SLOVENSKI STANDARD
SIST EN 159:1998

01-november-1998

Suho stiskane keramiļ ne ploģļ ice z vodovpojnostjo E>10 % - skupina BIII

Dust-pressed ceramic tiles with water absorption E>10% - Group BIII

Trockengepreßte Fliesen und Platten mit hoher Wasseraufnahme E>10% - Gruppe BIII

Carreaux et dalles céramiques pressés a sec a absorption d'eau E>10% - Groupe BIII

Ta slovenski standard je istoveten z: **EN 159:1991**

ICS:

91.100.23 Keramiļ ne ploģļ ice Ceramic tiles

SIST EN 159:1998 **en**

EUROPEAN STANDARD

NORME EUROPEENNE

EUROPAISCHE NORM

EN 159:1991

July 1991

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Supersedes EN 159:1984

Descriptors: Tiles, coating slabs, ceramic coatings, equipment specifications, dimensions, dimensional tolerances, physical properties, appearence, chemical properties, mechanical properties, designation, marking

English version

Dust-pressed ceramic tiles with water absorption E>10% - Group BIII

Carreaux et dalles céramiques pressés à sec à absorption d'eau E>10% - Groupe BIII

Trockengepreßte Fliesen und Platten mit hoher Wasseraufnahme E>10% - Gruppe BIII

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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

Ref. No. EN 159:1991 E

FOREWORD

This European Standard was drawn up by the Technical Committee CEN/TC 67 'Ceramic tiles', the Secretariat of which is held by UNI.

This European Standard was adopted by CEN on the strength of its acceptance by the following Member countries:

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1. Object and field of application

This European Standard specifies sizes, dimensional tolerances, mechanical, physical and chemical requirements, surface quality requirements and marking of ceramic tiles.

It is applicable only to dust-pressed ceramic glazed tiles of first quality , with a water absorption ($E > 10$ %) according to group BIII of EN 87, for use as both wall and floor coverings. Tiles in this group are mainly used in areas not subject to severe mechanical load. They are not intended for applications where conditions of frost may apply.

There is a small production of dust-pressed ceramic unglazed tiles with a water absorption greater than 10 % that is not covered by this standard.

2. References

EN 87 'Ceramic floor and wall tiles — Definitions, classification, characteristics and marking'

EN 98 'Ceramic tiles — Determination of dimensions and surface quality'

EN 99 'Ceramic tiles — Determination of water absorption'

EN 100 'Ceramic tiles — Determination of modulus of rupture'

EN 101 'Ceramic tiles — Determination of scratch hardness of surface according to Mohs'

EN 103 'Ceramic tiles — Determination of linear thermal expansion'

EN 104 'Ceramic tiles — Determination of resistance to thermal shock'

EN 105 'Ceramic tiles — Determination of crazing resistance — Glazed tiles'

EN 122 'Ceramic tiles — Determination of chemical resistance — Glazed tiles'

EN 154 'Ceramic tiles — Determination of resistance to abrasion — Glazed tiles'

EN 163 'Ceramic tiles — Sampling and basis for acceptance'

3. Description

The definition of dust-pressed ceramic tiles is given in EN 87. The surface of tiles and components belonging to this group can be smooth, profiled, wavy, decorated or finished in some other way. It can be glossy, matt or semi-matt (GL).

Tiles may have spacer lugs.

4. Shapes and sizes

For shapes and sizes see figures 1 and 2 and tables 1 and 2.

4.1 Other sizes. For dust-pressed tiles with dimensions other than those given in tables 1 and 2, the work size shall be stated by the manufacturer. The relevant requirements for work size and thickness given in the respective tables are applicable.

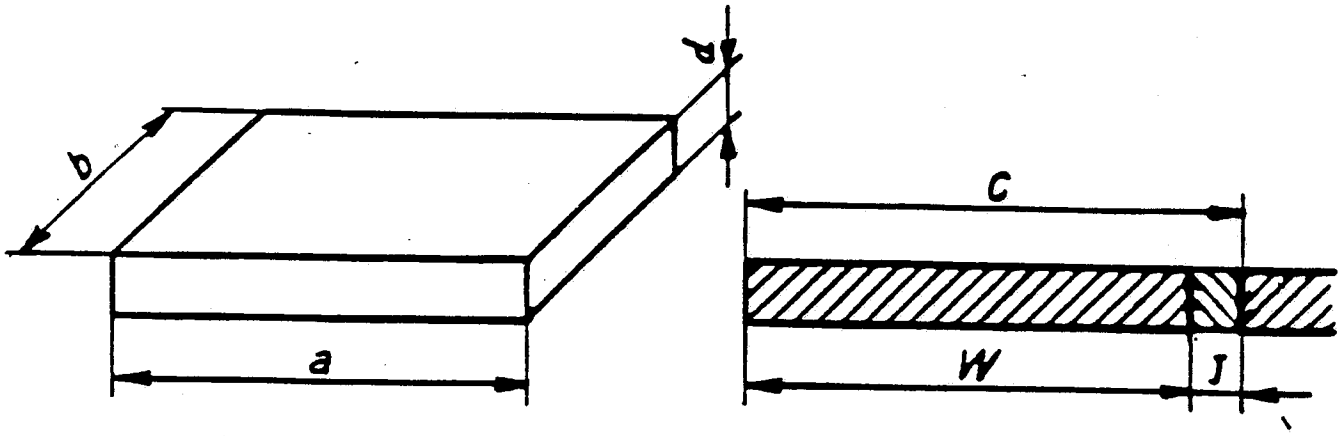
4.2 Spacer lug tiles. Spacer lugs are projections, usually of 0,6 mm, which are located along certain edges of tiles so that when two tiles are placed together, in line, the lugs on adjacent edges separate the tiles by a distance not less than the specified width of joint. Lugs are positioned so that the joint between the tiles may be filled with grout without the lugs remaining exposed.

