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GB/T 8484-2020

Test method for thermal insulating performance of building exterior doors and windows

建筑外门窗保温性能检测方法

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 8484-2008 "Classification and Testing Method for Thermal Insulation Performance of Exterior Doors and Windows of Buildings", and is consistent with GB/T 8484-2008 The main technical changes are as follows:

--- Added the term "door and window insulation performance" (see 3.1);

--- Deleted the terms "total hemispherical emissivity" and "glass door" (see

3.6 in the.2008 edition);

---Deleted the insulation performance classification (see Chapter 4 of the.2008 edition);

---Modified the detection principle, the calculation of the heat transfer coefficient K value takes into account the heat loss of the test piece and the edge of the filling plate (see Chapter 4,

5.1 in the.2008 edition);

---Modified the detection device, and added a deflector for the hot box (see Chapter 5,

5.2 of the.2008 edition);

---Modified the data processing, and added the edge line heat transfer in the calculation formula (see 7.4,

5.10 of the.2008 edition);

---Added the normative appendix "The value of edge line heat transfer coefficient" (see appendix C);

---The anti-condensation factor test method is adjusted to an informative appendix [see Appendix D, 5.1.2, 5.7.7, 5.8.2, 5.9.2,.2008 edition 5.10.2, Chapter 6 e)2)]. This standard was proposed by the Ministry of Housing and Urban-Rural Development of the People's Republic of China. This standard is under the jurisdiction of the National Standardization Technical Committee for Building Curtain Walls, Doors and Windows (SAC/TC448). Drafting organizations of this standard. China Academy of Building Research Co., Ltd., Guangdong Academy of Building Research Group Co., Ltd., Xinjiang Building Research Institute (Limited Liability Company), Zhejiang Building Science Design and Research Institute Co., Ltd., South China University of Technology, Guangdong Jianlang Hardware Products Co., Ltd., Hebei Aorun Shunda Window Industry Co., Ltd., Guangdong Jianmei Aluminum Profile Factory (Group) Co., Ltd., Zhuhai Industrial Energy Conservation Division Technology Co., Ltd., Shandong Zhiying Door and Window System Co., Ltd., Beijing Gangyuan Curtain Wall Co., Ltd., Henan Longwang Tempered Vacuum Glass Co., Ltd., He North China Glass New Materials Co., Ltd., Liaoning Yuhong Doors and Windows Co., Ltd., Beijing Aobotai Technology Co., Ltd., Suzhou Winspar New Building Materials Co., Ltd. Company, Jinzhu Taiyang Decoration Co., Ltd., Shantou Bomaki Material Co., Ltd., Shenyang Ziwei Electromechanical Equipment Co., Ltd., Jiangsu Saidi Music Festival Energy Technology Co., Ltd., Shandong Academy of Building Research Co., Ltd., Shanghai Jianke Inspection Co., Ltd., Xinjiang University, Xi'an Gaoke Building Materials Division Technology Co., Ltd., Guangdong Weiye Aluminum Factory Group Co., Ltd., ASSA ABLOY Guoqiang (Shandong) Hardware Technology Co., Ltd., Beijing Jiayu Door and Window Curtain Wall Company limited by shares. The main drafters of this standard. Wang Hongtao, Wan Chenglong, Liu Yueli, Liu Huitao, Mai Yuebang, Chen Xiangdong, Yan Xin, Meng Qinglin, Han Kun, Jiao Changlong, Yu Zhilong, Luo Duo, Meng Fei, Leng Yanping, Li Hongyan, Yao Yongkai, Chang Wensheng, Zhang Zhemin, Zhong Tiezhu, Wang Peng, Jia Bo, Zhang Xu, Xiao Min, Pan Zhen, Yang Huaqiu, Shan Bo, Zhang Suli, Liu Huihua, Wang Junyang, Wang Zhaojun, Yuan Tao, Li Di, Yue Peng, Wang Wanjiang, Guo Peng, Ren Fengying, Sun Jichao, Zhang Guofeng. The previous versions of the standard replaced by this standard are as follows:

---GB/T 8484-1987, GB/T 8484-2002, GB/T 8484-2008;

1 Scope

China's national test method for the thermal insulation performance of external doors and windows. The number this test produces - the overall heat transfer coefficient of the complete window - is the single figure that determines whether a window may be sold for a given climate zone in China, and it is not calculable with confidence from the components.

