SLOVENSKI STANDARD
SIST EN 1024:2012

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Nadomešča:
SIST EN 1024:1998

Opečni strešniki - Ugotavljanje geometrijskih značilnosti

Clay roofing tiles for discontinuous laying - Determination of geometric characteristics

Tondachziegle für überlappende Verlegung - Bestimmung der geometrischen Kennwerte

Tuiles de terre cuite pour pose en discontinu - Détermination des caractéristiques géométriques

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91.100.25 Keramični gradbeni izdelki Ceramic building products

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Tuiles de terre cuite pour pose en discontinu - Détermination des caractéristiques géométriques

Tondachziegle für überlappende Verlegung - Bestimmung der geometrischen Kennwerte

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 1024:2012) has been prepared by Technical Committee CEN/TC 128 “Roof covering products for discontinuous laying and products for wall cladding”, the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by September 2012, and conflicting national standards shall be withdrawn at the latest by September 2012.

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This document supersedes EN 1024:1997.

This European Standard is one of the series of standards dealing with clay roofing tiles as listed below:

— EN 1304, *Clay roofing tiles and fittings — Products definitions and specifications*

— EN 538, *Clay roofing tiles for discontinuous laying — Flexural strength test*

— EN 539, *Clay roofing tiles for discontinuous laying — Determination of physical characteristic*

This European Standard includes:

— an informative annex

Figure A.1 – Example of twist measurement device for tiles with sidelock and headlock, tiles with sidelock only and overlapping tiles.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European standard specifies the methods for determining the geometric characteristics of clay tiles as defined in EN 1304, *Clay roofing tiles and fittings — Product definitions and specifications.*

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1304, *Clay tiles and fittings — Product definitions and specifications*

3 Symbols

L_1 maximum distance when measuring covering dimensions (length) in millimetres (mm);

L_2 minimum distance when measuring covering dimensions (length) in millimetres (mm);

l_1 maximum distance when measuring covering dimensions (width) in millimetres (mm);

l_2 minimum distance when measuring covering dimensions (width) in millimetres (mm);

L mean cover length in millimetres (mm);

L_M maximum cover length in millimetres (mm);

l mean cover width in millimetres (mm);

l_M maximum cover width in millimetres (mm);

H difference in height from the measuring point at the support bar or height in relation to a reference plane in millimetres (mm);

C twist coefficient in percent;

A tile length as declared by the manufacturer in millimetres (mm);

B tile width as declared by the manufacturer in millimetres (mm);

h_d height of camber as declared by the manufacturer in millimetres (mm);

h_m measured height of camber in millimetres (mm);

R camber in percentage;

Δh $|h_m - h_d|$ absolute value in millimetres (mm);

L_T total length of the tile in millimetres (mm);

l_T total width of the tile in millimetres (mm);

L_A measurement base in longitudinal direction in millimetres (mm);

L_B measurement base in transverse direction in millimetres (mm);

E_1 distance between the internal edges of an over - and under- tile at one of its extremities in millimetres (mm);

E_2 distance between the internal edges of an over - and under- tile at the other extremity in millimetres (mm).

4 Test pieces

The measurement of geometric characteristics are carried out on 10 test pieces, each of which constitutes a whole tile, except for the measurement of cover dimensions, which requires 24 tiles.

5 Tests methods

5.1 Determination of dimensional characteristics

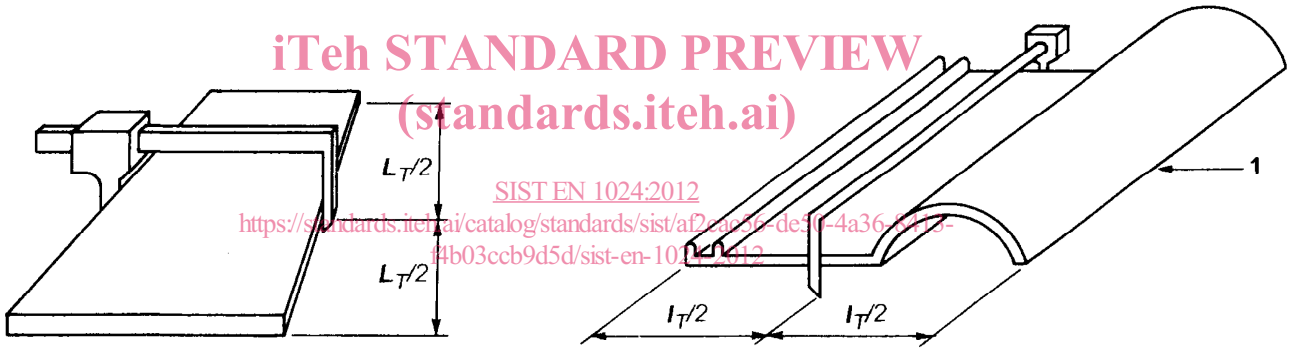
5.1.1 Individual dimensions[1)]

5.1.1.1 Apparatus

The tests are made with a measuring apparatus with a precision of at least one millimetre.

