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Agglomerated cork floor tiles — Determination of dimensions and deviation from squareness and from straightness of edges

Dalles d'agglomeré de liège pour revêtements de sol — Détermination des dimensions et des écarts de l'équerrage et de la rectitude des bords

Reference number
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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 9366 was prepared by Technical Committee ISO/TC 87, *Cork*.

This second edition cancels and replaces the first edition (ISO 9366:1990), which has been technically revised.

Agglomerated cork floor tiles — Determination of dimensions and deviation from squareness and from straightness of edges

1 Scope

This International Standard specifies a method for the determination of the dimensions of agglomerated cork floor tiles or slabs, and the deviation from squareness and from straightness of their edges.

NOTE 1 Alternatively, methods described in EN 427 and EN 428 may be used.

NOTE 2 The term “tiles” used in this International Standard covers either tiles or slabs.

2 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

2.1
squareness
property of a product in tile form whose corners form exactly a right angle

2.2
straightness
absence of irregularities (e.g. bends or curves) from the edge of a tile

2.3
thickness
distance between two parallel plates where the tile is inserted under a certain load

2.4
agglomerated composition cork
product obtained from the agglutination of cork granules with the addition of a binder not derived from cork cells

2.5
floor covering
product manufactured in roll or tile form, which can be used to cover floors from wall to wall

2.6
cork floor covering
floor covering, the main component of which is agglomerated composition cork, intended to be used with a finish

2.7
tile
floor covering supplied in flat form, normally as squares

3 Principle

The plane dimensions, the deviation from squareness and the deviation from straightness of edges of tiles or slabs are measured by contact with dial gauges.

4 Apparatus

4.1 Device for the determination of plane dimensions, comprising the following (see Figure 1).

4.1.1 Flat surface, with dimensions larger than those of the tiles.

If possible, use a flat surface making an angle of 120° with the horizontal plane; this will allow the test specimen to be maintained against the rigid ruler by the action of its own weight.

4.1.2 Metallic ruler, fixed to the flat surface and having a saliency on one end.

4.1.3 Three dial gauges (A, B, C), graduated in 0,01 mm, fitted with feeler gauges.

4.1.4 Two standard rulers, of stainless steel, one of length equal to the nominal length of the tiles (L_l), accurate to ± 0,05 mm, and the other of length equal to the nominal width (L_w).

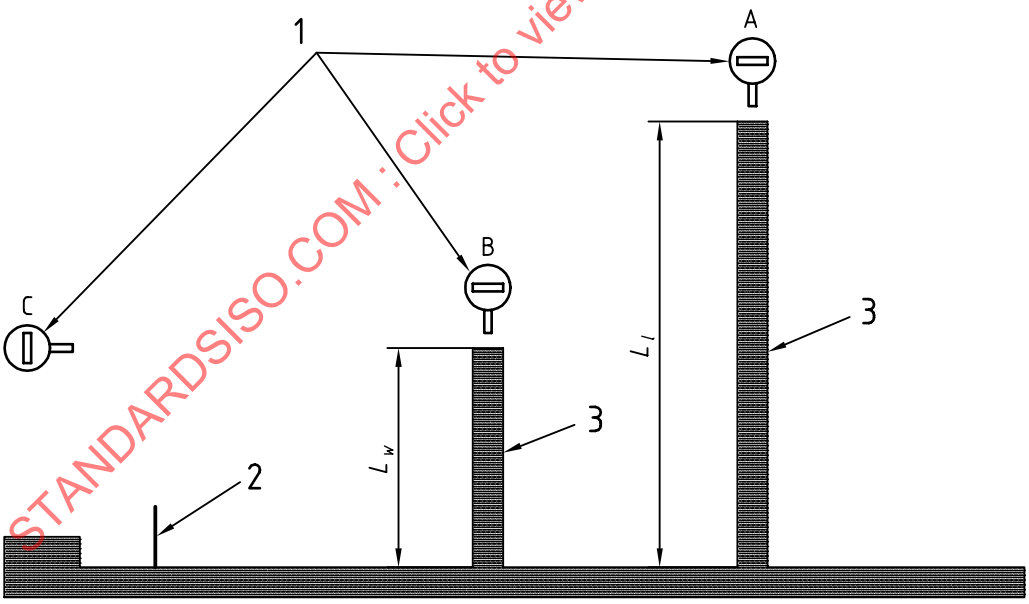
4.2 Device for the determination of thickness, comprising the following.

