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Floor tiles of agglomerated cork — Methods of test

Dalles d'aggloméré de liège pour revêtements des sols — Méthodes d'essai

Reference number
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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 3810 was prepared by Technical Committee ISO/TC 87, *Cork.*

This second edition cancels and replaces the first edition (ISO 3810 : 1977), of which it constitutes a technical revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Floor tiles of agglomerated cork — Methods of test

1 Scope and field of application

This International Standard specifies methods of test for determining the following characteristics of agglomerated cork floor tiles : dimensions and squareness, apparent density, tensile strength, initial and residual indentation, ash content and resistance to boiling hydrochloric acid.

2 References

ISO 3813, *Floor tiles of agglomerated cork — Characteristics, sampling and packing.* [1]

ISO 9366, *Floor tiles of composition cork — Determination of dimensions and of deviation from rectilinearity and from sides perpendicularity.* [2]

3 Reagent

Hydrochloric acid, $\varrho_{20} \approx 1{,}18$ g/ml, of technical grade.

4 Apparatus

4.1 Balance, accurate to ± 0,5 g.

4.2 Balance, accurate to ± 0,1 mg.

4.3 Crucible, made of porcelain, nickel or platinum.

4.4 Stop-watch.

4.5 Desiccator.

4.6 Conditioning chamber, temperature and humidity controlled.

4.7 Electrically heated oven, capable of being controlled at 103 ± 2 °C.

4.8 Electric muffle furnace, capable of being controlled at 450 ± 20 °C.

4.9 Tensile testing machine, accurate to ± 1 N, with one fixed jaw and one movable jaw, initially 12 mm apart. The movable jaw shall move unloaded at a speed of 300 mm/min.

4.10 Static load press, with flat parallel platens of dimensions greater than those of the test pieces and equipped with the following items :

4.10.1 Cylindrical indentor, made of steel, of diameter 28,7 mm (cross-sectional area 645 mm^2) fitted on the movable head.

4.10.2 Dial micrometer, accurate to ± 0,05 mm, attached to the movable head and giving by direct reading the thickness of the compressed material.

4.10.3 Weights, for applying the load to the movable head.

4.11 Device for testing resistance to boiling hydrochloric acid, equipped with

4.11.1 Round bottom flask, of min. capacity 500 ml.

4.11.2 Reflux condenser.

4.11.3 Heating device, to maintain temperature.

4.12 Punch, to prepare test piece.

5 Sampling and conditioning

Tests shall be carried out at ambient temperature, on test specimens taken from a sample obtained in accordance with ISO 3813 and conditioned in the conditioning chamber (4.6) for 24 h at 20 ± 2 °C and at a relative humidity of 65 ± 5 %, unless otherwise specified.

1) At present at the stage of draft. (Revision of ISO 3813-1977.)

2) At present at the stage of draft.

6 Methods of test

6.1 Dimensions

6.1.1 Length and width

Test each tile of the sample according to the method specified in ISO 9366.

Express the results in millimetres, rounded off to the nearest 0,1 mm.

6.1.2 Thickness

Test each tile of the sample according to the method specified in ISO 9366.

Express the results of the measurements obtained in millimetres, rounded off to the nearest 0,1 mm.

6.1.3 Deviations

For each dimension, calculate the deviation as the average of the deviations determined for each tile. No single deviation shall exceed the permissible tolerance specified in ISO 3813.

6.2 Squareness of tiles and straightness of edges

Take five tiles at random from the sample.

Test them according to the method specified in ISO 9366.

6.3 Apparent density

6.3.1 Procedure

Determine the dimensions of each tile in the sample, following the procedure specified in 6.1, and determine its mass on the balance (4.1). The apparent density is obtained by dividing the mass of the tile, in grams, rounded off to the nearest 0,5 g, by its volume, in cubic centimetres, rounded off to the nearest 0,1 cm^3, the volume being equal to the product of the linear dimensions, in centimetres, rounded off to the nearest 1 mm.

6.3.2 Expression of results

Calculate the apparent density of the sample as the average of the values resulting from the tests. Express the result in kilograms per cubic metre, rounded off to the nearest 1 kg/m^3.

6.4 Initial and residual indentation

6.4.1 Preparation of test pieces

Cut one test piece measuring 5 cm × 5 cm and having the thickness of the tile, from each tile in the sample.

