Australian STANDARD®

Ceramic tiles

Method 4: Determination of modulus of rupture and breaking strength

STANDARDS Australia

AS ISO 10545.4:2020

This Australian Standard® was prepared by BD-044, Fixing of Ceramic, Natural and Reconstituted Stone Tiles. It was approved on behalf of the Council of Standards Australia on 24 February 2020.

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The following are represented on Committee BD-044:

Association of Consultants in Access Australia
Australian Ceramic Society
Australian Industry Group
Australian Institute of Waterproofing
Australian Stone Advisory Association
Australian Tile Council
CSIRO
Master Builders Australia
Surface Coatings Association Australia
Swimming Pool and Spa Association of Australia
TAFE NSW
Tiles and Tiling Industry Association Australia

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Ceramic tiles

Method 4: Determination of modulus of rupture and breaking strength

Originated as AS 4459.4—1997.
Revised and redesignated as AS ISO 10545.4:2020.

Preface

This Test Method was prepared by the Standards Australia Committee BD-044, Fixing of Ceramic, Natural and Reconstituted Stone Tiles to supersede AS 4459.4—1997, *Methods of sampling and testing ceramic tiles — Method 4: Determination of modulus of rupture and breaking strength*.

The objective of this Test Method is to specify a test method for determining the modulus of rupture and breaking strength of all ceramic tiles.

NOTE AS 13006 provides property requirements for tiles and other useful information on these products.

This Test Method is identical with, and has been reproduced from, ISO 10545-4:2019, *Ceramic tiles — Part 4: Determination of modulus of rupture and breaking strength*.

As this document has been reproduced from an International Standard, a full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms "normative" and "informative" are used in Standards to define the application of the appendices or annexes to which they apply. A "normative" appendix or annex is an integral part of a Standard, whereas an "informative" appendix or annex is only for information and guidance.

Contents

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 Technical Committee ISO/TC 189, *Ceramic tile.*

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.

This fourth edition cancels and replaces the third edition (ISO 10545-4:2014), which has been technically revised. The main changes compared to the previous edition are as follows:

— test specimens are tested in different format size according to their work size thickness that can be minor or greater/equal than 7,5 mm;

— the minimum number of specimen to be tested has been changed.

A list of all parts in the ISO 10545 series can be found on the ISO website.

Australian Standard®

Ceramic tiles

Method 4: Determination of modulus of rupture and breaking strength

1 Scope

This document specifies a test method for determining the modulus of rupture and breaking strength of all ceramic tiles.

NOTE ISO 13006 provides property requirements for tiles and other useful information on these products.

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 48-2, *Rubber, vulcanized or thermoplastic — Determination of hardness — Part 2: Hardness between 10 IRHD and 100 IRHD*

3 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
breaking load
F
force necessary to cause the test specimen to break, as read from the pressure gauge (see Figure 1)

3.2
breaking strength
S
force obtained by multiplying the *breaking load* (3.1) by the ratio (span between support rods)/(width of the test specimen)

3.3
modulus of rupture
R
quantity obtained by dividing the calculated *breaking strength* (3.2) by the square of the minimum thickness along the broken edge

3.4
work size thickness
thickness of the tile specified by the manufacturer