4.2.1 Flat and rigid surface, having dimensions larger than the tiles, supported by four levelling screws.

4.2.2 Dial gauge (D), graduated in 0,01 mm, fitted with a feeler gauge with 100 mm² cross section.

This dial gauge should have an adapter to support a weight (4.2.3).

4.2.3 Weight, of mass (0,80 ± 0,02) kg.



Key

1 Dial gauges
2 Metallic ruler
3 Standard rulers

Figure 1 — Example of device for the measurement of plane dimensions

5 Sampling and preparation of test specimens

The size of the sample shall be agreed between the interested parties.

From the sample, take at least five tiles as test specimens. Where a pack of tiles comprises the sample, ensure that the first and the last tiles are not used as test specimens.

When the test is carried out for manufacturing control purposes, the sampling shall follow the procedure described in the manufacturer's manual.

6 Conditioning

Test specimens shall be conditioned at a temperature of (23 ± 5) °C for 24 h. In case of dispute, the conditioning shall be carried out at a temperature of (23 ± 2) °C and relative humidity of (50 ± 5) % for 24 h. Maintain these conditions when carrying out the test.

For production control purposes, test specimens are tested without previous conditioning; however, the temperature during the test shall not exceed 30 °C.

7 Procedure

7.1 Checking the device for the determination of plane dimensions

7.1.1 Place the apparatus on a flat horizontal surface (4.1.1). Check the level and adjust it, if necessary.

7.1.2 Take the standard ruler (4.1.4) of length L_l. Place it on the flat surface so that one of its ends touches the metallic ruler (4.1.2), being perpendicular to it, and the other end touches the feeler gauge of dial gauge A. Fix this dial gauge at approximately half of its path and reset the reading to zero[1)].

7.1.3 Take the standard ruler (4.1.4) of length L_w. Place it on the flat surface so that one of its ends touches the metallic ruler (4.1.2), being perpendicular to it, and the other end touches the feeler gauge of dial gauge B. Fix this dial gauge at approximately half of its path and reset the reading to zero[1)].

7.1.4 Fix the dial gauge C at a distance from the metallic ruler equal to the nominal width of the test specimen (L_w) and so that approximately half of its path lies on the perpendicular projection of the metallic ruler. Reset the reading to zero[1)].

7.2 Checking the device for the determination of thickness

Fix the dial gauge D to its stem so that its feeler gauge is in contact with the base. Add the weight (4.2.3) and reset to zero.

7.3 Tests

7.3.1 Determination of side length

7.3.1.1 Take a tile as test specimen. Mark the edges of the test specimen with letters (e.g. a, b, c, d, clockwise).

1) When the dial gauges of are the analog type, without zero adjustment, this value has to be deducted from each reading taken during the test.

7.3.1.2 Place the apparatus on a flat horizontal table. Place side c against the metallic ruler, so that the feeler gauge of dial gauge A touches side a at a distance of approximately 1 cm from the corner of the test specimen. Record the reading (a_1) on dial gauge A.

7.3.1.3 Keep the test specimen against the metallic ruler and move the test specimen until the middle of edge a contacts the feeler gauge of dial gauge A. Record the reading (a_2).

7.3.1.4 Move again the test specimen until the feeler gauge of dial gauge A is at a distance of approximately 1 cm from the other corner. Record the new reading (a_3) on dial gauge A.

7.3.1.5 Turn the test specimen 180° so that side a is against the metallic ruler and side c touches the feeler gauge of dial gauge A at a distance of approximately 1 cm from the corner of the test specimen. Repeat steps 7.3.1.2 to 7.3.1.4 and record the readings on dial gauge A for side c (c_1, c_2, c_3).

7.3.1.6 Turn the test specimen 90° so that side d is against the metallic ruler and the feeler gauge of dial gauge B touches side b, at a distance of approximately 1 cm from the corner. Record the reading (b_1) on dial gauge B.

7.3.1.7 Repeat steps 7.3.1.3 and 7.3.1.4 and record the new readings for side b (b_2, b_3) on dial gauge B.

7.3.1.8 Repeat step 7.3.1.5 and record the readings for side d (d_1, d_2, d_3) on dial gauge B.

7.3.2 Determination of squareness

7.3.2.1 Place side b of the test specimen against the metallic ruler (4.1.2). Move the test specimen along the metallic ruler until its side c touches the saliency of the metallic ruler and the feeler gauge of dial gauge C. Record the reading (s_1) for the squareness of the corner bc.

7.3.2.2 Turn the test specimen over 180° clockwise so that side d is in contact with the metallic ruler. Repeat procedure 7.3.2.1 and record the reading, on dial gauge C, for the corner da (s_2).

