

ICS 91.100.25
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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 3810.9-2016

Replacing GB/T 3810.9-2006

**Test methods of ceramic tiles -- Part 9: Determination of
resistance to thermal shock**

陶瓷砖试验方法 第9部分：抗热震性的测定
(English Translation)

Issued on: April 25, 2016

Implemented on: March 1, 2017

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China**

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Foreword

GB/T 3810 "ceramic tile test method" is divided into 16 parts.

- Part 1. Sampling and receiving conditions;
- Part 2. Inspection of dimensions and surface quality;
- Part 3. Determination of water absorption, apparent porosity, apparent relative density and bulk density;
- Part 4. Determination of fracture modulus and failure strength;
- Part 5. Determining the impact resistance of a brick with a recovery factor;
- Part 6. Determination of wear depth of unglazed tiles;
- Part 7. Determination of abrasion resistance of glazed tiles;
- Part 8. Determination of linear thermal expansion;
- Part 9. Determination of thermal shock resistance;
- Part 10. Determination of wet expansion;
- Part 11. Determination of glaze resistance of glazed tiles;
- Part 12. Determination of frost resistance;
- Part 13. Determination of resistance to chemical corrosion;
- Part 14. Determination of resistance to contamination;
- Part 15. Determination of lead and cadmium elution of glazed tiles;

- Part 16. Determination of small chromatic aberration.

This part is part 9 of GB/T 3810.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 3810.9-2006 "Test methods for ceramic tiles Part 9. Determination of thermal shock resistance".

This section is the main change compared with GB/T 3810.9-2006 as follows.

- modified the requirements for low temperature sinks (see 4.1, version 4.1 of 4.1);
- modified the requirements for the sample (see Chapter 5, Chapter 5 of the 2006 edition);
- modified the test time requirements (see 6.4, 2006 version 6.4);
- modified the test procedure (see 6.4, 6.5, 2006 6.4).

This part uses the translation method equivalent to ISO 10545-9.:2013 "Ceramic tiles Part 9. Determination of thermal shock resistance" (English version).

In this part of the normative reference to the international documents have a consistent correspondence between the following documents.

Test methods for ceramic tiles GB/T 3810.3-2016 Test methods for ceramic tiles - Part 3. Water absorption, apparent porosity, apparent relative density and bulk density (ISO 10545-3.:1995, IDT).

This section makes the following editorial changes.

--- Standard name changed to "Ceramic tile test method Part 9. Determination of thermal shock resistance".

This section is proposed by the China Building Materials Federation.

This part of the National Building Sanitary Ceramics Standardization Technical Committee (SAC/TC249) centralized.

This part of the drafting unit. Xianyang Ceramic Research and Design Institute, Hangzhou Nobel Group Co., Ltd., Guangdong Mona Lisa New Materials Group Ltd., Guangdong Dongpeng Holding Co., Ltd., Ministry of Industry and Information Technology Building Sanitary Ceramics and Sanitary Ware Product Quality Control Technical Evaluation Laboratory.

1 Scope

This part of GB/T 3810 specifies the test method for thermal shock resistance of various types of ceramic tiles under normal conditions of use.

Unless otherwise approved, different test methods (submerged or non-submerged tests)

should be used depending on the water absorption.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article. For undated references, the latest edition (including all modifications) applies to this document.

ISO 10545-3 ceramic tiles Part 3. Determination of water absorption, apparent porosity, apparent relative density and bulk density (Ceramic tiles-Part 3. Determination of water absorption, apparent porosity, apparent relative density and bulk density)

3 Principle

The thermal shock resistance of the whole brick was measured by 10 cycles of the sample between 15 °C and 145 °C.

4.1 Low temperature water tank

Can maintain 15 °C ± 5 °C flow of water low temperature water tank. Such as water tank length 55cm, width 35cm, depth 20cm. Water flow is 4L/min.

Other suitable means may be used.

Immersion test. for testing according to the provisions of ISO 10545-3 water absorption of not more than 10% of the ceramic tiles. The sink is not covered, but the water is there. Enough depth, so that the brick can be completely submerged after vertical placement.

Non-immersion test. For the determination of ceramic tiles with a water absorption of greater than 10% (mass fraction) according to ISO 10545-3. Put in the sink. Place an aluminum plate and come into contact with the water. Then, aluminum particles having a particle size of 0.3 mm to 0.6 mm were covered on an aluminum plate, and the thickness of the aluminum particles was about 5mm.

4.2 Drying box

The working temperature is 145 °C ~ 150 °C.

5 Samples

Specimens should be randomly selected from the sample and tested with at least 5 pieces of the entire brick.

Note: For large bricks (ie, bricks longer than 400mm), it is necessary to cut, cut as large as possible, the center should be consistent with the original center. in case of doubt, use the whole brick to be accurate with the result of the cut brick.