5.1.1.2 Procedure

After removing any surplus clay from the edges, the measurements shall be taken, both transversely and longitudinally along the centre of the tile unless another measuring position has been specified by the manufacturer (see Figure 1). The dimensions are expressed to the nearest whole millimetre.



Key

1 tile

Figure 1 – Principle for measuring individual dimensions

5.1.1.3 Expression of results

The arithmetic means of the lengths and widths of the 10 tested tiles and the differences expressed as a percentage of these mean values in relation to the values A and B declared by the manufacturer shall be calculated and noted in the test report.

1) EN 1304 specifies to which type of tiles these measurements apply.

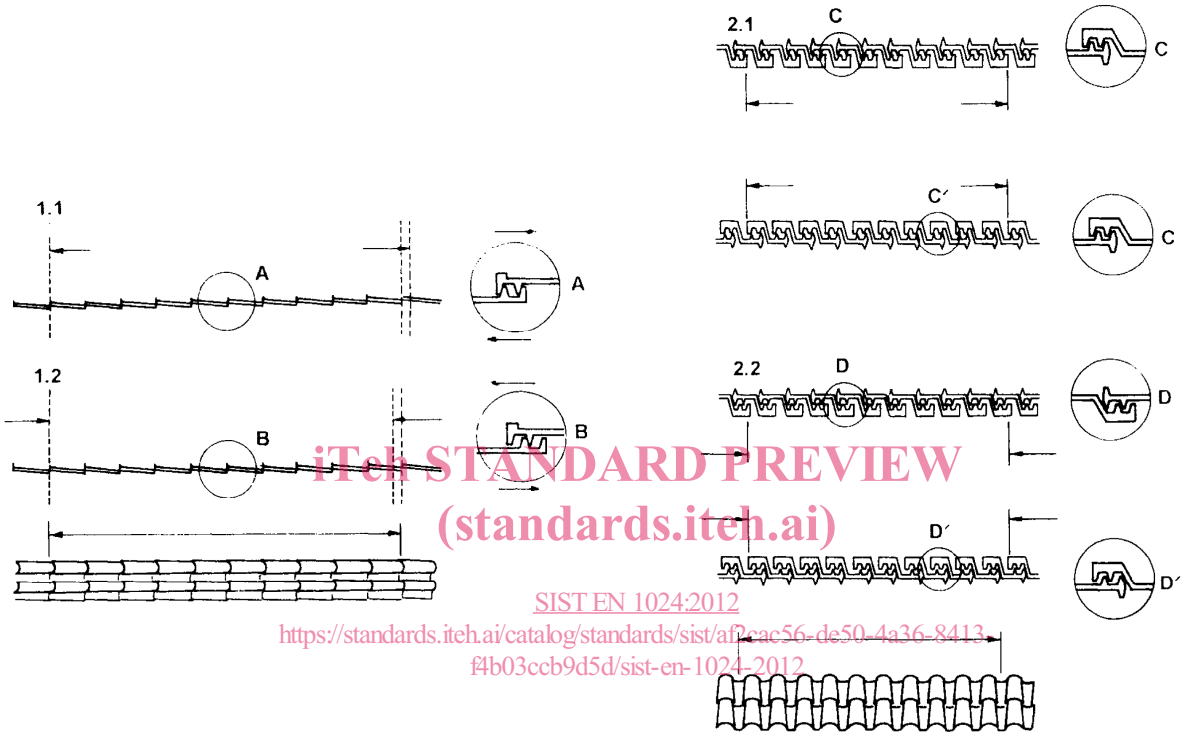
5.1.2 Overlap dimensions (margins)[1)]

5.1.2.1 Principle

The mean overlap dimensions are determined longitudinally and transversely.

They are measured as indicated in Figure 2.

