



SLOVENSKI STANDARD SIST-TS CEN/TS 15209:2008

01-september-2008

Otipni indikatorji tlakovane površine iz betona, opeke in kamna

Tactile paving surface indicators produced from concrete, clay and stone

Taktile Bodenindikatoren gefertigt aus Beton, Ton und Stein

Spécifications relatives aux surfaces tactiles d'indication au sol

Ta slovenski standard je istoveten z: **CEN/TS 15209:2008**

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ICS:

11.180.30	Účel [{ [\ áä Á äæ [ää^Áæ	Aids and adaptations for reading
93.080.10	Gradnja cest	Road construction

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TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CEN/TS 15209

April 2008

ICS 11.180.30; 93.080.10

English Version

**Tactile paving surface indicators produced from concrete, clay
and stone**

Surfaces tactiles d'indication au sol en béton, terre cuite et
pierre naturelle

Taktile Bodenindikatoren gefertigt aus Beton, Ton und
Stein

This Technical Specification (CEN/TS) was approved by CEN on 18 September 2007 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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Contents

page

Foreword	3
Introduction	4
1 Scope.....	5
2 Normative references	5
3 Terms and definitions.....	5
3.1 General terms and definitions	5
3.2 Types of tactile paving surface indicators	6
4 Requirements for tactile paving surface indicators	7
4.1 Profile feature arrangement	7
4.2 Blister surface profile features	10
4.3 Rib surface profile features	15
4.4 Grooved surface profile features	20
5 Marking	22
Annex A (informative) Guide to the various applications of tactile surfaces in a number of European countries	23
Annex B (informative) Guide to the preferred dimensions for tactile paving surface indicator profiles for use in a number of European countries	32
Annex C (normative) Measurement of the dimensions of a single tactile paving unit.....	34
C.1 General.....	34
C.2 Width at base, WB.....	34
C.3 Width at top, WT.....	34
C.4 Spacing, S.....	35
C.5 Height, PH.....	35
C.6 Length at base of profile	35
C.7 Length at top of profile.....	36
C.8 Acceptance criteria	36
Bibliography	37

Foreword

This document (CEN/TS 15209:2008) has been prepared by Technical Committee CEN/TC 178 “Paving units and kerbs”, the secretariat of which is held by BSI.

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CEN/TS 15209:2008 (E)**Introduction****The nature of visual impairment**

The nature of visual loss varies considerably among individuals. Generally, the result of different eye conditions will lead to the following types of impairment:

- a limited field of vision, being unable to see to the sides or up and down;
- some loss of central vision limiting the ability to see fine detail;
- acute short-sightedness, seeing the world as a continuous blur;
- uncontrollable oscillations of the eyeball leading to an inability to see objects clearly;
- night blindness, a sensitivity to light and a tendency to be dazzled by glare.

Visually impaired people detect information about the environment by the use of non-visual features, for example, audible and tactile features. A loss of sight is not accompanied by an increase in the effectiveness of other non-visual senses. However, visually impaired people generally place more emphasis on information received via other senses, for example the sense of touch.

The use of tactile information (standards.iteh.ai)

When moving around the pedestrian environment, visually impaired people, using a range of mobility equipment including the long cane will actively seek and make use of paving surface tactile information, particularly detectable contrasts in surface texture.

The ability to detect contrasts in texture underfoot varies from one individual to another. For example, older visually impaired people and people who have lost their sight through certain medical conditions, such as diabetes, may well have reduced sensitivity in their feet.

It is important that tactile warning of potential hazards, e.g. a road crossing or a stair, are rigorous enough to be detectable by most people but without constituting a trip hazard or causing extreme discomfort.

Considering the walking speed and the length of one step by a visually impaired pedestrian, the 'width' of any warning surface is a critical parameter.

The importance of luminance contrast

In addition to tactile information those visually impaired people who have some residual vision will also make use of the luminance contrast between surfaces for orientation and guidance. Those characteristics can therefore be used by designers, planners, engineers and others involved in the design of the built and pedestrian environments to accentuate the presence of hazards and amenities.

This Technical Specification cannot deal with luminance contrast since it relies on the difference between adjacent surfaces which need not both be tactile surfaces. However, manufacturers should be aware of this issue in considering the range of colour and tones they provide in their tactile products.

1 Scope

This document specifies the nominal dimensions for surface profile features and patterns for the surfaces of pedestrian paving units, used to convey information for visually impaired people. It applies to paving units made of concrete, clay and stone.

This document does not specify requirements for visibility (colour, luminance contrast or profile) except where this visibility is provided by the tactile paving surface indicator. It does not specify material characteristics.

NOTE 1 See Introduction for an explanation for the exclusion of luminance contrast requirements.

NOTE 2 A guide to the various applications of tactile surfaces in a number of European countries is given in informative Annex A.

2 Normative references

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

EN 1339:2003, *Concrete paving flags — Requirements and test methods*

EN 1344:2002, *Clay pavers — Requirements and test methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 General terms and definitions

3.1.1

visually impaired

blind or partially sighted

3.1.2

profile feature

single component of a tactile paving surface indicator

NOTE For example: dome, flat-topped dome, cylinder, bar or cuboid.