A window's heat loss is not the sum of its glass and its frame: the edge of the glazing unit, where the spacer bridges the two panes, conducts far more than the centre, and the frame's thermal break performs differently in the assembly than in isolation. So the whole window is tested, in a guarded hot box with a warm chamber on one side and a cold one on the other, measuring the power needed to hold the difference. The standard specifies the test principles, apparatus, specimens and installation requirements, the test procedure and the report, and applies to the thermal insulation testing of exterior doors and windows installed vertically.

This standard specifies the testing principles, testing devices, test pieces and installation requirements, testing and testing reports for the thermal insulation performance of exterior doors and windows of buildings. This standard applies to the thermal insulation performance testing of exterior doors and windows in vertical buildings.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 4132 Thermal insulation materials and related terms

GB/T 5823 Terminology for building doors and windows

GB/T 10294 Determination of steady-state thermal resistance and related characteristics of thermal insulation materials. Protective hot plate method

GB/T 13475 Determination of adiabatic steady-state heat transfer properties, calibration and protective hot box method

3 Terms and definitions

The following terms and definitions defined in GB/T 4132 and GB/T 5823 apply to this document.

3.1 Insulation performance of doors and windows The ability of building exterior doors and windows to prevent heat transfer from indoor to outdoor is characterized by heat transfer coefficient.

3.2 Heat transfer coefficient of doors and windows Under steady-state heat transfer conditions, when the air temperature difference between the two sides of the door and window is 1K, the heat transfer per unit area within a unit time.

Note. Rewrite GB/T 4132-2015, definition 2.8.15.

3.3 Thermal conductivity Under steady-state heat transfer conditions, the ratio of the heat transfer per unit area of a filled plate with a certain thickness to the temperature difference

between the two surfaces of the plate.

3.4 Heat flow coefficient Under steady-state heat transfer conditions, calibrate the heat transfer when the temperature difference between the two surfaces of the box wall or the test frame in the hot box is 1K.

4 Detection principle

Based on the principle of steady-state heat transfer, the calibrated hot box method is used to detect the heat transfer coefficient of exterior doors and windows of buildings. One side of the specimen is a hot box, which simulates the winter heating of the building. Seasonal indoor air temperature conditions; the other side is a cold box, which simulates the outdoor air temperature and air velocity in winter. After sealing the gap of the test piece, the two test pieces Under the conditions of maintaining stable air temperature, air velocity and heat radiation on each side, measure the heat generation per unit time of the heating device in the hot box to reduce To go through the heat loss of the hot box wall, the test piece frame, the filling plate, the test piece and the edge of the filling plate, divide by the product of the area of the test piece and the air temperature difference on both sides, namely The heat transfer coefficient K value of the test piece can be obtained. In the plane of 150mm~300mm, it should be larger than the size of the tested piece.

5.3.4 At least 9 air temperature measuring points should be evenly arranged between the deflector and the test piece in the cold box, and the heat radiation should be shielded.

5.3.5 In the cold box, a deflector and a fan should be used for forced convection to form a uniform and stable airflow from top to bottom along the surface of the test piece; The distance from the cold side surface meets the requirements of GB/T 13475.The average wind speed in the plane should be 3.0m/s±0.2m/s.

5.4 Specimen frame

5.4.1 The outer edge size of the test piece frame shall not be less than the inner edge size of the opening of the hot box.

5.4.2 The thermal resistance of the test frame shall not be less than 7.0m2·K/W, and the surface shall be made of non-hygroscopic and corrosion-resistant materials.

5.4.3 At least 6 temperature measuring points should be evenly arranged on each surface of the hot and cold sides of the test frame.

5.5 Filler plate

5.5.1 The filler plate should be made of homogeneous materials with a thermal conductivity of less than 0.040W/(m·K), and the thermal conductivity should be measured in accordance with GB/T 10294.