SLOVENSKI STANDARD
oSIST ISO/DIS 10545-6:2009

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Keramiļ ne ploģļ ice - 6. del: Doloļ anje odpornosti neloģļ enih ploģļ ic proti globinski obrabi

Ceramic tiles -- Part 6: Determination of resistance to deep abrasion for unglazed tiles

Carreaux et dalles céramiques -- Partie 6: Détermination de la résistance à l'abrasion profonde pour les carreaux non émaillés

Ta slovenski standard je istoveten z: ISO/DIS 10545-6

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91.100.23	Keramiļ ne ploģļ ice	Ceramic tiles

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Ceramic tiles —

Part 6:
Determination of resistance to deep abrasion for unglazed tiles

Carreaux et dalles céramiques —

Partie 6: Détermination de la résistance à l'abrasion profonde pour les carreaux non émaillés

[Revision of first edition (ISO 10545-6:1995)]

ICS 91.100.23

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Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 10545-6 was prepared by Technical Committee ISO/TC 189, *Ceramic Tiles*, Subcommittee SC , .

This second edition cancels and replaces the first edition (ISO 10545-6:1995), subclause 4.3 which has been technically revised.

ISO 10545 consists of the following parts, under the general title *Ceramic Tiles* — :

— *Part 1: Sampling and basis for acceptance*

— *Part 2: Determination of dimensions and surface quality*

— *Part 3: Determination of water absorption, apparent porosity, apparent relative density and bulk density*

— *Part 4: Determination of modulus of rupture and breaking strength*

— *Part 5: Determination of impact resistance by coefficient of restitution*

— *Part 6: Determination of resistance to deep abrasion for unglazed tiles*

— *Part 7: Determination of resistance to surface abrasion for glazed tiles*

— *Part 8: Determination of linear thermal expansion*

— *Part 9: Determination of resistance to thermal shock*

— *Part 10: Determination of moisture expansion*

— *Part 11: Determination of crazing resistance for glazed tiles*

— *Part 12: Determination of frost resistance*

— *Part 13: Determination of chemical resistance*

— *Part 14: Determination of resistance to stains*

— *Part 15: Determination of lead and cadmium given off by glazed tiles*

— *Part 16: Determination of small colour differences*

Ceramic tiles —

Part 6:
Determination of resistance to deep abrasion for unglazed tiles

1 Scope

This part of IS0 10545 specifies a test method for determining the resistance to deep abrasion of all unglazed ceramic tiles used for floor coverings.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of IS0 10545. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of IS0 10545 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and IS0 maintain registers of currently valid International Standards.

IS0 630:1995, Structural steels - Part 1: Plates, wide flats, bars, sections and profiles.

IS0 8486:1996, Bonded abrasives - Grain size analysis - Designation and determination of grain size distribution - Part 1: Macrogrits F 4 to F 220.

3 Principle

Determination of the abrasion resistance of unglazed tiles by measuring the length of the groove produced in the proper surface by means of a rotating disc, under given conditions and with the use of abrasive material.

4 Apparatus

4.1 Abrasion apparatus

The abrasion apparatus, see figure 1, consists essentially of a rotating disc, a storage hopper with a dispensing device for the abrasive material, a test specimen support and a counterweight.

The disc is made of E 235 A (Fe 360 A) (IS0 630-1) with a diameter of (200 $\pm$ 0,2) mm and thickness at the edge of (10 $\pm$ 0,1) mm, and with a revolution rate of 75 revolutions/min.

The pressure with which the test specimens are held against the steel disc is determined by calibrating the apparatus against transparent fused silica. The pressure is adjusted such that, after 150 revolutions using F 80 (IS0 8486-1) abrasive, a chord of (24 $\pm$ 0,5) mm is produced. Transparent fused silica shall be used as a primary standard. A secondary standard of float glass or other products may be used.

When the diameter has worn by 0,5 % of the initial diameter, the steel disc shall be replaced.

4.2 Measuring gauge,

The measuring gauge should be accurate to 0,1 mm.

4.3 Abrasive material:

White fused aluminium oxide of grain size F 80, according to IS0 8486-1.

NOTE: white fused aluminium oxide with a nominal grain size of F80 may be used provided that the apparatus is appropriately calibrated

5 Test specimens

6 Types of test specimens

Tests shall be carried out using whole tiles or test specimens of suitable dimensions. Before testing, small specimens shall be fixed with an adhesive onto a larger background, avoiding joints.

6.1 Preparation of test specimens

Clean, dry test specimens shall be used.

6.2 Number of test specimens

A minimum of five test specimens shall be tested.

7 Procedure

Place a test specimen in the apparatus (4.1) so that it is tangential against the rotating disc. Ensure that abrasive material (4.3) is fed uniformly into the grinding zone at a rate of (100 ± 10) g/100 revolutions.

Rotate the steel disc for 150 revolutions. Remove the test specimen from the apparatus and measure the chord length L of the groove to the nearest 0,5 mm (see Figure 2). Test each test specimen on its proper surface, in at least two places at right angles to each other.

In the case of relief surfaces interfering with the determination of the abrasion resistance, the projections may be ground off, but the results of the test will not be the same as for similar tiles having plane surfaces.

Do not re-use the abrasive material.

8 Expression of results

The resistance to deep abrasion is expressed as the volume, V, in cubic millimetres, of material removed, and is calculated from the chord length L of the groove using the equation

$$V = \left(\frac{\pi\alpha}{180} - \sin\alpha\right) * \left(\frac{h * d^2}{8}\right)$$

with

$$\sin(0{,}5\alpha) = \frac{L}{d}$$

where

α is the angle, in degrees, subtended at the centre of the rotating disc by the chord (see figure 2);