3.1.3

tactile paving surface indicator

profiled paving finish used to convey information to visually impaired pedestrians about hazards and amenities

CEN/TS 15209:2008 (E)

3.2 Types of tactile paving surface indicators

3.2.1

blister surface – type B1

profiled paving finish comprising raised rows of domes, flat-topped domes, flat-topped pyramids or cylinders

3.2.2

blister surface – type B2

profiled paving finish comprising raised off-set rows of domes, flat-topped domes or cylinders

3.2.3

blister surface – type B3

profiled paving finish comprising lozenge shapes with rounded edges

3.2.4

blister surface – type B4

profiled paving finish comprising raised lozenges

3.2.5

rib surface – type R1

profiled paving finish comprising parallel rounded bars running full width or diagonally on the unit

3.2.6

rib surface – type R2

profiled paving finish comprising flat-top bars with rounded ends running full width or diagonally on the unit

3.2.7

rib surface – type R3

profiled paving finish comprising flat-top bars running full width or diagonally on the unit

3.2.8

rib surface – type R4

profiled paving finish comprising trapezoidal shapes

3.2.9

rib surface – type R5

profiled paving finish comprising a continuous sine-like wave

3.2.10

rib surface – type R6

profiled paving finish comprising trapezoidal intermittent rib

3.2.11

grooved surface – type G1

profiled paving finish comprising flat grooves running full width of the unit

3.2.12

grooved surface – type G2

profiled paving finish comprising flat trapezoidal grooves running full width of the unit

3.2.13

complementary fitting

curved paving unit used to maintain the general profile paving finish between paving units

4 Requirements for tactile paving surface indicators

4.1 Profile feature arrangement

4.1.1 Dimension designation

4.1.1.1 General

The tables in Clause 4 detail the designations for product dimensions. However, 4.2 and 4.3 limit the possible combinations of designations.

NOTE Preferred dimensions for tactile paving surface indicator profiles for use in a number of European countries are given in informative Annex B.

Dimensions shall be determined in accordance with Annex C.

Dimensions shall conform to the acceptance criteria in Annex C.

4.1.1.2 Spacing

The spacing, **S**, of profile features within a single paving unit shall be in accordance with the following categories, with a permitted tolerance of (± 1 mm), and shall be defined as the dimension from centre-to-centre of the profile feature.

Table 1 — Spacing of profile features, **S**, in mm (even spacings only)

S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
≥ 10 to < 15	≥ 15 to < 20	≥ 20 to < 25	≥ 25 to < 30	≥ 30 to < 35	≥ 35 to < 40	≥ 40 to < 45	≥ 45 to < 50	≥ 50 to < 55	≥ 55 to < 60	≥ 60 to < 65
S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22
≥ 65 to < 70	≥ 70 to < 75	≥ 75 to < 80	≥ 80 to < 85	≥ 85 to < 90	≥ 90 to < 95	≥ 95 to < 100	≥ 100 to < 105	≥ 105 to < 110	≥ 135 to < 145	≥ 195 to < 205

Unless specified otherwise, the spacing, **S**, shall be uniform, determined centre-to-centre and independent of direction.

4.1.1.3 Width

Within a single paving unit, the profile feature width at base and the profile feature width at top (**WB** and **WT** respectively) shall be in accordance with the following categories with a permitted tolerance of (± 1 mm):

CEN/TS 15209:2008 (E)

Table 2 — Width of profile feature at base, WB in mm

WB1	WB2	WB3	WB4	WB5	WB6	WB7	WB8
1 to < 5	≥ 5 to < 10	≥ 10 to < 15	≥ 15 to < 20	≥ 20 to < 25	≥ 25 to < 30	≥ 30 to < 35	≥ 35 to < 40
WB9	WB10	WB11	WB12	WB13	WB14	WB15	WB16
≥ 40 to < 45	≥ 45 to < 50	≥ 50 to < 55	≥ 55 to < 60	≥ 60 to < 65	≥ 65 to < 70	≥ 70 to < 75	≥ 80 to < 85

Table 3 — Width of profile feature at top, WT in mm

WT0	WT1	WT2	WT3	WT4	WT5	WT6	WT7
0 to < 5	1 to < 5	≥ 5 to < 10	≥ 10 to < 15	≥ 15 to < 20	≥ 20 to < 25	≥ 25 to < 30	≥ 30 to < 35
WT8	WT9	WT10	WT11	WT12	WT13	WT14	WT15
≥ 35 to < 40	≥ 40 to < 45	≥ 45 to < 50	≥ 50 to < 55	≥ 55 to < 60	≥ 60 to < 65	≥ 65 to < 70	≥ 70 to < 75

NOTE WT0 indicates a dome. A cylinder or square requires WT = WB.

4.1.1.4 Length

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Within a single paving unit, the profile feature length at base and profile feature length at top, where applicable, shall be in accordance with the following categories, or as specified.

