INTERNATIONAL STANDARD

ISO 10545-11

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Ceramic tiles —

Part 11:
Determination of crazing resistance for glazed tiles

Carreaux et dalles céramiques —

Partie 11: Détermination de la résistance au tressaillage pour les carreaux émaillés

Reference number
ISO 10545-11:1994(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 10545-11 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*

Ceramic tiles —

Part 11:
Determination of crazing resistance for glazed tiles

1 Scope

This part of ISO 10545 defines a test method for determining the crazing resistance of all glazed ceramic tiles except when the crazing is an inherent decorative feature of the product.

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 Definition

For the purposes of this part of ISO 10545, the following definition applies.

2.1 craze: Crack, showing as a fine hairline, limited to the glazed surface of a tile.

3 Principle

Determination of the resistance to the formation of crazes by subjecting whole tiles to steam at high pressure in an autoclave, then examination of the tiles for crazes after applying a stain to the glazed faces.

4 Apparatus

4.1 Autoclave, of sufficient internal volume to accommodate five tiles with adequate separation. Ideally, the steam is fed from an external source in order to maintain a pressure of (500 ± 20) kPa, that is, a steam temperature of (159 ± 1) °C for 2 h.

Alternatively, a directly heated autoclave may be used.

5 Test specimens

5.1 A minimum of five whole tiles shall be tested.

5.2 Exceptionally large tiles may be cut into pieces for enclosure in the autoclave, but all pieces shall be tested. The cut pieces shall be as large as possible.

6 Procedure

6.1 First examine the tiles for visible defects by viewing them with the naked eye (or with the aid of spectacles if usually worn) from a distance of 25 cm to 30 cm under an illumination of approximately 300 lx. All test specimens shall be free from crazing at the commencement of the test. The methylene blue solution described in 6.3 may be used to detect pretest crazing. Except in the case of freshly fired tiles being tested as part of a routine in-house quality assurance programme, the tile shall be prepared by reheating to (500 ± 15) °C at a rate not greater than 150 °C/h and with a soak of not less than 2 h.

6.2 Place the test specimens in the autoclave (4.1) in such a way that there is air space between them. Raise the pressure in the autoclave gradually for a period of 1 h until it reaches (500 ± 20) kPa, (159 ± 1) °C, and maintain this pressure for 2 h. Then turn off the steam source (or the heat supply in the case of directly heated autoclaves), allow the pressure to fall as rapidly as possible to atmospheric and cool the test specimens in the autoclave for 0,5 h. Bring the test specimens into the laboratory atmosphere,

place them singly on a flat surface and allow them to cool for a further period of 0,5 h.

6.3 Brush a suitable stain, such as a 1 % aqueous solution of methylene blue containing a small quantity of wetting agent, on to the glazed surfaces of the test specimens. After 1 min, wipe off the stain with a damp cloth.

6.4 Examine the test specimens for crazes, taking care to avoid confusing crazes with scratches and ignoring cracks.

7 Test report

The test report shall include the following information:

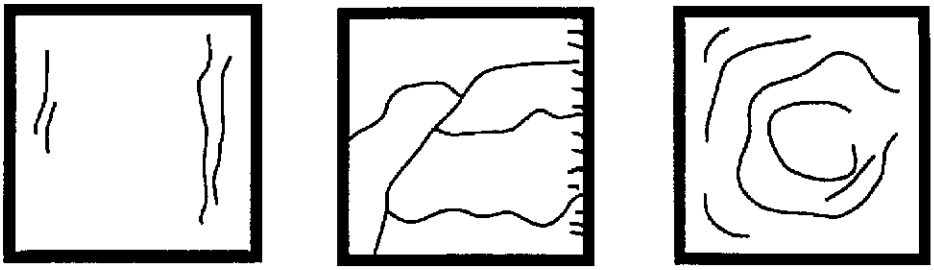
a) reference to this part of ISO 10545;

b) a description of the tiles;

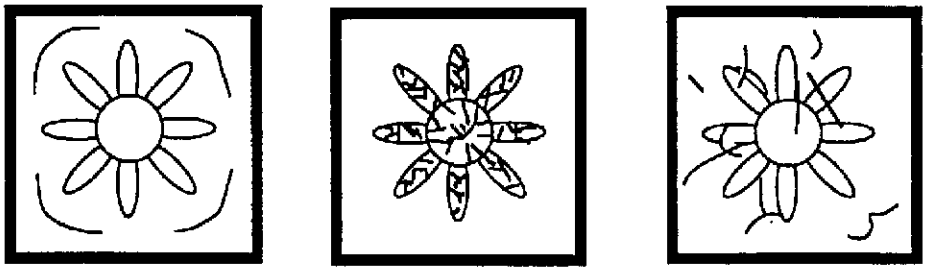
c) the number of test specimens;

d) the number of test specimens showing crazing;

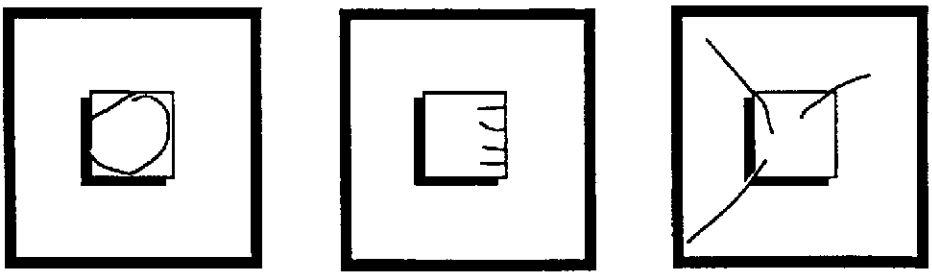
e) a description of the crazing (written text, drawing or photograph).



Plain tiles



Decorated tiles



Relief-surfaced tiles

NOTE — Any resemblance to existing tiles is purely coincidental.

Figure 1 — Examples of crazes

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Descriptors: ceramics, enamelled ceramic, tiles, tests, cracking tests, determination, crazing resistance.

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