

Surfaces for sports areas — Determination of dimensional changes due to the effect of varied water, frost and heat conditions

The European Standard EN 13746:2004 has the status of a British Standard

ICS 59.080.60; 97.150; 97.220.10

National foreword

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English version

Surfaces for sports areas - Determination of dimensional changes due to the effect of varied water, frost and heat conditions

Sols sportifs - Détermination des variations dimensionnelles dues aux effets de l'eau, du gel et de la chaleur

Sportböden - Bestimmung von Maßänderungen aufgrund wechselnder Einwirkung von Wasser, Frost und Wärme

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Foreword

This document (EN 13746:2004) 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 dimensional stability of synthetic turf, textile surfaces, shock pads and loose-laid synthetic surfaces when subjected to varied water, frost and heat conditions.

2 Principle

A comparison between the dimensions in the plane of a test piece parallel and perpendicular to the direction of its manufacture is made before and after it has been subjected to varied water, frost and heat conditions.

3 Apparatus

3.1 Test apparatus

3.1.1 *Support*, to hold the test piece during conditioning and the taking of measurements.

3.1.2 *Metal plate*, with a mass of (15 ± 1) kg/m², of dimensions along each edge (10 ± 1) mm smaller than the test piece.

3.1.3 *Instrument with a gauge*, capable of measuring the length of the test piece to the nearest 0,01 mm.

Dimensions in millimetres

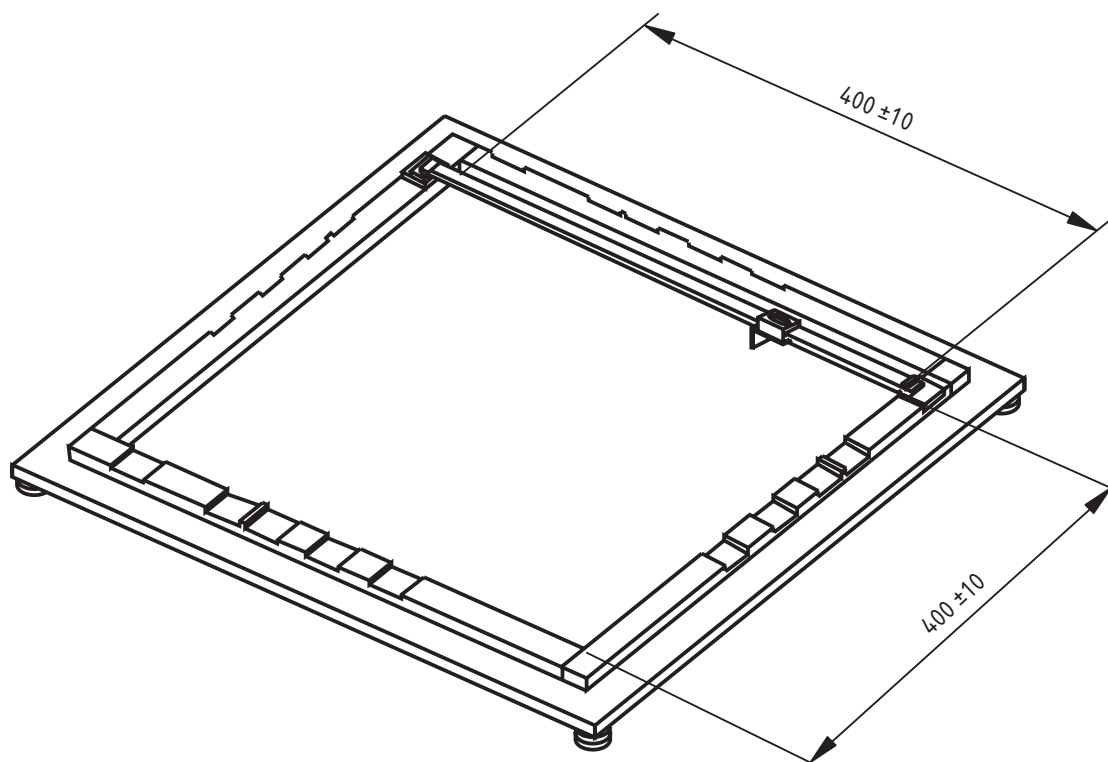


Figure 1 — Test apparatus

3.2 Container, for holding water at $(23 \pm 2) ^\circ\text{C}$, of dimensions at least 20 mm greater than the test piece and deep enough to accommodate the submerged test piece.

