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Ceramic tiles - Extruded ceramic tiles with a water absorption of $3\% < E \leq 6\%$ (Group Alla) Part 1

Keramische Fliesen und Platten - Stranggepreßte keramische Fliesen und Platten mit einer Wasseraufnahme von $3\% < E \leq 6\%$ (Gruppe Alla) Teil 1

Carreaux et dalles céramiques - Carreaux et dalles céramiques étirés a absorption d'eau $3\% < E \leq 6\%$ (Groupe Alla) Partie 1

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Ta slovenski standard je istoveten z: EN 186-1:1991

ICS:

91.100.23 S^|æ ã}^Ā|| z æ^ Ceramic tiles

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EUROPEAN STANDARD

REPUBLIKA SLOVENIJA
 MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO
 Urad RS za standardizacijo in meroslovje
 LJUBLJANA

EN 186-1:1991

NORME EUROPEENNE

EUROPAISCHE NORM

SIST.....EN 186-1
 PREVZET PO METODI RAZGLASITVE

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Descriptors: Tiles, Coating slabs, ceramic coatings, drawn products, equipment specifications, dimensions, dimensional tolerance, physical properties, mechanical properties, chemical properties, appearance, marking

English version

Ceramic tiles - Extruded ceramic tiles with a water absorption of $3\% \leq E \leq 6\%$ (Group AIIa) Part 1

Carreaux et dalles céramiques -	Keramische Fliesen und Platten -
Carreaux et dalles céramiques étirés à	Stranggepreßte keramische Fliesen und
absorption d'eau $3\% \leq E \leq 6\%$ (Groupe AIIa)	Platten mit einer Wasseraufnahme von
Partie 1	$3\% \leq E \leq 6\%$ (Gruppe AIIa)) Teil 1

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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

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Ref. No. EN 186-1:1991 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.

According to the common CEN/CENELEC rules, 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 and the United Kingdom.

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1 Scope and field of application

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

It is applicable only to extruded ceramic tiles with a water absorption of $3\% < E < 6\%$ according to Group AIIa of EN 87, for interior and exterior use on floors and on walls. The standard applies only to extruded ceramic tiles of first quality.

This standard is divided into two Parts.

The majority of the tiles in Group AIIa is covered by this Part of the standard (Part 1). Certain specific products, which are manufactured under different names (terre cuite in France and Belgium, cotto in Italy and baldosin catalan in Spain), have different values, e.g. for modulus of rupture, scratch hardness and resistance to deep abrasion of unglazed tiles. These products are covered by Part 2 of this standard, in which different requirements are specified.

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 102 'Ceramic tiles — Determination of resistance to deep abrasion — Unglazed tiles'

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 106 'Ceramic tiles — Determination of chemical resistance — Unglazed tiles'

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

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

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

EN 202 'Ceramic tiles — Determination of frost resistance'

3 Description

According to EN 87, two types of extruded ceramic tiles are distinguished: split tiles and quarry tiles.

Split tiles are produced as a double tile which is split in two after firing, hence the name 'split tile'. Split tiles are characterized by typical parallel ridges on their reverse.

Quarry tiles are shaped by cutting from a single column and are often subsequently die-pressed.

The surface of extruded ceramic tiles can be smooth, profiled, wavy, decorated or finished in some other way; it can be fully or partly glazed (GL) in glossy, matt or semi-matt finish, or unglazed (UGL).

