

ICS 91.100.60

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

GB/T 33011-2026

Replacing GB/T 33011-2016

**Thermal insulating products for building applications -
Determination of freeze-thaw resistance**

建筑用绝热制品 抗冻融性能的测定

(English Translation)

Issued on: April 30, 2026

Implemented on: November 1, 2026

Issued by: State Administration for Market Regulation

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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 replaces GB/T 33011-2016 "Determination of Freeze-Thaw Resistance of Thermal Insulation Products for Buildings" and is consistent with GB/T 33011-2016.

Aside from structural adjustments and editorial changes, the main technical changes are as follows.

- a) The applicability provisions in the "Scope" section have been removed (see Chapter 1 of the 2016 edition);
- b) Added provisions for automatic procedures to the "Principles" section (see Chapter 4);
- c) The requirements for the test chamber in the "Water Tank" section have been added (see 5.2);
- d) Added requirements to the "Test Specimens" section (see 6.1).

This document adopts ISO 16546:2020 "Determination of freeze-thaw resistance of building insulation products".

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 Thermal Insulation Materials (SAC/TC191).

1 Scope

This document describes the determination of the compressibility and compressibility of thermal insulation products under repeated cycles between -20°C drying conditions and 20°C immersion conditions.

Equipment and testing methods for moisture content variation.

This document aims to simulate the freeze-thaw effects experienced by insulation products frequently exposed to water and low-temperature environments, such as inverted roofs and unexposed...

Protective ground insulation system.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

Note: GB/T 30807-2025 Determination of long-term water absorption of building insulation products by immersion method (ISO 16535:2019, IDT) Note. GB/T 13480-2014 Determination of compressive properties of thermal insulation products for building (ISO 29469:2008, IDT)

3 Terms and Definitions

The following terms and definitions apply to this document.

Freeze-thaw resistance the ability of a product to withstand repeated soaking and freezing conditions is quantitatively characterized by changes in water absorption and compression performance.

4 Principles

The experiment was conducted in an automated manner, continuously cycling between specified conditions.

Freeze-thaw resistance was determined by measuring the absorbance of the specimen after 300 consecutive cycles from a -20°C drying condition to a 20°C immersion condition.

The determination is based on changes in water volume and changes in compressive strength or compressive stress. The test should be combined with any one of the following long-term water absorption tests.

- a) Water absorption test by diffusion method according to ISO 16536;
- b) Immersion water absorption test according to ISO 16535.

The selected long-term water absorption test a) and/or b) depends on the intended use of the product and is given in the relevant product standard. Freezing in it occurs in the air, or it melts in the water.