NOTE Certain tile models can only be measured in one direction.



Key

1 mean cover length
1.1 open position
1.2 closed position
2 mean cover width
2.1 open position
2.2 closed position

Figure 2 – Principle for measuring cover dimensions

5.1.2.2 Number of test pieces

24 tiles are required for the measurements.

5.1.2.3 Apparatus

The tests are carried out with a measuring apparatus with a precision of at least 1 mm.

5.1.2.4 Procedure

The tiles are laid upside down in two rows on a flat surface, and interlocked with one another so as to form a stable unit. Certain types of tiles may require laying the right way up.

The tiles are interlocked longitudinally and pulled apart individually to measure the maximum distance between two corresponding points on the first and the eleventh tile, i.e. L_1, the maximum length.

Following this, the tiles are taken up, then relaid and interlocked. They are pushed together individually as closely as possible to carry out the measurement of the minimum distance (L_2) following the procedure described above.

Take again the same measurements, but this time, transversely in order to obtain the values l_1 and l_2.

With regard to tiles with a variable overlap, determine only the measurement of cover in the open position, L_1 *(*longitudinally*)*, l_1 *(*transversely*)*.

NOTE This method is not relevant to some types of tiles designed to be laid broken jointed.

5.1.2.5 Expression of results

The mean cover length (L) is obtained from the following formula:

$$L = (L_1+L_2) / 20 \quad (1)$$

The maximum cover length (L_M) (tiles with a variable overlap) is obtained from the following formula:

$$L_M = L_1 / 10 \quad (2)$$

The mean cover width (l) is calculated from the following formula:

$$l = (l_1 + l_2) / 20 \quad (3)$$

The maximum cover width (l_M) (of tiles with a variable overlap) is calculated from the following formula:

$$l_M = l_1 / 10 \quad (4)$$

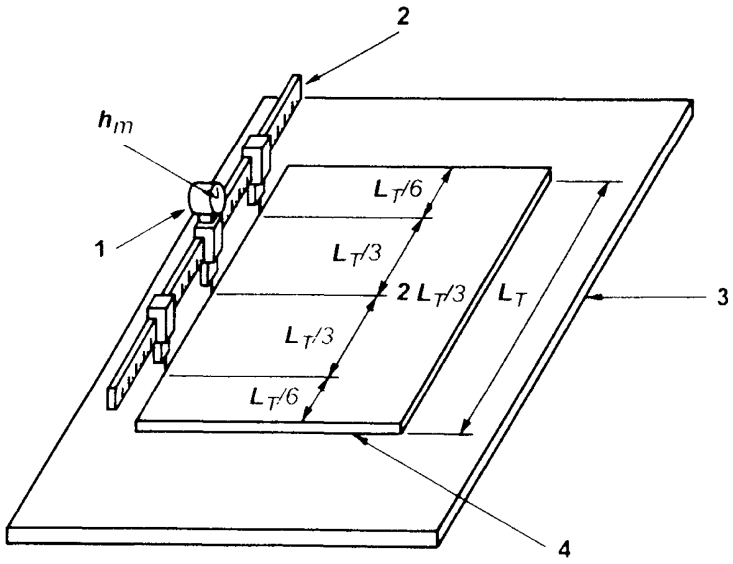
The calculated values as recorded are rounded to the nearest whole millimetre.

The percentage difference of these cover dimensions compared with those declared by the manufacturer are calculated and stated in the test report.