Table 4 — Length of profile feature at base

LB1	LB2	LB3	LB4
25 mm	26 mm	80 mm	150 mm

Table 5 — Length of profile feature at top

LT1	LT2	LT3	LT4
15 mm	20 mm	50 mm	120 mm

4.1.1.5 Spacing length

Lengths of profile features shall be split into two or more sections, separated by profile gaps PG as specified (± 1 mm).

Table 6 — Length of profile gap

PG1	PG2	PG3	PG4
10 mm	13 mm	30 mm	50 mm

4.1.1.6 Profile height

Within a single paving unit, the profile height shall be in accordance with the following categories.

Table 7 — Profile height

PH1	PH2	PH3	PH4
3 mm	4 mm	5 mm	6 mm

4.1.1.7 Profile rounded ends

The radius at top and base for rounded end profiles shall be in accordance with the following categories.

Table 8 — Profile radius at top

PRT1	PRT2
≥ 10 mm to ≤ 15 mm	≥ 40 mm to < 45 mm

Table 9 — Profile radius at base

PRB 1
≥ 40 mm to 45 mm

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4.1.2 Continuity of finished surface

Tactile paving units shall be manufactured so that the profile of the tactile paving surface indicator is maintained across individual units, such that the spacing between profile features at the edges of adjoining units is within the range of 0,5 S to 1,6 S (see Figure 1).

NOTE Where possible, profiled paving units should be manufactured in such a way that the profile of the whole finished surface has the same dimensions as the profile of the individual units including any joints, i.e. spacing S is maintained between the centre of profile features at the edges of adjoining units.

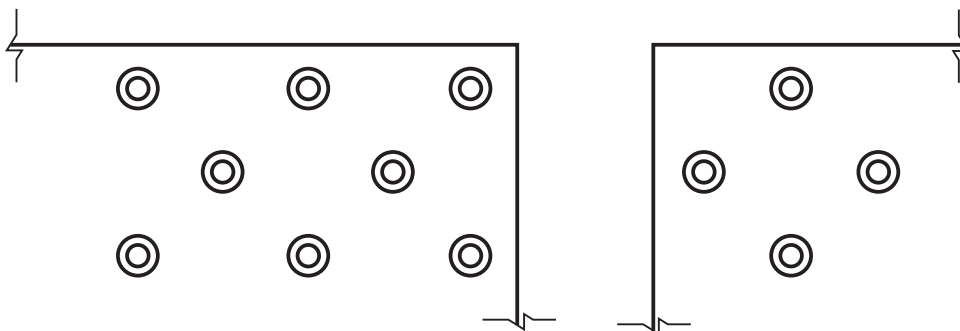


Figure 1 — Continuity of finished surface

CEN/TS 15209:2008 (E)

4.2 Blister surface profile features

4.2.1 Type B1

The profile features of blister surface – type 1 shall be arranged so as to meet the requirement of 4.1.2 and shall have the following dimensions, in accordance with 4.1.1:

- width at base WB6 to WB8 (≥ 25 mm to < 40 mm), or WB12 (≥ 55 mm to < 60 mm);
- width at top WT0 (0 mm), or WT3 (≥ 10 mm to < 15 mm) to WT8 (≥ 25 mm to < 40 mm);
- spacing S7 to S14 (≥ 40 mm to < 80 mm);
- profile height PH1 to PH3 (3 mm to 5 mm).

An example of Type B1 is given in Figures 2 and 3.

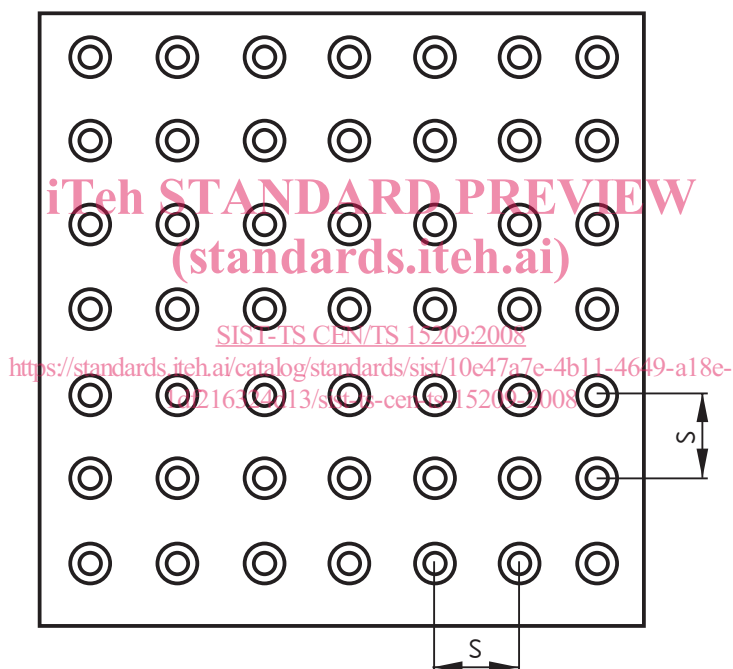


Figure 2 — Example of blister surface – type B1