SLOVENSKI STANDARD
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Opečni strešniki - Preskus upogibne trdnosti

Clay roofing tiles for discontinuous laying - Flexural strength test

Tondachziegel für überlappende Verlegung - Prüfung der Biegetragfähigkeit

Tuiles de terre cuite pour pose en discontinu - Détermination de la résistance a la rupture par flexion

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English version

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

Contents

Foreword

This European Standard has been prepared by CEN/TC 128 "Roof covering products for discontinuous laying", the secretariat of which is held by ON.

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of an identical text or by endorsement, at the latest by November 1994, and conflicting national standards shall be withdrawn at the latest by November 1994.

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

1 Scope

This European Standard describes the test method used to evaluate the flexural strength of clay roofing tiles as defined in the standard EN 1304 "Clay roofing tiles - Product definitions and specifications."

Other physical characteristics are dealt with by the Standard EN 539 "Clay Roofing Tiles - Determination of physical characteristics: Impermeability and frost resistance.

2 Normative references

This European Standard includes references, with or without dates, to measures from other publications. These normative references are quoted in the appropriate places in the text and the publications are listed afterwards. Subsequent amendments or revisions from any of the publications referred to by dated references, can only apply to this European Standard if they have been incorporated into it by amendment or revision. The latest edition of the publication referred to applies to undated references.

- EN 1304 ; Clay roofing tiles - Product definitions and spécifications.
- EN 539 : Clay roofing tiles - Determination of physical characteristics : Impermeability and frost resistance.
- ISO 48:1979 Vulcanised rubbers - Determination of hardness (hardness between 30 and 85 I.R.H.D.).

3 Symbols and abbreviations

L : Overall length of tile

F : Load at failure

4 Test principle

Verification of the ability of the product to resist a centred load when subjected to flexion on two simple bearers.

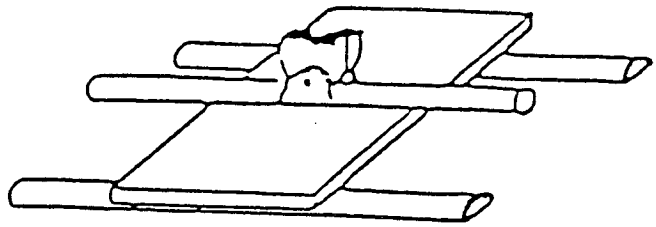

Figure 1 : Test principle

5 Samples

The evaluation of flexural strength is made on ten samples each one consisting of a whole tile dried in ambient air. If the tiles have been subjected to humidity, they must be dried in a laboratory atmosphere before testing (temperature in between 10°C and 40°C - relative humidity less than 90%).

6 Apparatus

The apparatus consists of :

-a device that applies a load with an accuracy of 2% and a load increase rate of 0.05 kN/s;

-a system used as lower bearers and, depending on the type of tile, either made up of rods or half-rods, one of which is articulated in order to rotate in a vertical plane and obtain as uniform a load distribution as possible on the sample, or for some Over and Under tiles by a flat plate supporting the tile;

-a round steel bar fitted to the bottom of the load application device. The upper and lower bearers shall have a radius of between 15mm and 20mm and a length greater than the width of the tile to be tested;

-a set of hardwood shims used for chocking the lower bearers as defined in paragraph 7.2;

-a hardwood shim adapted to the shape of the tile as defined in paragraph 7.2., should this chocking system be preferred to the plaster shim type;

-for apparatus where the weight of the tile and fittings is taken into account when reading the load, the corresponding tare is not included in the failure load value.

7 Test procedure

7.1. Plain tiles

-Place the tile on the two lower bearers (see figure 2) so that:

.the first bearer is in the position normally occupied by the batten;
.the second bearer is separated from the first by a distance equal to two thirds of the overall length (L) of the tile.

-Place this assembly in such a position that the load application bar is parallel to the two lower bearers and equidistant from both.

-Note the distance between the bearer axes.

-Apply the test load progressively at a rate of not more than 0.05 kN/s until the sample fails.

-Note the value (F) of the load at failure, expressed in kN and rounded off to two decimal points.

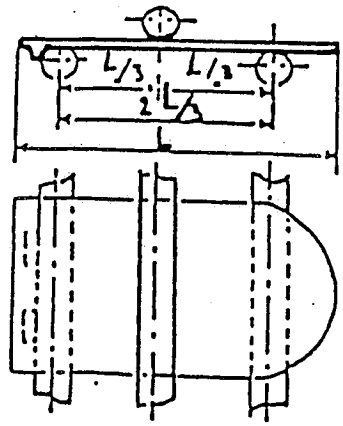

Figure 2 : Test for plain tiles

7.2. Tiles with sidelock and headlock, tiles with sidelock only and overlapping tiles

-Place the tile on the two lower bearers in the same horizontal plane (see figure 3) so that :

.the first bearer is in the position normally occupied by the batten;

.the second bearer is separated from the first by a distance equal to two-thirds of the overall length (L) of the tile.

-In order to ensure that the tile remains in a stable position, use wooden shims of the same width as the upper shim, to support the tile on the lower bearers and a shim adapted to fit the shape of the tile, for the upper bearer.

This upper support can be obtained either by using a contoured hardwood shim (Figures 4.1 ans 4.2) or a moulded plaster one (Figures 5.1 and 5.2) to keep the load application bar horizontal.

-The contoured piece of wood has a strip of rubber on the part in contact with the tile. This 5 mm thick strip shall have a specified I.R.H.D. hardness 50 ± 5, measured as per ISO 48:1979.

-The width of the contoured hardwood shim or moulded plaster shim shall be equal to the diameter of the load application bar.

-Place the assembly in such a position that the load application bar is parallel to the two lower bearers and equidistant from both.

-Note the distance between the bearer axes.

-Apply the load progressively at a rate of 0.05 kN/s until the samples fails,

-Note the value (F) of the load at failure, expressed in kN, and rounded off to the nearest two decimal points.