6.4.2 Procedure

Place the test piece on the base-plate of the press (4.10), apply the indentor to the centre under a load of 88,9 N for 15 s and immediately read the thickness (d_1) of the test piece; then increase the pressure exerted by the indentor applying a load of 444,5 N for 10 min. Read the thickness (d_2) of the test piece at the point where the indentor was applied. Remove the load and allow the test piece to recover for 1 h. At the end of this period, re-apply the indentor under a load of 88,9 N for 15 s and read the thickness (d_3) of the piece at the point where the tile has been compressed.

6.4.3 Expression of results

The initial indentation of each test piece is given, as a percentage, by the formula

$$\frac{d_1 - d_2}{d_1} \times 100$$

The residual indentation of each piece is given, as a percentage, by the formula

$$\frac{d_1 - d_3}{d_1} \times 100$$

Calculate the initial and residual indentations as the average of the values thus found, rounded off to the nearest 0,1 %.

6.5 Tensile strength

6.5.1 Preparation of test pieces

Take three tiles at random from the sample. Cut from each a test piece measuring 10 cm × 5 cm and of the thickness of the tile.

6.5.2 Procedure

Determine the width and the thickness of the test piece, following the procedure specified in 6.1. Clamp each test piece, with the long edges vertical, in the jaws of the tensile testing machine (4.9), set the machine in operation and record the force at which rupture occurs.

6.5.3 Expression of results

The tensile strength of the test piece is given, in megapascals, by the formula

$$\frac{F}{b \times d}$$

where

F is the force at which rupture occurs, in newtons, rounded off to the nearest 1 N;

b is the width of the test piece, in millimetres, rounded off to the nearest 1 mm;

d is the thickness of the test piece, in millimetres, rounded off to the nearest 1 mm.

Record the tensile strength of each test piece, rounded off to the nearest 0,1 MPa, in the test report.

6.6 Ash content[1)]

6.6.1 Preparation of test piece

From one of the tiles in the sample, take one piece of mass approximately 10 g and break it up so that the fragments can be placed in the crucible (4.3).

6.6.2 Procedure

Place the fragments (6.6.1) in the crucible (4.3). Dry the crucible and contents in the electric oven (4.7), controlled at 103 ± 2 °C, allow to cool in the desiccator (4.5), then weigh using the balance (4.2). Repeat the drying, cooling and weighing operations till constant mass is reached. Place the crucible and contents in the muffle furnace (4.8), controlled at 450 ± 20 °C, to ignite the agglomerated cork; allow to cool in the desiccator, then re-weigh. Repeat the procedure till constant mass is reached.

6.6.3 Expression of results

The ash content of the test piece is given, as a percentage by mass, by the formula

$$\frac{m_2 - m_0}{m_1 - m_0} \times 100$$

where

m_0 is the mass, in grams, of the crucible, rounded off to the neareast 1 mg;

m_1 is the mass, in grams, of the crucible with the dried test piece, rounded off to the nearest 1 mg;

m_2 is the mass, in grams, of the crucible with the residue, rounded off to the nearest 1 mg.

Express the result to the nearest 0,1 %.

6.7 Resistance to boiling hydrochloric acid

6.7.1 Preparation of test pieces

Take three tiles at random from the sample. Cut from each a test piece measuring 5 cm × 4 cm and having the thickness of the tile.

6.7.2 Procedure

Fit together the different parts of the device (4.11), connecting the reflux condenser to a flow of water.

Heat the flask (4.11.1), containing the hydrochloric acid (clause 3) and the test pieces until the acid reaches boiling point and maintain it at this temperature for 30 min. Then remove the test pieces and make a visual examination.

6.7.3 Expression of results

Express the result of the test by stating the presence or absence of disintegration in the agglomerated cork.

NOTE — A specimen is said to disintegrate if it splits open and/or if it shows substantial loss of particles during the test.

7 Test report

The test report shall include the following information :

a) reference to this International Standard;

b) all details necessary for complete identification of the sample;

c) reference to the method used;

d) the results obtained and the form in which they are expressed;

e) all details of procedure not specified in this International Standard or in the International Standards to which reference is made, or regarded as optional;

f) any occurrences that may have affected the results.

1) This test is only used to distinguish the tiles of pure agglomerated cork from those of composition cork; so it is facultative.

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Descriptors : cork, agglomerates, floor coverings, floor slabs, tests.

Price based on 3 pages