

STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 4459.10—1999

**Methods of sampling and testing ceramic tiles
Method 10: Determination of moisture expansion**

RECONFIRMATION NOTICE

Technical Committee BD-044 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 21 January 2016.

The following are represented on Technical Committee BD-044:

Australian Industry Group
Australian Stone Advisory Association
Australian Tile Council
Ceramic Tile Manufacturers Association of Australia
Institute of Building Consultants
Master Builders Australia
Master Glazed Wall & Floor Tile Layers Association of SA
Plastics and Chemicals Industries Association
Property Council of Australia
Surface Coatings Association Australia

NOTES

Australian Standard™

Methods of sampling and testing ceramic tiles

Method 10: Determination of moisture expansion

[ISO title: Ceramic tiles, Part 10: Determination of moisture expansion]

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee BD/44, Fixing of Ceramic Tiles.

This Standard is technically equivalent to and reproduced from ISO 10545-10:1995, *Ceramic tiles, Part 10: Determination of moisture expansion*.

This Standard is the result of consensus among the representatives on the Joint Committee that it be produced as an Australian Standard.

Appendix ZA details variations to ISO 10545-10:1995 for Australian conditions. Explanation for the basis of these variations is as follows:

Clauses 6.1 and 6.2 have been modified to adopt accepted laboratory practices that permit greater precision and reproducibility.

Appendix ZB provides guidelines for testing tiles where it is suspected that the tiles may have contributed to a differential movement failure.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

For the purpose of this Australian Standard, the ISO/IEC text should be modified as follows:

- (a) *Terminology* The words 'Australian Standard' should replace the words 'International Standard' wherever they appear.
- (b) *Decimal marker* A full point should be substituted for a comma where it appears as a decimal marker.

METHOD

1 Scope

This part of ISO 10545 specifies a method for determining the moisture expansion of ceramic tiles.

2 Definition

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

2.1 Moisture expansion: Proportional accelerated expansion that results from subjecting reheated tiles to extended immersion in boiling water.

3 Principle

Determination of accelerated moisture expansion by subjecting a reheated tile to boiling water and measuring the proportional change in length.

4 Apparatus

4.1 A suitable type of measuring frame, fitted with a micrometer, dial gauge, transducer or similar device, with an accuracy of at least 0,01 mm.

4.2 Reference bars of nickel steel (Invar), of approximately the same length as the test specimens, fitted with an insulated grip.

4.3 Kiln, capable of firing up to 600 °C at a rate of temperature rise of 150 °C/h and with a control over the temperature of ± 15 °C.

4.4 Vernier callipers, or other suitable apparatus for linear measurement to the nearest 0,5 mm.

4.5 Boiling apparatus, for maintaining the test specimens in boiling deionized or distilled water for 24 h.

5 Test specimens

A sample consists of five whole tiles. If the size of the measuring frame is such that whole tiles do not fit, a test specimen shall be cut from the centre of each tile with a minimum length of 100 mm, a minimum width of 35 mm and the thickness of the tile.

In the case of extruded tiles, the length of the test specimens shall be in the direction of the extrusion.

The test specimens shall be prepared as required for the chosen measuring device (4.1).

6 Procedure

6.1 Refiring

Refire the test specimens in a kiln (4.3) with a rate of temperature rise of 150 °C/h and a 2 h step at (550 ± 15) °C. Allow the test specimens to cool inside the kiln. Remove them when the temperature falls to (70 ± 10) °C and then keep them at room temperature for 24 h to 32 h in a dry desiccator. Should any of the tiles crack on refiring, carry out a further refiring on a fresh tile with slower heating and cooling rates.

Determine the initial length of each test specimen, to the nearest 0,5 mm, by comparing with a reference bar of nickel steel (4.2). Measure the test specimen twice, with 3 h between measurements.