Dust-pressed tiles may be made with other spacer lug systems and in such cases, the manufacturer's work size shall apply.

For an example of spacer lug tiles, see figure 2.

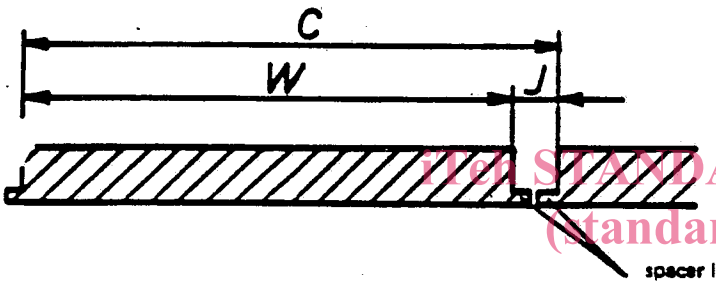
NOTE. Some tiles have one or more manufacturing projections part way along certain edges and smaller than 0,3 mm. These are not intended as spacer lugs and shall not be used to space joints.

4.3 Accessories. Dimensions and tolerances of accessories, for example soap-holders, are not standardized and these shall be stated by the manufacturer where appropriate.



Co-ordinating size (*C*) = Work size (*W*) + Joint (*J*)
Work size (*W*) = Dimension of the visible face (*a*) and (*b*)

Figure 1. Tile



Co-ordinating size (*C*) = Work size (*W*) + Joint (*J*)
Work size (*W*) = Dimension of the visible face (*a*) and (*b*)

Figure 2. Tile with spacer lug

Table 1. Modular preferred sizes

Co-ordinating size (*C*) cm	Work size (*W*) mm		Thickness (*d*) mm
	Length (*a*)	Width (*b*)	
M 30 x 30 M 30 x 15 M 25 x 25 M 20 x 20 M 20 x 15 M 20 x 10 M 15 x 15 M 15 x 7,5 M 10 x 10	The manufacturer shall choose the work size in order to allow a nominal joint width of between 1,5 mm and 5 mm		The thickness shall be specified by the manufacturer. It includes the profile on visual face and on the rear side

Table 2. Non-modular sizes

The most common sizes are:

Nominal size (*N*) cm	Work size (*W*) mm		Thickness (*d*) mm
	Length (*a*)	Width (*b*)	
40 x 40 33 x 33 30 x 30 30 x 15 25 x 25 21,6 x 10,8 20 x 40 20 x 30 20 x 20 20 x 15 15,2 x 15,2 15,2 x 7,6 15 x 15 15 x 7,5 10,8 x 10,8 10 x 20	The manufacturer shall choose the work size in such a way that the difference between the work size and the nominal size is not more than ± 2 mm. For spacer lug tiles, one work size shall apply for each nominal size within the limits mentioned above		The thickness shall be specified by the manufacturer. It includes the profile on the visual face and on the rear side

5. Requirements

Dimensional and surface quality requirements and physical and chemical properties shall be as given in table 3.

Sampling and basis for acceptance shall be in accordance with EN 163.

Table 3.

Requirements		Test according to
Dimensions and surface quality		
Length and width		
e The deviation in % of the average size for each tile (2 or 4 sides) from the work size (*W*)	1 ⩽ 12 cm: ± 0,75[1] 1 > 12 cm: ± 0,5	EN 98
Tiles with spacer lugs	+ 0,6 / - 0,3	
f The deviation in % of the average size for each tile (2 or 4 sides) from the average size to the 10 test specimens (20 or 40 sides)	1 ⩽ 12 cm: ± 0,5[1] 1 > 12 cm: ± 0,3	EN 98
Tiles with spacer lugs	± 0,25	
Thickness		
The deviation in mm of the average thickness of each tile from the work size thickness		
< 250 cm²	± 0,5	EN 98
> 250 to 500 cm²	± 0,6	
> 500 to 1000 cm²	± 0,7	
> 1000 cm²	± 0,8	
Straightness of sides[2] *(facial sides)*		
The maximum deviation from straightness in % related to the corresponding work sizes	± 0,3	EN 98
Rectangularity[2]		
The maximum deviation from rectangularity, in % related to the corresponding work sizes	± 0,5	EN 98
Tiles with spacer lugs	± 0,3	
Surface flatness		
The maximum deviation from flatness, in %. For tiles with spacer lugs values are in mm (in brackets).		
(a) Centre curvature, related to diagonal calculated from the work sizes	+ 0,5 / - 0,3 (+ 0,8 / - 0,1 mm)	EN 98
(b) Edge curvature, related to the corresponding work size	+ 0,5 / - 0,3 (+ 0,8 / - 0,1 mm)	EN 98
(c) Warpage, related to diagonal calculated from the work sizes	± 0,5 (surface < 250 cm²; 0,5 mm) (" ≥ 250 cm²; 0,75 mm)	EN 98
Surface quality	min. 95 % of tiles shall be free from visible defects that would impair the appearance of a major area of tiles	EN 98

1) For tiles having one or more adjacent glazed edges.

2) Not applicable for tiles having curved shapes.