GB

ICS 13.220.50
Q 10

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB/T 8625-2005

Replacing GB/T 8625-1988

Test Method of Difficult-Flammability for Building Materials

建筑材料难燃性试验方法

Issued on: July 15, 2005 **Implemented on: January 01, 2006**

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

Standardization Administration of the People's Republic of China.

Table of Contents

Foreword

This Standard is not equivalent to DIN 4102-1:1998 "Fire Behaviour of Building Materials and Building Components - Part 1: Building Materials; Concepts, Requirements and Tests", DIN 4102-15:1990 "Fire Behaviour of Building Materials and Elements Brandschacht" and DIN 4102-16:1998 "Fire Behaviour of Building Materials and Building Components - Part 16: 'Brandschacht' Tests".

This Standard replaces GB/T 8625-1988 "Test Method of Difficult-Flammability for Building Materials".

Compared with GB/T 8625-1988, this Standard has the following main changes:

- For test devices, ADD the test device for furnace pressure and the calibration and inspection for vertical furnace, and ADJUST the controlling conditions of furnace wall temperature according to the requirements of DIN 4102-15:1990;

- In the test, the calculation and test procedures for fuel gas and air flow were conducted by microcomputer;

- The fuel gas adopted the methane gas with purity of 95% in order to adapt to conditions in China.

This Standard was proposed by the Ministry of Public Security of the People's Republic of China.

This Standard is under the jurisdiction of the Seventh Technical Subcommittee of National Technical Committee on Fire Protection of Standardization Administration of China.

Drafting organization of this Standard: Sichuan Fire Research Institute of Ministry of Public Security.

Main drafters of this Standard: Ding Min and Chen Genbao.

The previous edition of the standard replaced by this Standard is:

- G8/T 8625-1988.

Test Method of Difficult-Flammability for Building Materials

1 Scope

This Standard specifies the test apparatus, test-piece preparation, test operation, judgment of the residue length after test-piece combustion, judgment criteria and test report of difficult-flammability test for building materials.

This Standard is applicable to the determination of difficult-flammability for building materials.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB 8624-1997 Classification for Burning Behavior of Building Materials

GB/T 8626-1988 Test Method of Flammability for Building Materials

GB/T 8627-1999 Test Method for Density of Smoke from the Burning or Decomposition of Building Materials

3 Test Apparatus

The test apparatus of this method mainly include the combustion vertical furnace and test equipment.

3.1 Combustion vertical chamber

The combustion vertical furnace mainly comprises the combustion chamber, burner, test-piece support, air steady-state flow layer, gas flue and other parts. The overall dimension is 1700mm×1020mm×3930mm (see Figure 1 and Figure 2).

3.1.1 Combustion chamber

thermocouple, temperature recorder, temperature display instrument and furnace pressure test instruments.

3.2.1 Flowmeter

For the determination of methane gas and compressed air flow, the flowmeter shall be selected with precision of Class 2.5 and measuring range of (0.25~2.5) m^3/h.

3.2.2 Thermocouple

For the determination of flue gas temperature and furnace wall temperature, the nickel-chromium-alloy armoured thermocouple with precision of Class II, wire diameter of 0.5mm and external diameter no larger than 3mm shall be adopted. The installation positions are detailed in Figure 2.

3.2.3 Temperature recorder and display instrument

For temperature measurement, it may adopt microcomputer for indication and record and the measuring accuracy is 1°C; it may also adopt continuous recording electronic potential difference gauge or other suitable continuous recording instrument, which is of Class 0.5 precision and matched with the thermocouple.

3.3 Furnace pressure

Install a T-shaped furnace pressure test pipe at the gas flue position that is 2700mm away from the furnace bottom and 100mm away from the gas flue wall. The inner diameter of the T-shaped pipe is 10mm and the head width is 100mm. It is connected with the microcomputer or other recorders through one set of differential pressure transmitter of Class 0.5 precision. In this way, it is monitored continuously.

3.4 Calibration tests on components in combustion vertical furnace

3.4.1 Uniformity test on thermal load

In order to ensure that the test-piece is able to bear the uniformity of the thermal load in the test, the following steps shall be followed: place 4 stainless steel plates of 1000mm×190mm×3mm on the test-piece support and set 1 nickel-chromium-alloy thermocouple soundly on the center line of the place where is 200mm away from each bottom of the stainless steel plate respectively. The test shall be carried out according to the procedure specified in Chapter 5. After the test is conducted for 10min, the temperature mean measured from above-mentioned four thermocouples on the stainless steel plates shall be 540°C±15°C; otherwise, the equipment shall be debugged. This test must be carried out once every three months.

interval is 24h and the variation rate of the mass measured in two times shall not be larger than 0.1%. If the equilibrium state can not be determined through weighing, then it shall be stored for 28d in above-mentioned temperature and humidity conditions before the test.

5 Coupon and sample preparation

5.1 The test shall be carried out in the combustion vertical furnace as shown in Figure 1 .

5.2 FIX 4 samples, which meets those specified in 4.2 after state regulation, to the test-piece support vertically to constitute a vertical square flue. The relative distance of samples shall be (250±2) mm.

5.3 The furnace pressure shall be kept at (-15±10) Pa.

5.4 Before putting the test-pieces into the combustion chamber, the temperature of the inner furnace wall of the vertical furnace shall be preheated to 50°C.

5.5 The test-piece shall be put at the specified position in the combustion chamber and the furnace door shall be closed.

5.6 Where the furnace wall temperature falls to (40±5)°C, ignite the burner, meanwhile, press the timer button and start the test. In the test, the air flow in the vertical furnace shall be with flow of (10±1) m^3/min and at temperature of (23±2)°C. The fuel gas used in the burner shall be the gas mixture of methane and air; the methane flow shall be (35±0.5) L/min and its purity shall be larger than 95%; the air flow shall be (17.5±0.2) L/min. The above two gas flow shall be calculated according to the normal state.

The calculation formula for the gas in normal state shall be:

$$\frac{P_0 V_0}{T_0} = \frac{P_t V_t}{T_t}$$

Where:

P_0 - 101325 Pa;

V_0 - 35L/min for methane gas and 17.5L/min for air;

T_0 - 273°C;

P_t - the ambient atmospheric pressure plus the inlet pressure for the fuel gas to enter in the flowmeter, expressed in Pascal (Pa);

required in GB 8624-1997 may be defined as building materials of difficult-flammability.

8 Test Report

The test report shall include the following contents:

a) Test criteria;

b) Building material name, model and specification, production organization name and address as well as production date;

c) For wood and fabric used fire retardant, the test-piece appearance after brushing fire retardant shall be explained and the dry and wet brushing quantity (g/kg or g/m^2) of the used fire retard shall be noted;

d) General description of samples, including the trademark (or marking) and the structure form of the sample;

e) Minimum residue length and average residue length of the test-piece after burning;

f) Maximum value of average flue gas temperature of test-piece;

g) Phenomena observation: including the sample burning condition, the sample smoldering and the sustained burning of the dripped object on the screen mesh;

h) Test date.

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------