3.3 Deep-freeze, capable of being maintained at a temperature of $(-18 \pm 2) ^\circ\text{C}$, of dimensions at least 20 mm greater than the test piece.

3.4 Drying oven, with forced ventilation, capable of being controlled at $(70 \pm 2) ^\circ\text{C}$, and having perforated and lacquered shelves.

3.5 Enclosure for conditioning, capable of providing a standard atmosphere of $(50 \pm 5) \%$ relative humidity and a temperature of $(23 \pm 2) ^\circ\text{C}$.

4 Sampling, preparation of test pieces and conditioning

4.1 Sampling

Synthetic turf and textile surfaces incorporating integral shock pads shall be tested as a complete unit.

Each component of systems incorporating loose-laid synthetic turf, textile surfaces, shock pads and synthetic surfaces shall be tested separately.

4.2 Preparation of test pieces

Take at least three samples as delivered by the manufacturer, having a length of (400 ± 10) mm and a width of (400 ± 10) mm, and mark the direction of manufacture.

Make three marks on the edges of the test piece on the backing, two 50 mm from each corner and one halfway along the edge. Make a similar set of marks on the adjacent edge. Make the marks in the direction of manufacture and at right angles to it.

4.3 Conditioning

Condition the test pieces at (50 ± 5) % relative humidity and a temperature of (23 ± 2) °C for at least 48 h.

5 Procedure

5.1 General

Test pieces taken from carpets shall be tested upside down.

For sand- or rubber-filled surfaces, perform the test without sand or rubber.

5.2 Initial measurement of the test piece

Place the conditioned test piece on the metal plate (3.1.2) with the backing uppermost. Determine the length of the test piece at the three marks equally spaced over the total length, using the test apparatus described in 3.1, measure and record the distance between the marks on the edges parallel to and at right angle to the direction of manufacture to the nearest 0,1 mm.

Place the metal plate (3.1.2) on the test piece.

5.3 Determination of dimensional change

Immerse the test piece, laid flat, into a container (3.2) containing water and 0,1% sodium lauryl sulfate at a temperature of (23 ± 2) °C. Allow it to soak in the water for (24 ± 1) h.

Remove the test piece from the water and make the measurements described in 5.2 no later than 5 min after removal. Note and record the appearance of the test piece.

Immediately after measurement, place the test piece in the deep-freeze (3.3), lying freely but flat at a temperature of (-18 ± 2) °C. Leave it in the deep-freeze for (24 ± 1) h.

Remove the test piece from the deep-freeze and make the measurements described in 5.2 no later than 5 min after removal. Note and record the appearance of the test piece.

Dry the test piece for (72 ± 1) h in a drying oven (3.4) at (70 ± 2) °C, lying freely but flat on the perforated shelves.

Immediately after removing the test piece from the oven, make the measurements described in 5.2. Note and record the appearance of the test piece.

Finally, leave the test piece for (48 ± 1) h in the conditioning enclosure (3.5). Make the measurements described in 5.2. Note and record the final appearance of the test piece.

6 Calculation

Calculate, for each test piece, the percentage variation in each measurement using the formula:

$$\Delta L = \frac{l_m - l_o}{l_o} \times 100$$

where:

l_o is the initial length;

l_m is the length at each of the stages referred to in clause 5.

Indicate a decrease in dimensions by a minus sign, and an increase in dimensions by a plus sign.

Calculate the arithmetic mean for each test piece in each direction and for each stage referred to in clause 5.

7 Test report

The test report shall include the following:

- a) reference to this European Standard, i.e. EN 13746:2004;
- b) complete identification of the surface tested, including the manufacturer's reference and its previous history;
- c) for each test piece, the individual values of the length measurements parallel and at right angles to the direction of manufacture, together with the results obtained as specified in clause 6;
- d) a description of the appearance of the test pieces at each stage and their final appearance;
- e) type of measuring instrument used.

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