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

GB/T 3810.4-2026

Replacing GB/T 3810.4-2016

**Test methods of ceramic tiles - Part 4: Determination of
modulus of rupture and breaking strength**

陶瓷砖试验方法 第4部分：断裂模数和破坏强度的测定

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 4 of GB/T 3810 "Test Methods for Ceramic Tiles". GB/T 3810 has already published the following parts.

- Part 1: Sampling and Acceptance 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 breaking strength;
- Part 5: Determining the impact resistance of bricks using the coefficient of restitution;
- Part 6: Determination of the wear resistance depth of unglazed tiles;
- Part 7: Determination of the abrasion resistance of glazed tile surfaces;
- Part 8: Determination of linear thermal expansion;
- Part 9: Determination of thermal shock resistance;
- Part 11: Determination of the resistance of glazed tiles to glaze cracking;

- Part 12: Determination of freeze resistance;
- Part 13: Determination of chemical resistance;
- Part 14: Determination of stain resistance;
- Part 15: Determination of lead and cadmium leaching from ceramic tiles;
- Part 16: Determination of small color differences;
- Part 18: Measurement of Light Reflectance (LRV);
- Part 20: Determination of deflection in the calculation of the radius of curvature of ceramic tiles.

This document replaces GB/T 3810.4-2016 "Test Methods for Ceramic Tiles - Part 4: Determination of Modulus of Rupture and Breaking Strength", and is consistent with...

Compared to GB/T 3810.4-2016, apart from structural adjustments and editorial changes, the main technical changes are as follows.

- a) A definition for "working dimension thickness" has been added (see 3.4);
- b) The requirement for "two cylindrical support rods" has been changed (see 5.3, 2016 version 5.3).
- c) The requirement for "hard brushing" has been added (see 5.5);
- d) The requirements for "samples" have been changed (see Chapter 6, Chapter 6 of the 2016 edition).
- e) The requirements for "result representation" have been changed (see Chapter 8, Chapter 8 in the 2016 edition).

This document is equivalent to ISO 10545-4:2019 "Ceramic tiles - Part 4: Determination of modulus of rupture and breaking strength".

The following minimal editorial changes have been made to this document.

--To harmonize with existing standards, the standard title has been changed to "Test Methods for Ceramic Tiles - Part 4: Modulus of Rupture and Breaking Strength".

Measurement;

--3.3 added the preferred term "bending strength" for "modulus of rupture" to facilitate the understanding and use of the standard.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Building Materials Federation.

This document is under the jurisdiction of the National Technical Committee on

Standardization of Building and Sanitary Ceramics (SAC/TC 249).

Introduction

The modulus of rupture and breaking strength of ceramic tiles are important indicators for evaluating their mechanical properties, and their standardization has attracted widespread attention both domestically and internationally.

This has attracted widespread attention. In this regard, the ISO 10545 series of standards developed by the International Organization for Standardization (ISO) are standards for test methods of ceramic tiles, and my country has already...

Domestic transformation work was carried out on this series of standards, and a corresponding national standard system GB/T 3810 "Test Methods for Ceramic Tiles" was established.

This document is Part 4 of GB/T 3810 "Test Methods for Ceramic Tiles", which aims to determine the mechanical properties of ceramic tiles, such as breaking strength.

GB/T 3810 "Test Methods for Ceramic Tiles" consists of 18 parts.

--Part 1: Sampling and Acceptance Conditions. The aim is to establish a sampling inspection system for ceramic tiles.

Product appearance quality.

--Part 3: Determination of water absorption, apparent porosity, apparent relative density, and bulk density. The aim is to establish indicators such as water absorption rate for ceramic tiles.

The standard testing method facilitates the classification of ceramic tiles.

--Part 4: Determination of modulus of rupture and breaking strength. The aim is to establish methods for testing the mechanical properties of ceramic tiles to evaluate their strength.

Mechanical properties of ceramic tiles.

--Part 5: Determining the Impact Resistance of Bricks Using the Coefficient of Restitution. The aim is to establish a method for testing the mechanical properties of ceramic bricks to evaluate...

The resistance of ceramic tiles to damage.

--Part 6: Determination of Abrasion Depth of Unglazed Tiles. The aim is to establish a method for testing the abrasion depth of unglazed tiles to evaluate their performance.

The ability to resist wear and tear.

--Part 7: Determination of Abrasion Resistance of Glazed Tile Surfaces. The aim is to establish a method for testing the abrasion resistance of glazed tile surfaces to evaluate

their performance.

Glazed tiles' ability to resist wear.

--Part 8: Determination of Linear Thermal Expansion. The aim is to establish a method for testing the linear thermal expansion coefficient of ceramic tiles in order to evaluate ceramic tiles.

High-temperature stability of bricks.

--Part 9: Determination of Thermal Shock Resistance. The aim is to establish a testing method for the thermal shock resistance of ceramic tiles to evaluate their ability to withstand thermal shock.

Resistance to damage under rapid temperature changes.

--Part 10: Determination of Moisture Expansion. The aim is to establish a method for testing the moisture expansion of ceramic tiles to evaluate their resistance to deformation.

ability.

--Part 11: Determination of Glaze Cracking Resistance of Glazed Tiles. The aim is to establish a testing method for the glaze cracking resistance of ceramic tiles in order to evaluate the performance of ceramic tiles.

Durability.

Qualitative analysis.

--Part 13: Determination of Chemical Resistance. The aim is to establish a testing method for the chemical resistance of ceramic tiles in order to evaluate the performance of ceramic tiles.

The brick's resistance to chemical corrosion.

--Part 14: Determination of Stain Resistance. The aim is to establish a testing method for the stain resistance of ceramic tiles in order to evaluate their resistance to staining.

staining ability.

--Part 15: Determination of Lead and Cadmium Leaching from Ceramic Tiles. The aim is to establish a method for testing the lead and cadmium leaching levels in glazed tiles.

Assess the safety of ceramic tiles.

--Part 16: Determination of Small Color Differences. The aim is to establish a testing method for small color differences between monochrome ceramic tiles in order to evaluate the quality of ceramic tiles.

Appearance quality.