4 Shapes and sizes

4.1 Split tiles (Spaltplatten)

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

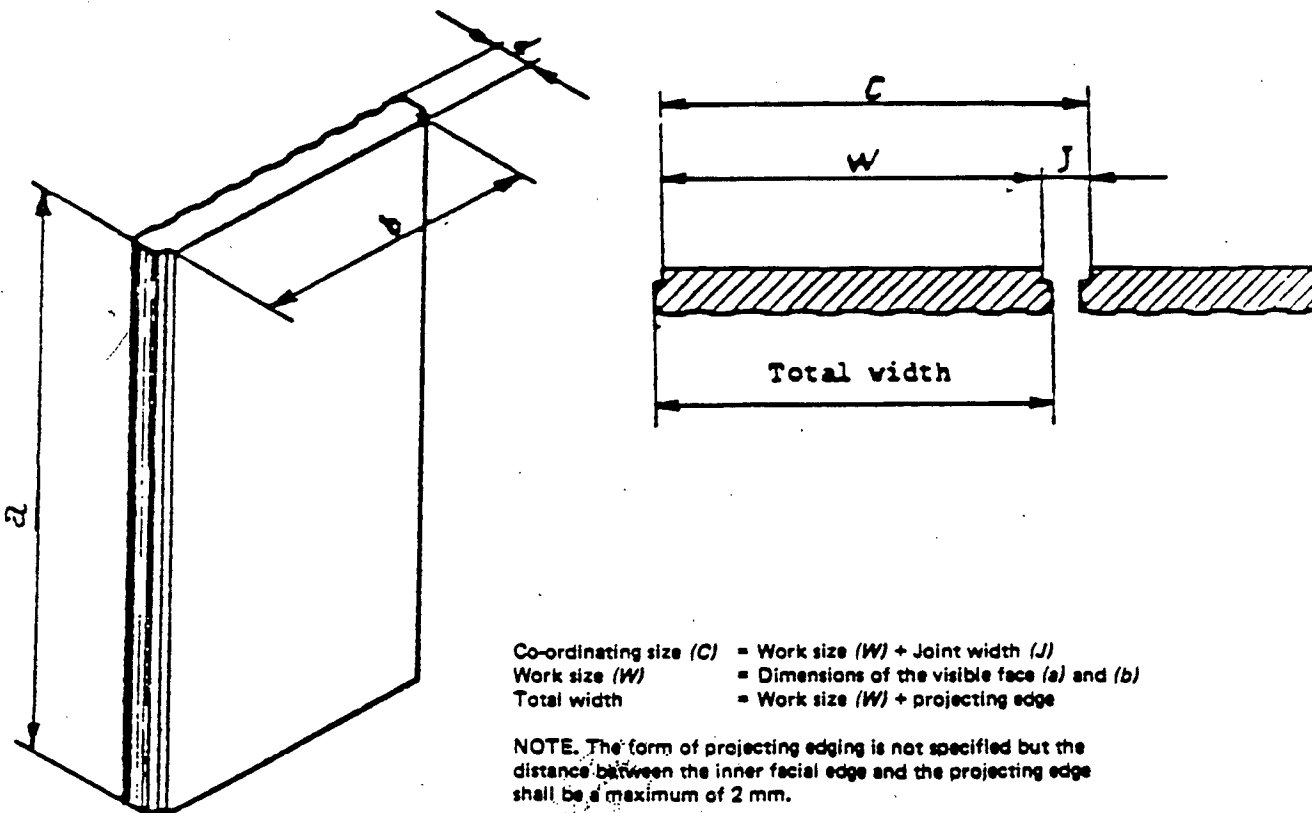


Figure 1. Split tile

Co-ordinating size (C) = Work size (W) + Joint width (J)
 Work size (W) = Dimensions of the visible face (a) and (b)
 Total width = Work size (W) + projecting edge

NOTE. The form of projecting edging is not specified but the distance between the inner facial edge and the projecting edge shall be a maximum of 2 mm.

Table 1. Modular preferred sizes for split tiles

Co-ordinating size (C) cm	Work size (W) mm		Thickness mm (d)
	Length (a)	Width (b)	
M 10 × 10 M 15 × 15 M 20 × 5 M 20 × 10 M 20 × 20 M 25 × 6,25 M 25 × 12,5 M 25 × 25 M 30 × 15 M 30 × 30	The manufacturer shall choose the work size in order to allow a nominal joint width of between 5 mm and 10 mm		The thickness shall be specified by the manufacturer

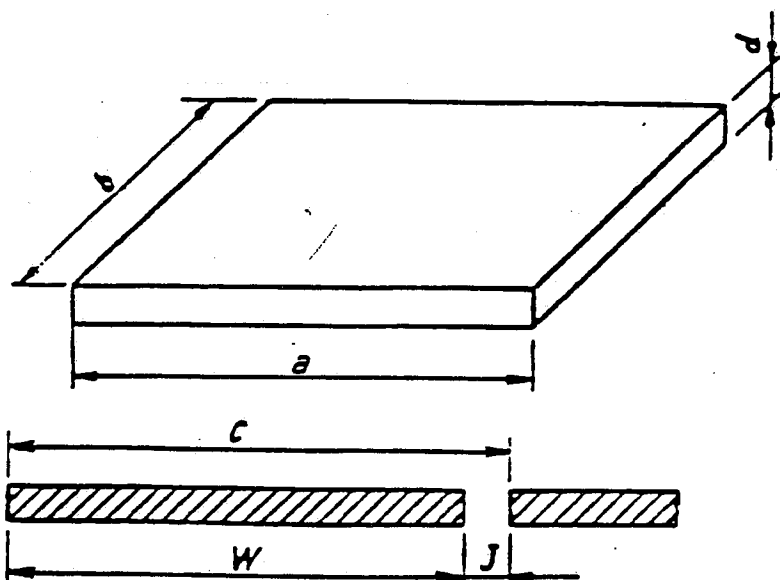
Table 2. Non-modular sizes for split tiles

