

ICS 91.100.25

CCS Q 31



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

GB/T 3810.8-2016

Replacing GB/T 3810.8-2006

**Test methods of ceramic tiles -- Part 8: Determination of linear
thermal expansion**

陶瓷砖试验方法 第8部分：线性热膨胀的测定

(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**

Table of Contents

Foreword
1 Scope
2 Principle
3 Instruments
4 Sample
5 Steps
6 Results show

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 8 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 3810.8-2006 "Test methods for ceramic tiles Part 8. Determination of linear thermal expansion".

This part of the main changes compared with GB/T 3810.8-2006 as follows.

- modified measurement accuracy (see Chapter 5, Chapter 6 of the 2006 edition);
- increased requirements for calibration standard specimens (see Chapter 5);
- modify the result representation formula (see Chapter 6, Chapter 6 of the 2006 edition).

This part uses the translation method equivalent to ISO 10545-8.:2014 "Ceramic tiles Part 8. Determination of linear thermal expansion" (English version).

This section makes the following editorial changes.

--- Standard name changed to "Ceramic tile test method Part 8. Determination of linear thermal expansion".

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 the thermal expansion coefficient of ceramic tiles.

2 Principle

The linear thermal expansion coefficient was measured from the temperature range of room temperature to 100 ° C.

3 Instruments

3.1

thermal expansion device. heating rate of 5 °C/min $\pm$ 1 °C/min, so that the sample even heat, and can maintain a certain 100 °C time.

3.2

vernier caliper or other suitable measuring instruments.

3.3

Drying oven. can work at $110\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ temperature; can also be used to obtain the same test results of microwave, infrared or other dry system.

3.4

Dryers.

4 Sample

Two specimens were cut perpendicularly from the center of a brick so that the length of the sample was suitable for the test instrument. Both ends of the specimen should be flattened and parallel to each other.

If necessary, either side of the cross section of the specimen shall be ground to less than 6 mm and the area of the cross section shall be greater than 10 mm². The most of the sample Small length of 25mm. Do not wipe the glaze on the glazed tiles.

5 Steps

It is necessary for the equipment to provide a standard sample for calibration, which should be of the same size as the test sample.

The sample in the $110\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ drying oven to dry weight, that is, separated by 24 hours after the difference between the two weighing less than 0.1%, and then the sample Into the dryer (3.4) to cool to room temperature.

Measure the length of the specimen with a caliper (3.2), accurate to 0.002 times the length.

Place the sample in the thermal expansion apparatus (3.1) and record the room temperature at this time.

During the initial and full heating, the length of the sample was measured to an accuracy of 0.01 mm. Measured and recorded at intervals not exceeding $15\text{ }^{\circ}\text{C}$ Temperature and length values. The heating rate is $5\text{ }^{\circ}\text{C}/\text{min} \pm 1\text{ }^{\circ}\text{C}/\text{min}$.

6 Results show

Linear thermal expansion coefficient α_1 with 10^{-6} degrees Celsius ($10^{-6}\text{ }^{\circ}\text{C}^{-1}$), accurate to the decimal point after the first, according to formula (1) calculation.