

STANDARDS AUSTRALIA

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**RECONFIRMATION**

**OF**

**AS 4459.3—1999**

**Methods of sampling and testing ceramic tiles**

**Method 3: Determination of water absorption, apparent porosity, apparent relative density and bulk density**

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**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™

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## Methods of sampling and testing ceramic tiles

### Method 3: Determination of water absorption, apparent porosity, apparent relative density and bulk density

[ISO title: Ceramic tiles, Part 3: Determination of water absorption, apparent porosity, apparent relative density and bulk density]

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#### 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 is reproduced from ISO 10545-3:1995, *Ceramic tiles, Part 3: Determination of water absorption, apparent porosity, apparent relative density and bulk density*, and Technical Corrigendum No. 1: 1997.

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

Appendix ZA details variations to ISO 10545-3:1995 for Australian conditions. Explanation for the basis of these variations are as follows:

- (a) Clause 4.4 has a report requirement added, which may explain differences in results due to cutting of tiles.
- (b) Clause 4.5 has been added to remove any uncertainty about the condition of tiles prior to testing.
- (c) A note has been added to Clause 5 to reflect normal prudent laboratory practice.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

The changes to ISO 10545:1995 are indicated as follows:

- (i) Technical Corrigendum No. 1: 1997—by a single marginal bar.
- (ii) Appendix ZA—by a double marginal bar.

The marginal bars are set adjacent to the clause, table, figure, or part thereof.

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 methods for determining water absorption, apparent porosity, apparent relative density and bulk density of ceramic tiles.

There are two methods of obtaining impregnation with water of the samples' open pores: boiling and immersion under vacuum. Boiling will impregnate open pores that are easily fillable; the vacuum method fills almost all the open pores.

The boiling method shall be used for classification of tiles and product specifications. The vacuum method shall be used for apparent porosity, apparent relative density and water absorption for purposes other than classification.

### 2 Principle

Impregnation of dry tiles with water and then suspension in water. Calculation of the listed properties using the relationships between the dry, saturated and suspended masses.

### 3 Apparatus

**3.1 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 the same results are obtained.

**3.2 Heating apparatus**, constructed of suitable inert material, in which boiling takes place.

**3.3 Source of heat.**

**3.4 Balance**, accurate to 0,01 % of the mass of a test specimen.

**3.5 Deionized or distilled water.**

**3.6 Desiccator.**

**3.7 Chamois leather.**

**3.8 Ware loop, halter or basket**, capable of supporting specimens under water for making suspended mass measurements.

**3.9 Glass beaker**, or similar container of size and shape such that the sample, when suspended from the balance (3.4) by the wire loop (3.8), is completely immersed in water, with the test specimen and the wire loop being completely free of contact with any part of the container.

**3.10 Vacuum chamber and vacuum system**, of sufficient capacity to accommodate the required number of test specimens and achieve and hold a vacuum of  $(100 \pm 1)$  kPa for 30 min.

### 4 Test specimens

**4.1** A sample of each type of tile under test shall consist of 10 whole tiles.