The most common sizes are:

Nominal size (N) cm	Work size (W) mm		Thickness mm (d)
	Length (a)	Width (b)	
20 × 20 21,7 × 10,5 21,9 × 6,6 22 × 11 24 × 7,3 24 × 11,5 30 × 30	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 ± 3 mm		The thickness shall be specified by the manufacturer

4.2 Quarry tiles

For shapes and sizes see figure 2 and tables 3 and 4.



Co-ordinating size (C) = Work size (W) + Joint width (J)
Work size (W) = Dimensions (a) and (b)

Figure 2. Quarry tile

Table 3. Modular preferred sizes for quarry tiles

Co-ordinating size (C) cm	Work size (W) mm		Thickness mm (d)
	Length (a)	Width (b)	
M 10 × 10 M 15 × 15 M 20 × 5 M 20 × 10 M 20 × 20 M 25 × 12,5 M 25 × 25 M 30 × 15	The manufacturer shall choose the work size in order to allow a nominal joint width of between 3 mm and 11 mm		The thickness shall be specified by the manufacturer

Table 4. Non-modular sizes for quarry tiles

The most common sizes are:

Nominal size (N) cm	Work size (W) mm		Thickness mm (d)
	Length (a)	Width (b)	
13 × 13 14 × 14 15 × 15 15,2 × 7,6 15,2 × 15,2 18 × 18 20 × 10 20 × 20 20,3 × 20,3 22,9 × 22,9 26 × 13 28 × 14	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 ± 3 mm		The thickness shall be specified by the manufacturer

4.3 Other sizes

For extruded ceramic tiles with dimensions other than those given in the tables, the work size shall be stated by the manufacturer. The relevant requirements for work size and thickness given in the respective tables are applicable.

4.4 Accessories

Dimensions of accessories and their tolerances are not standardized and these shall be stated by the manufacturer where appropriate.

5 Requirements

Dimensional and surface quality requirements and physical and chemical properties shall be as given in table 5.

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

Table 5

	Split tiles	Quarry tiles	Test according to
Dimensions and surface quality			
<i>Length and width</i>			
e The deviation in % of the average size for each tile (2 or 4 sides) from the work size (<i>W</i>)	± 1,25	± 2	EN 98
f The deviation in % of the average size for each tile (2 or 4 sides) from the average size of the 10 test specimens (20 or 40 sides)	± 1,0	± 1,5	EN 98
<i>Thickness</i>			
The deviation in % of the average thickness of each tile from the work size thickness	± 10	± 10	EN 98
<i>Straightness of sides¹⁾ (facial sides)</i>			
The maximum deviation from straightness, in % related to the corresponding work sizes	± 0,5	± 0,6	EN 98
<i>Rectangularity¹⁾</i>			
The maximum deviation from rectangularity, in % related to the corresponding work sizes	± 1,5	± 1,0	EN 98
<i>Surface flatness</i>			
The maximum deviation from flatness in %			
(a) Centre curvature, related to diagonal calculated from the work sizes	± 0,5	± 1,5	EN 98
(b) Edge curvature, related to the corresponding work sizes	± 0,5	± 1,5	EN 98
(c) Warpage, related to diagonal calculated from the work sizes	± 0,8	± 1,5	EN 98
<i>Surface quality²⁾</i>	Min. 95 % of the tiles shall be free from visible defects that would impair the appearance of a major area of tiles		EN 98
Physical properties			
<i>Water absorption % by weight</i>	Average 3 < E < 6 Individual max. 6,5	Average 3 < E < 6 Individual max. 6,5	EN 99
<i>Modulus of rupture in N/mm²</i>	Average > 20 Individual min. 18	Average > 20 Individual min. 18	EN 100
<i>Scratch hardness of surface (Mohs)</i>			
(a) glazed tiles	min. 5	min. 5	EN 101
(b) unglazed tiles	min. 6	min. 6	

1) Not applicable for tiles having curved shapes.

2) Because of firing, slight variations from the standard colour are unavoidable. This does not apply to intentional irregularities of colour variation of the face of extruded tiles (which can be unglazed, glazed or partly glazed) or to the colour variation over a tile area, which is characteristic for this type of tile and desirable. Spots or coloured dots which are introduced for decorative purposes are not considered a defect.