



# SLOVENSKI STANDARD SIST EN ISO 10545-8:1998

01-april-1998

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## Keramične ploščice - 8. del: Ugotavljanje linearnega toplotnega raztezka

Ceramic tiles - Part 8: Determination of linear thermal expansion (ISO 10545-8:1994)

Keramische Fliesen und Platten - Teil 8: Bestimmung der linearen thermischen Dehnung (ISO 10545-8:1994)

Carreaux et dalles céramiques - Partie 8: Détermination de la dilatation linéique d'origine thermique (ISO 10545-8:1994) (standards.iteh.ai)

Ta slovenski standard je istoveten z: <sup>SIST EN ISO 10545-8:1998</sup> EN ISO 10545-8:1996  
<https://standards.iteh.ai/catalog/standards/sist/d645f4bc-317e-47dc-8cc1-b18f64aa03e8/sist-en-iso-10545-8-1998>

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### ICS:

91.100.23      Keramične ploščice      Ceramic tiles

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EUROPEAN STANDARD

EN ISO 10545-8

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 1996

ICS 91.100.20

Supersedes EN 103:1991

Descriptors: ceramics, tiles, tests, determination, thermal expansion

English version

**Ceramic tiles - Part 8: Determination of linear thermal expansion (ISO 10545-8:1994)**

Carreaux et dalles céramiques - Partie 8:  
Détermination de la dilatation linéique  
d'origine thermique (ISO 10545-8:1994)

Keramische Fliesen und Platten - Teil 8:  
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This European Standard was approved by CEN on 1996-01-14. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**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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### Foreword

The text of the International Standard from Technical Committee ISO/TC 189 "Ceramic tiles" of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 67 "Ceramic tiles", the secretariat of which is held by UNI.

This European Standard replaces EN 103:1991.

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 measurement of 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: Extraction of lead and cadmium from glazed tiles
- Part 16: Determination of colour differences
- Part 17: Determination of coefficient of friction

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 February 1997, and conflicting national standards shall be withdrawn at the latest by February 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of 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.

### Endorsement notice

The text of the International Standard ISO 10545-8:1994 has been approved by CEN as a European Standard without any modification.

INTERNATIONAL  
STANDARD

**ISO**  
**10545-8**

First edition  
1994-08-15

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**Ceramic tiles —**

**Part 8:**

Determination of linear thermal expansion

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*Carreaux et dalles céramiques —*

*Partie 8. Détermination de la dilatation linéique d'origine thermique*

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Reference number  
ISO 10545-8:1994(E)

**ISO 10545-8:1994(E)****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.

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.

International Standard ISO 10545-8 was prepared by Technical Committee ISO/TC 189, *Ceramic tile*.

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 measurement of 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*

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- 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: Extraction of lead and cadmium from glazed tiles
- Part 16: Determination of colour differences
- Part 17: Determination of coefficient of friction

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# Ceramic tiles —

## Part 8:

## Determination of linear thermal expansion

### 1 Scope

This part of ISO 10545 defines a test method for determining the coefficient of linear thermal expansion of ceramic tiles.

NOTE 1 ISO 13006:—, *Ceramic tiles — Definitions, classification, characteristics and marking* (to be published), provides property requirements for tiles and other useful information on these products.

### 2 Principle

Determination of the linear thermal expansion coefficient for the temperature range from ambient temperature to 100 °C.

### 3 Apparatus

**3.1 Suitable thermal expansion apparatus**, capable of a rate of heating of  $(5 \pm 1)$  °C/min with uniform distribution of heat to a test specimen. Certain types of apparatus require a soaking time at 100 °C.

**3.2 Vernier calipers**, or other suitable device.

**3.3 Drying oven**, capable of being operated at  $(110 \pm 5)$  °C. Microwave, infrared or other drying systems may be used provided that it has been determined that equal results are obtained.

**3.4 Desiccator**.

### 4 Test specimens

Cut two test specimens at right angles from the central portion of one tile so that their lengths are suitable for the apparatus. The ends of the test specimens shall be ground flat and parallel.

If necessary, grind the test specimens so that the length of any side in cross-section is less than 6 mm and the area of cross-section is greater than 10 mm<sup>2</sup>. The minimum length of the test specimens should be 50 mm. In the case of glazed tiles, the glaze shall not be ground off the test specimens.

### 5 Procedure

Dry the test specimens at  $(110 \pm 5)$  °C until they reach constant mass; i.e. when the difference between two successive weighings at intervals of 24 h is less than 0,1 %. Allow them to cool in the desiccator (3.4) at ambient temperature.

Using vernier calipers (3.2), determine the lengths to an accuracy of 0,002 times the length.

Place a test specimen in the apparatus (3.1) and record the ambient temperature.

Initially, and throughout the heating procedure, measure the length to an accuracy of 0,01 mm. Take temperature and length measurements at temperature intervals of no more than 15 °C.

The rate of heating shall be  $(5 \pm 1)$  °C/min.