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

GB/T 21332-2025

Replacing GB/T 21332-2008

**Rigid cellular plastics - Determination of water vapour
transmission properties**

硬质泡沫塑料 水蒸气透过性能的测定

(English Translation)

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Table of Contents

Foreword
1 Scope
2 Normative references
3 Terms and Definitions

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 supersedes GB/T 21332-2008 "Determination of Water Vapor Permeability of Rigid Foamed Plastics", and is consistent with GB/T 21332-2008.

In comparison, aside from structural adjustments and editorial changes, the main technical changes are as follows.

- a) The applicable boundaries of the scope have been changed (see Chapter 1, Chapter 1 of the 2008 edition);
- b) The requirements for instruments and materials have been changed (see 5.2 and 5.6, 2008 editions of 5.2 and 5.6);
- c) The test conditions were changed (see 7.3, 2008 version 7.3);
- d) The tolerance limits for the environmental humidity requirements have been changed (see 8.1, 2008 edition of 8.1);
- e) The accuracy of the measured specimens has been changed (see 8.5, 2008 edition of 8.5);
- f) A blank sample was added (see 9.1);
- g) Added corrections for static air and surface resistance, and for the sample encapsulation edges (see 9.3.2);
- h) The calculation of the water vapor diffusion resistance index has been modified (see 9.5, 2008 edition of 9.5);
- i) The content of the test report has been added (see Chapter 11).

This document is equivalent to ISO 1663:2023 "Rigid foamed plastics - Determination of

water vapor permeability".

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

---Note added in version 5.8.2.

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 National Light Industry Council.

This document is under the jurisdiction of the National Technical Committee on Standardization of Plastic Products (SAC/TC48).

1 Scope

This document describes the water vapor transmission rate, water vapor transmission coefficient, and water vapor diffusion resistance of rigid foam plastics.

Methods for determining numbers.

This document applies to rigid foam plastics with a thickness of 10mm or more. It can be a self-skinning foam material or a foam material with different adhesion...

The surface material is made of foam material.

This document specifies three different temperature and humidity conditions.

- a) At 38°C, the relative humidity gradient on both sides of the sample is 0%~88%;
- b) At 23°C, the relative humidity gradient on both sides of the sample is 0%~85%;
- c) At 23°C, the relative humidity gradient on both sides of the sample is 0%~50%.

The results obtained through this method are used for product design, production control, and product specifications.

This method is applicable to materials with water vapor permeability ranging from 3 $\mu\text{g}/(\text{m}^2\cdot\text{s})$ to 1400 $\mu\text{g}/(\text{m}^2\cdot\text{s})$.

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 2918-2018 Standard environment for conditioning and testing of plastic specimens (ISO

291:2008, MOD) linear dimensions) Note. GB/T 6342-1996 Determination of linear dimensions of foamed plastics and rubber (ISO 1923:1981, IDT)

3 Terms and Definitions

The following terms and definitions apply to this document.

The mass of water vapor passing through a unit area sample per unit time under specified temperature, humidity and thickness conditions.

Note 1: Expressed in micrograms per square meter per second [$\mu\text{g}/(\text{m}^2\cdot\text{s})$].

Note 2: The measured water vapor transmission rate is specific to the sample at this thickness.

Water vapor transmission rate During the test, the ratio of the amount of water vapor passing through the sample to the vapor pressure difference between the upper and lower surfaces of the sample during the test.

Note 1: The expression is expressed in nanograms per square meter per second in Pascals [$\text{ng}/(\text{m}^2\cdot\text{s}\cdot\text{Pa})$].

Note 2: The measured water vapor transmission rate is specific to the sample at this thickness.