5.2 Cambers

5.2.1 Principle

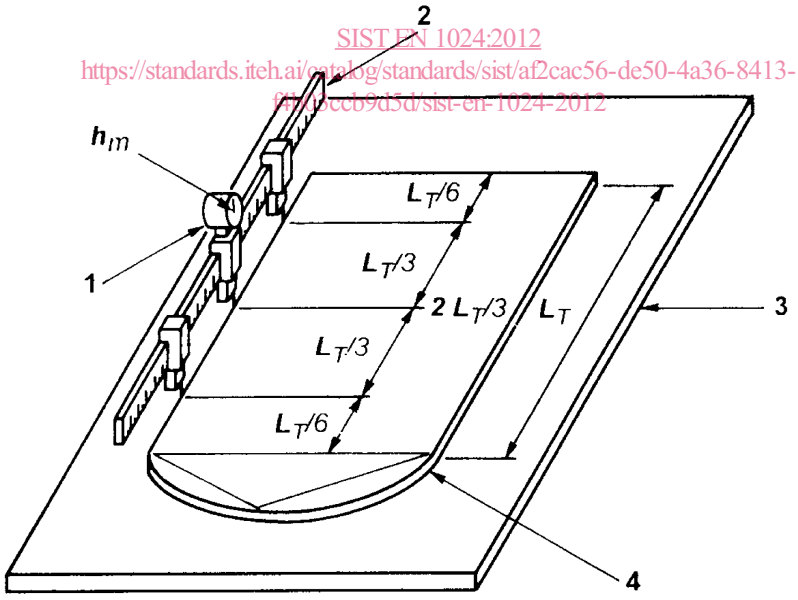
Measure height of camber longitudinally and transversely for plain tiles (see Figures 3, 4 and 5) and longitudinally only for all other types of tile (see Figures 6, 7 and 8). The height of camber for a curvature whose concavity is located on the outer surface of the tile are given a minus sign and a plus sign is given in the opposite case. The measurement is taken to a precision of at least 0,5 mm on each outside edge of the tile, with the most unfavourable value being selected. Take as measurement bases L_A and L_B equal to 2/3 of the total length (L_T) and width (l_T) of the tile. Where this is not possible, the measurement base may be reduced to the largest dimension that is compatible with the shape of the tile.



Key

1 dial gauge
2 rule
3 metal plate
4 tile

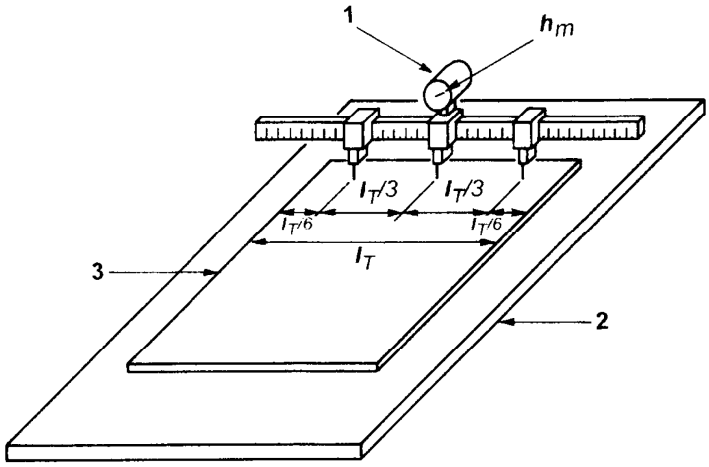
Figure 3 – Measurement of longitudinal camber on a plain tile



Key

1 dial gauge
2 rule
3 metal plate
4 tile

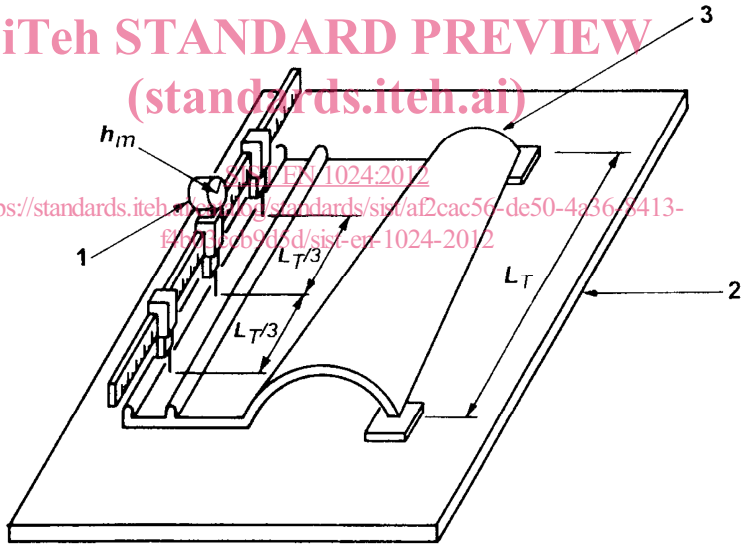
Figure 4 – Measurement of longitudinal camber on an ornamental plain tile



Key

1 dial gauge
2 metal plate
3 tile

Figure 5 – Measurement of transverse camber on a plain tile



Key

1 dial gauge
2 metal plate
3 tile

Figure 6 – Measurement of longitudinal camber on a tile with sidelock and headlock or a tile with sidelock only