
Ceramic tiles — Definitions, classification, characteristics and marking

*Carreaux et dalles céramiques — Définitions, classification,
caractéristiques et marquage*

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see: www.iso.org/iso/foreword.html.

This document was prepared by ISO/TC 189, *Ceramic tile*.

This third edition cancels and replaces the second edition (ISO 13006:2012), which has been technically revised.

This main changes compared to the previous edition are as follows:

- The boiling method in ISO 10545-3 is no longer referenced for the determination of water absorption. The vacuum method is now referenced for the determination of water absorption.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Ceramic tiles — Definitions, classification, characteristics and marking

1 Scope

This document defines terms and establishes classifications, characteristics and marking requirements for ceramic tiles of the best commercial quality (first quality). This document is not applicable to tiles made by other than normal processes of extrusion or dry pressing. It is not applicable to decorative accessories or trim such as edges, corners, skirting, capping, coves, beads, steps, curved tiles and other accessory pieces or mosaics (i.e. any piece that can fit into a square, the side of which is less than 7 cm).

NOTE ISO 10545 (all parts) describes the test procedures required to determine the product characteristics listed in this document. ISO 10545 is a multi-part standard, each part describes a specific test procedure or related matter.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 1006, *Building construction — Modular coordination — Basic module*

ISO 10545-1, *Ceramic tiles — Part 1: Sampling and basis for acceptance*

ISO 10545-2, *Ceramic tiles — Part 2: Determination of dimensions and surface quality*

ISO 10545-3, *Ceramic tiles — Part 3: Determination of water absorption, apparent porosity, apparent relative density and bulk density*

ISO 10545-4, *Ceramic tiles — Part 4: Determination of modulus of rupture and breaking strength*

ISO 10545-5, *Ceramic tiles — Part 5: Determination of impact resistance by measurement of coefficient of restitution*

ISO 10545-6, *Ceramic tiles — Part 6: Determination of resistance to deep abrasion for unglazed tiles*

ISO 10545-7, *Ceramic tiles — Part 7: Determination of resistance to surface abrasion for glazed tiles*

ISO 10545-8, *Ceramic tiles — Part 8: Determination of linear thermal expansion*

ISO 10545-9, *Ceramic tiles — Part 9: Determination of resistance to thermal shock*

ISO 10545-10, *Ceramic tiles — Part 10: Determination of moisture expansion*

ISO 10545-11, *Ceramic tiles — Part 11: Determination of crazing resistance for glazed tiles*

ISO 10545-12, *Ceramic tiles — Part 12: Determination of frost resistance*

ISO 10545-13, *Ceramic tiles — Part 13: Determination of chemical resistance*

ISO 10545-14, *Ceramic tiles — Part 14: Determination of resistance to stains*

ISO 10545-15, *Ceramic tiles — Part 15: Determination of lead and cadmium given off by glazed tiles*

ISO 10545-16, *Ceramic tiles — Part 16: Determination of small colour differences*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1006 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

ceramic tile

thin slab made from clays and/or other inorganic raw materials, generally used as covering for floors and walls, usually shaped by extruding (A) or pressing (B) at room temperature, but may be formed by other processes (C), then dried and subsequently fired at temperatures sufficient to develop the required properties

Note 1 to entry: Tiles may be glazed (GL) or unglazed (UGL); they are incombustible and are not affected by light.

3.2

porcelain tile

fully vitrified tile with water absorption coefficient less than or equal to a mass fraction of 0,5 %, belonging to groups AI_a and BI_a

3.3

glaze

vitrified covering that is impermeable

3.4

engobed surface

clay-based covering with a matt finish which may be permeable or impermeable

Note 1 to entry: A tile with an engobed surface is regarded as an unglazed tile.

3.5

polished surface

surface of glazed and unglazed tile which has been given a glossy finish by mechanical polishing as the last stage of manufacture

3.6

extruded tile

tile, whose body is shaped in the plastic state in an extruder, the column obtained being cut into tiles of pre-determined dimension, and which is designated as Group A

Note 1 to entry: This document classifies extruded tiles as “precision” or “natural”. The classification is dependent upon the different technical characteristics as listed in the individual product standards.

Note 2 to entry: Traditional terms used for extruded products are “split tiles” and “quarry tiles”. They commonly indicate double-extruded and single-extruded tiles, respectively. The term “quarry tiles” only refers to extruded tiles with a water absorption coefficient of a mass fraction not exceeding 6 %.

3.7

dry-pressed tile

tile, formed from a finely milled body mixture and shaped (e.g. in dies or moulds) at high pressure, and which is designated as Group B

3.8

water absorption

E_v

percentage of water impregnating a tile

Note 1 to entry: This is measured in accordance with ISO 10545-3.

Note 2 to entry: Water absorption is expressed as a mass fraction of dry mass.

3.9 Sizes

Note 1 to entry The sizes are only defined for rectangular tiles. If the sizes of non-rectangular tiles are required, they are defined by the smallest rectangle into which they fit.

3.9.1

nominal size

size used to describe the product

Note 1 to entry: See [Figures 1](#) and [2](#).

3.9.2

work size

size of a tile specified for manufacturing to which the actual size shall conform within specified permissible deviations

Note 1 to entry: See [Figures 1](#) and [2](#).

3.9.3

actual size

size obtained by measuring the face of a tile

Note 1 to entry: This is measured in accordance with ISO 10545-2.

Note 2 to entry: See [Figures 1](#) and [2](#).

3.9.4

coordinating size

work size plus the joint width

Note 1 to entry: See [Figures 1](#) and [2](#).

3.9.5

modular size

tile and size based on module M, 2 M, 3 M and 5 M and also their multiples or subdivisions, except for tiles with a surface area of less than 9 000 mm²

Note 1 to entry: See ISO 1006, where 1 M = 100 mm.

Note 2 to entry: See [Figures 1](#) and [2](#).

3.9.6

non-modular size

size not based on module M

Note 1 to entry: See ISO 1006, where 1 M = 100 mm.

Note 2 to entry: Tiles of these sizes are those commonly used in most countries.

Note 3 to entry: See [Figures 1](#) and [2](#).

3.9.7

tolerance

difference between the permissible limits of size

Note 1 to entry: See [Figures 1](#) and [2](#).