque wrench at a nominal speed of 12 min^{-1} such that the disc rotates between 90° and 120°.

Repeat the test to obtain eight readings of torque in the same position and note the maximum torque for the last five readings.

Repeat the test to obtain readings at four positions on the mat.

NOTE Processing agents on new materials or particulate materials may contaminate the test sole material and affect the results. It is recommended that the sole be cleaned to remove contamination between each test or new test soles be used.

8 Expression of results

Calculate the mean static rotational friction for the five readings in each position from:

$$\text{Mean static rotational friction} = \frac{3\,T}{w\,D}$$

where:

T is the mean value of torque, in Nm;

w is the vertical force applied to the surface, in N;

D is the diameter of disc, in m.

Determine the static rotational friction as the lowest mean value of the four positions.

9 Test report

The test report shall include the following information:

a) reference to this test method, i.e. EN 12503-6;

b) complete identification of the mat tested including type, manufacturer's reference and previous history;

c) the temperature at which the test was carried out;

d) the static rotational friction value;

e) the individual test results if required;

f) details of any deviation from the procedure.