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

GB/T 29416-2026

Replacing GB/T 29416-2012

**Test method for the fire performance of external wall insulation
systems applied to building facades**

建筑外墙外保温系统的防火性能试验方法

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Table of Contents

- 1 Scope
- 4 Test Apparatus
- 4.6 Measurement System
- 4.6.2 Thermocouples
- 4.6.2.3 Internal thermocouples on horizontal alignment lines 2 and
- 5 Samples
- 5.2 Sample Dimensions and Installation
- 7 Test Procedure
- 7.4 Experimental Observation and Recording

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 29416-2012 "Test Methods for Fire Resistance Performance of External Thermal Insulation Systems for Buildings", and is consistent with GB/T 29416- Compared to.2012, aside from structural adjustments and editorial changes, the main technical changes are as follows:

- a) The term "horizontal alignment 3" and its definition have been added (see 3.4);
- b) The term "collapsed area" and its definition have been added (see 3.8);
- c) Increased requirements for the height of the indoor space for the construction of the test facility (see 4.1);
- d) The heights of the main and secondary walls in the test setup were changed (see 4.2,.2012 edition of 4.2);
- e) The distance between the combustion chamber opening and the sub-wall has been changed (see 4.3,.2012 edition of 4.3);
- f) The requirements for the combustion heat source have been changed (see 4.4 and Annex A, 4.4, Annex A and Annex B of the.2012 edition);
- g) The installation position of the thermocouple at horizontal level line 3 and the requirements for recording the thermocouple temperature at horizontal level line 3 have

been added (see 4.6.2). 7.4.2);

h) The time interval for recording data in the data acquisition system has been changed (see 4.6.3, 2012 version 4.6.3);

i) The measurement accuracy of the wind speed measuring equipment has been changed (see 4.6.5, 4.6.6 in the 2012 version);

j) The requirement for the total thickness of the specimen has been removed (see

1 Scope

GB/T 29416-2026 is the Chinese national standard covering the large-scale facade fire test - a full external wall insulation system built on a test rig with a fire in the opening below it, which is the only way to know whether a system will carry a fire up the outside of a building. It replaces GB/T 29416-2012 and has been in force since 1 October 2026. It was issued on 31 March 2026 and takes effect on 1 October 2026, replacing GB/T 29416-2012. The document is under the responsibility of the National Fire and Rescue Administration. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes the test method for the fire resistance performance of building exterior wall insulation systems, and provides the test apparatus, specimens, conditioning procedures, and test process. The test includes an introduction, post-test inspection, test result determination, and test report. This document applies to fire performance testing of non-load-bearing external insulation systems installed on building exterior walls. This document does not apply to fire performance testing of breathable glass curtain wall external insulation systems installed on building exteriors.

4 Test Apparatus

4.1 General Requirements A fire performance testing device for external thermal insulation systems should generally consist of a base wall, a combustion chamber, a heat source, a collapse zone, and a measurement system. composition. The testing apparatus should be constructed in a building with sufficient space, the size of which should be adequate for the construction of the testing apparatus and the installation of the test specimens. Due to the needs of construction, testing operations, and testing safety requirements, the clearance height should not be less than 18m, and it should also be able to ensure the safe use of heat sources and samples during the test. Free combustion (experimental behavior was controlled by fuel, not ventilation). The testing apparatus should be durable and should not be deformed or damaged during the test, thus affecting the test results.

4.2 Base Wall The base wall of the experimental device consists of a main wall and a secondary wall, using autoclaved aerated concrete blocks with a dry density of not less than 600 kg/m^3 . Straight masonry construction. The height of both the main wall and secondary walls shall not be less than 9700mm, and the thickness shall not be less than 300mm. The width of the main wall shall not be less than 2600mm, and the secondary wall... The wall width shall not be less than 1500mm, as shown in Figures 1a) and 1b). The main wall and the secondary wall form a 90° angle, as shown in Figure 1c).