7.3.2.3 Turn the test specimen over 180° about an imaginary axis perpendicular to the edges b and d so that side d is maintained in contact with the metallic ruler (the tile is backwards). Repeat step 7.3.2.1 and record the reading, on dial gauge C, for the corner dc (s_3).

7.3.2.4 Repeat step 7.3.2.2 and record the reading, on dial gauge C, for the corner ba (s_4).

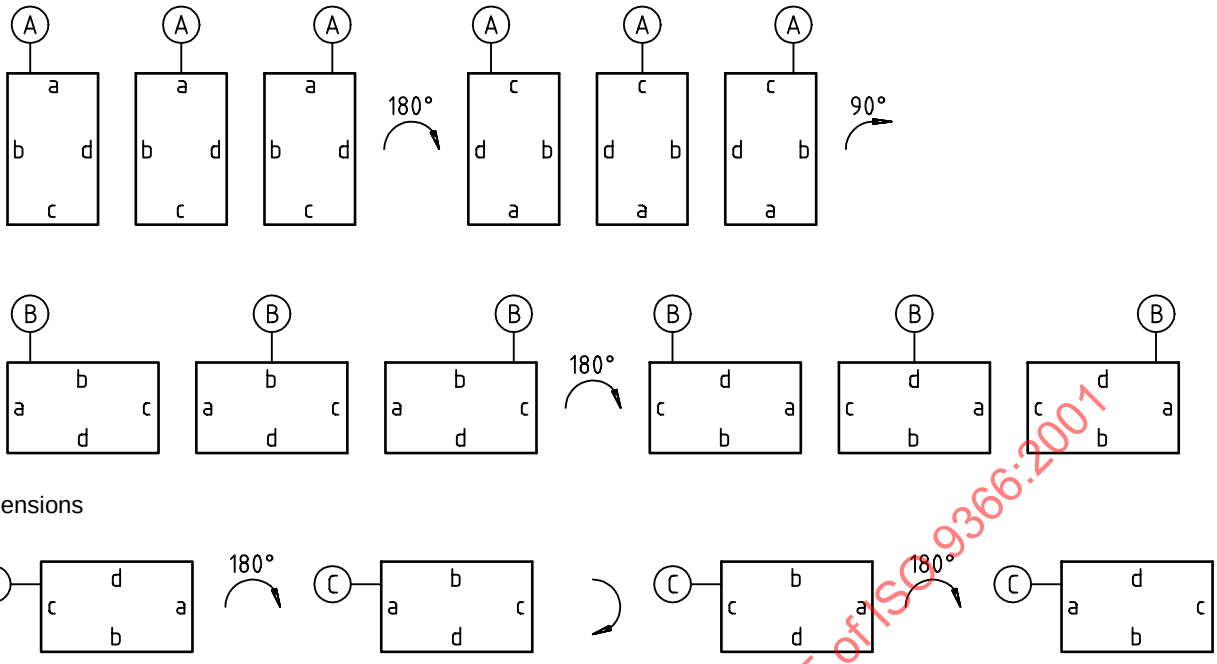
7.3.3 Determination of thickness

7.3.3.1 Divide the test specimen into at least four parts. Mark its centre.

7.3.3.2 Place the test specimen on the rigid flat surface of the apparatus. Place the feeler gauge of dial gauge D on the centre of one of the marks. Place the weight on the adapter and record the reading (e_1) on the dial gauge after 5 s.

7.3.3.3 Repeat this procedure, placing successively the feeler gauge of dial gauge D on the centre of each remaining mark, and record the respective readings (e_2, e_3, e_4).

Figure 2 gives examples of the movements carried out with the test specimen for these measurements.



a) Dimensions

b) Squareness

Figure 2 — Examples of the movements

8 Calculation and expression of results

8.1 Length

The length of the test specimen (L), expressed in millimetres and rounded to the nearest 0,1 mm, is given by:

$$L = \frac{a_1 + a_2 + a_3 + c_1 + c_2 + c_3}{6} + L_l$$

where

a_1 is the reading in 7.3.1.2, expressed in millimetres to the nearest 0,01 mm;

a_2 is the reading in 7.3.1.3, expressed in millimetres to the nearest 0,01 mm;

a_3 is the reading in 7.3.1.4, expressed in millimetres to the nearest 0,01 mm;

c_1, c_2, c_3 are the readings in 7.3.1.5, expressed in millimetres to the nearest 0,01 mm;

L_l is the length of the standard ruler, expressed in millimetres to the nearest 0,05 mm.

