

ICS 91.120.10
CCS Q 25



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

GB/T 17146-2015

Replacing GB/T 17146-1997

**Test methods for water vapour transmission properties of
building materials and products**

建筑材料及其制品水蒸气透过性能试验方法

(English Translation)

Issued on: December 31, 2015

Implemented on: November 1, 2016

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

Table of Contents

Preface
1 Scope
2 Normative reference document
3 Terms and definitions, symbols and quantities of units
4 Principle
5 Equipment and materials
6 Specimen
7 Test procedure

Foreword

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

This standard replaces GB/T 17146-1997 "Test method for water vapor permeability of building materials", and GB/T 17146-1997 phase the main technical changes are as follows.

- extends the scope of the standard (see Chapter 1, Chapter 1 of the 1997 edition);
- the addition of the terms and definitions to which this standard applies (see 3.1);
- the addition of symbols and quantities of units (see 3.2);
- Added wet method of testing and removed the water method (see Chapter 4, Chapter 4 of the 1997 edition);
- modified the requirements of the test cup (see 5.1, 1997, 5.1);
- increased requirements for masking and thickness testers (see 5.2 and 5.3);
- modified requirements for sealing materials, desiccants and saturated solutions (see 6.1, 5.7 and 5.18, 6.1 and 6.2 of 1997);
- modified the size and number of specimens (see 6.2 and 6.3, 1997, 7.2, 7.3, 7.4 and 7.5);
- Increased specimen state adjustment (see 6.4);
- modified test conditions (see Appendix 1, 1997, Appendix C);
- Increased moisture permeability, wet resistance factor, water vapor equivalent air layer thickness calculation (see 8.4, 8.6 and 8.7);
- increases the accuracy of the measurement method (see Chapter 9);

- Annex A, Appendix B, Appendix C, Appendix D and Appendix E (Appendix A, Appendix B, Appendix C, Appendix D) and Appendix E);
- Added normative Appendix A "Test methods for self-supporting materials", normative Appendix B "Tests applicable to loose materials Method ", normative Appendix C" Test methods for sheet materials such as films and aluminum foils ", normative Appendix D" Applicable to colloidal Materials and sealant materials test method ", normative Appendix E" applicable to coatings, varnishes and other materials, test methods ", normative Appendix G "Correction of air layer resistance", informative Appendix H "Weighing of the instrument to meet the accuracy required for the test Repeatability of the instrument, and the size of the test piece ", the data attached to the K" This standard and ISO 12572.:2001 compared to the structural changes "(see Appendix A, Appendix B, Appendix C, Appendix D, Appendix E, Appendix G, Appendix H, Appendix K);
- Added normative Appendix F "Amendments to Factors affecting the edge of the package" (see Appendix F, Appendix D of the 1997 edition);
- Added information on Appendix I, "Unit conversion of water vapor transmission energy" (see Appendix I, Appendix E of the 1997 edition);
- Added information on Appendix J "Saturated vapor pressure at different temperatures" (see Appendix J, Appendix B of the 1997 edition).

This standard uses the re-drafting method to modify ISO 12572.:2001 "Building materials and their products Damp heat performance Water vapor permeability of the determination ".

This standard has a greater structural adjustment compared to ISO 12572.:2001. Appendix K lists this standard with ISO 12572.:2001 Chapter number comparison list.

The technical differences between this standard and ISO 12572.:2001 are as follows.

--- on the normative reference documents, the standard has done a technical differences in the adjustment to meet China's technical conditions, adjust the situation is reflected in Chapter 2, "normative reference documents", the specific adjustments are as follows.

- Added reference to GB/T 16777-2008 (see Appendix D.2);
- Added references to GB/T 20312 (see 5.8, 9.5);
- Added reference to GB/T 20313 (see 6.4);
- Added references to JG/T 309-2011 (see Appendix E.2).
- The meaning of the symbol subscript is removed in Chapter 3, "Terms and Definitions, Symbols and Units of Measure". Because the standard in the standard Has been explained at the time of reference;
- in 8.3 "moisture permeability" in the modified formula (3), the revision of this standard reference GB/T 17146-1997, easy to calculate the specimen through Wetness - In 8.3

"Moisture Permeability", the "Calculation formula for calculating the saturated vapor pressure of water at different temperatures" is removed.

The calculation of complex, water at different temperatures under the conditions of saturated vapor pressure can look up table;

- In Appendix B, "Test methods for loose materials," two additional test steps have been added, due to the different packages Method, the test steps are different, so the contents of the increase after the test method more operational;
- In Appendix D, "Test methods for glued materials and sealant materials", the maintenance conditions for the preparation of the test pieces are increased, the test procedure of the packaging method, due to the different types of test pieces of the maintenance conditions are different, packaging methods of the test There is a difference, so the contents of the increase after the test method more operational;
- In Appendix E "Test methods for materials such as paints, varnishes and other materials", the test steps of the two packages are added.

Of the packaging method, the test steps are different, so the contents of the increase after the test method more operational.

This standard has made the following editorial changes.

- Added information on Appendix J "Saturated vapor pressure at different temperatures" to facilitate calculation of the moisture permeability of the specimen;
- Added information on Appendix K "This is a change in structure compared to ISO 12572.:2001", providing a structural change A list of controls;
- The references to ISO 12572.:2001 were deleted.

This standard is proposed by the China Building Materials Federation.

This standard is nationalized by the National Standardization Technical Committee for Thermal Insulation (SAC/TC191).

The drafting of this standard. Shanghai Institute of Building Science (Group) Co., Ltd., Zhejiang Zhen Shen Insulation Technology Co., Ltd., Guangzhou Baiyun Industrial Co., Ltd., Oriental Yuhong Waterproof Engineering Co., Ltd., Shanghai Cao Yang Building Adhesive Factory, Shanghai Jianke Inspection Co., Ltd., Shanghai Tunnel Waterproof material Co., Ltd., Shanghai new building materials Yanmian Limited.

1 Scope

This standard specifies the terms and definitions of the water vapor transmission performance test methods for building materials and their products, the units and principles of symbols and quantities, Equipment and materials, test pieces, test procedures,

calculation and expression of results, accuracy of measurement methods and test reports.

This standard applies to moisture-absorbing and non-hygroscopic building materials and their products, including natural skin or finishes of materials and products. This standard
There are different test methods for different materials and their products.

This standard does not apply to the determination of water vapor equivalent air layer thickness of less than 0.1m of building materials and their products.

Note: When the building materials and products of water vapor equivalent air layer thickness greater than 1500m, can be considered impermeable.

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 Pieces. For undated references, the latest edition (including all modifications) applies to this document.

Test methods for waterproofing paints GB/T 16777-2008 GB/T 20312-2006 Damp heat performance of building materials and articles. Determination of hygroscopic properties (GB/T 20312-2006, ISO 12571.:2000, IDT) GB/T 20313 Damp heat performance of building materials and products. Determination of moisture content Drying method (GB/T 20313-2006, ISO 12570.:2000, IDT) Determination and classification of water vapor transmission rate of JG/T 309-2011 exterior wall paint ISO 9346 adiabatic - mass transfer - physical quantities and definitions

3.1 Terms and definitions

ISO 9346 and the following terms and definitions apply to this document.

3.1.1

Wet density density of water vapour flow rate the mass of water vapor per unit area passing through the specimen per unit time.

3.1.2

Homogeneous material Water vapor permeability is not related to the material's internal position.

3.1.3

Moisture permeability water vapour permeance the wet flow density is divided by the difference in water vapor pressure across the specimen.