4.3 Combustion Chamber The combustion chamber of the test apparatus is located at the bottom of the main wall, with its outer edge flush with the main wall surface. The opening size should be. height $(2000 \pm 100) \text{ mm}$. Width $(2000 \pm 100) \text{ mm}$. Internal dimensions. Height $(2300 \pm 50) \text{ mm}$, Width $(2000 \pm 50) \text{ mm}$, Depth $(1000 \pm 50) \text{ mm}$. Combustion chamber opening. The distance from the opening to the outer surface of the external insulation system sample of the secondary wall should be $(160 \sim 360) \text{ mm}$. The upper part of the opening should be protected with fire-resistant material.

4.4 Heat Source The heat source used in the test should be a wood stack heat source that conforms to the specifications in Appendix A.

4.5 Collapse Area The collapsed area of the test apparatus should be marked on the ground of the test apparatus (see Figure 2). The unit is millimeters.

4.6 Measurement System

4.6.1 Overview The measurement system consists of thermocouples, a data acquisition system, a camera, wind speed measuring equipment, and a timing device.

4.6.2 Thermocouples

4.6.2.1 General Provisions The thermocouple should be a type K armored thermocouple with an outer cable diameter D of $(1.5 \pm 0.025) \text{ mm}$, conforming to GB/T 18404, for temperature measurement. The temperature range is $(0 \sim 1000)^\circ\text{C}$, and the tolerance level is Class II. Thermocouples installed on the test apparatus are divided into external thermocouples and internal thermocouples. External thermocouples should be installed on horizontal alignment lines 1, 2, and

3. The measuring points of the external thermocouples should extend $(50 \pm 5) \text{ mm}$ beyond the outer surface of the external insulation system. The allowable deviation for the temperature measurement point location is $\pm 10 \text{ mm}$. Internal thermocouples should be installed on horizontal alignment lines 2 and

3. The temperature measuring points of the internal thermocouples should be arranged at the midpoint of the thickness of each structural layer of the insulation layer. At the core. When the insulation layer thickness is less than 10mm, thermocouples are not required. If the system contains cavities, the temperature measuring points of the internal

thermocouples should be... They are positioned at the center of each cavity thickness. The allowable deviation for the temperature measurement point position is $\pm 10\text{mm}$.

4.6.2.2 External thermocouples on horizontal level line 1, horizontal level line 2, and horizontal level line

3 The installation method of the external thermocouples on horizontal level line 1, horizontal level line 2, and horizontal level line 3 is as follows:

---On the front of the main wall, thermocouples are installed on the vertical centerline of the combustion chamber opening and 500mm and 1000mm to each side of the centerline. Five temperature measuring points are set on each of the horizontal alignment lines 1, 2, and 3 (see Figure 1a);

---On the front of the secondary wall, thermocouples are installed at positions 150mm, 600mm, and 1050mm from the outer surface of the main wall's external insulation system. Three temperature measurement points are set on each of the horizontal alignment lines 1, 2, and 3 (see Figure 1b).

4.6.2.3 Internal thermocouples on horizontal alignment lines 2 and

3 The installation method of the internal thermocouples on horizontal alignment lines 2 and 3 is as follows:

---Within the main wall external insulation system, thermocouples should be installed on the vertical centerline of the combustion chamber opening and 500mm on each side of the centerline. At a position of 1000mm, five temperature measuring points are set on each of the horizontal alignment lines 2 and 3 (see Figure 1a).

---Inside the secondary wall external insulation system, thermocouples are installed at distances of 150mm, 600mm, and 1050mm from the outer surface of the main wall external insulation system. At the position, three temperature measuring points are set on each of the horizontal alignment lines 2 and 3 [see Figure 1b].

4.6.3 Data Acquisition System The data acquisition system should record data at intervals no greater than 3 seconds.

4.6.4 Camera Two cameras with a continuous recording time of no less than 90 minutes were used to continuously record the entire experiment. The camera angles should cover the entire experiment. The overall height of the two walls of the test device should be determined. HD mode with a resolution of at least 1920x1080 is recommended for video recording.

4.6.5 Wind speed measurement equipment Wind speed can be measured using equipment such as an anemometers, with a measurement accuracy of not less than $\pm$

0.1 m/s.