The test result for the sample is the mean value of the results obtained for the number of test specimens tested.

8.2 Width

The width of the test specimen (W), expressed in millimetres and rounded to the nearest 0,1 mm, is given by:

$$W = \frac{b_1 + b_2 + b_3 + d_1 + d_2 + d_3}{6} + L_w$$

where

b_1, b_2, b_3 are the readings in 7.3.1.6 and 7.3.1.7, expressed in millimetres rounded to the nearest 0,01 mm;

d_1, d_2, d_3 are the readings in 7.3.1.8, expressed in millimetres rounded to the nearest 0,01 mm;

L_w is the length of the second standard ruler, expressed in millimetres rounded to the nearest 0,05 mm.

The test result for the sample is the mean value of the results obtained for the number of test specimens tested.

8.3 Thickness

The thickness of the test specimen (E), expressed in millimetres and rounded to the nearest 0,1 mm, is given by:

$$E = \frac{e_1 + e_2 + e_3 + e_4}{4}$$

where

e_1 is the reading in 7.3.3.2, expressed in millimetres to the nearest 0,01 mm;

e_2, e_3, e_4 are the readings in 7.3.3.3, expressed in millimetres to the nearest 0,01 mm.

The test result for the sample is the mean value of the results obtained for the number of test specimens tested.

8.4 Deviation from nominal dimensions

8.4.1 Deviation from length

The deviation from the nominal length (ΔL) of the test specimen, expressed as a percentage rounded to the nearest 0,01 % is given by:

$$\Delta L = \frac{L_M}{L_l} \times 100\ \%$$

where L_M is the greatest value of the module $|a_1|$, $|a_2|$, $|a_3|$, $|c_1|$, $|c_2|$, $|c_3|$, expressed in millimetres rounded to the nearest 0,01 mm.

The test result for the sample is the mean value of the results obtained for the number of test specimens tested.

8.4.2 Deviation from width

The deviation from the nominal width (ΔW) of the test specimen, expressed as a percentage rounded off to the nearest 0,1 %, is given by:

$$\Delta W = \frac{W_M}{L_w} \times 100\ \%$$

where W_M is the greatest value of the module $|b_1|$, $|b_2|$, $|b_3|$, $|d_1|$, $|d_2|$, $|d_3|$, expressed in millimetres rounded to the nearest 0,01 mm.

The test result for the sample is the mean value of the results obtained for the number of test specimens tested.

8.4.3 Deviation from thickness

The deviation from the nominal thickness (ΔE) of the test specimen, expressed in millimetres rounded to the nearest 0,1 mm, is given by:

$$\Delta E = E - e_0$$

where

e_0 is the nominal thickness of the test specimen, expressed in millimetres rounded to the nearest 0,01 mm;

e_1 is the reading in 7.3.3.2, expressed in millimetres rounded to the nearest 0,01 mm;

e_2, e_3, e_4 are the readings in 7.3.3.3, expressed in millimetres rounded to the nearest 0,01 mm;

E is the value obtained in 8.3.

The test result for the sample is the mean value of the results obtained for the number of test specimens tested.

8.5 Deviation from squareness

The deviation from squareness (ΔS) of the test specimen, at a distance from the corner equal to the nominal width of the test specimen, expressed in millimetres to the nearest 0,1 mm, is the greatest value of the module:

$$|s_1 - S|,\ |s_2 - S|,\ |s_3 - S|,\ |s_4 - S|$$

where

s_1 is the reading in 7.3.2.1, expressed in millimetres to the nearest 0,01 mm;

s_2 is the reading in 7.3.2.2, expressed in millimetres to the nearest 0,01 mm;

s_3 is the reading in 7.3.2.3, expressed in millimetres to the nearest 0,01 mm;

s_4 is the reading in 7.3.2.4, expressed in millimetres to the nearest 0,01 mm;

S is the mean value for the above four readings, expressed in millimetres to the nearest 0,01 mm, as given by the following equation:

$$S = \frac{s_1 + s_2 + s_3 + s_4}{4}$$

The test result for the sample is the mean value of the results obtained for the number of test specimens tested.

8.6 Deviation from straightness

The deviation from straightness of the test specimen, expressed in millimetres rounded to the nearest 0,1 mm, is the largest value of the module:

$$\Delta a = \frac{a_1 + a_3}{2} - a_2 \qquad \Delta b = \frac{b_1 + b_3}{2} - b_2$$

$$\Delta c = \frac{c_1 + c_3}{2} - c_2 \qquad \Delta d = \frac{d_1 + d_3}{2} - d_2$$