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

GB/T 18250-2015

Replacing GB/T 18250-2000

**Grading and test method for the storey deformation
performance of curtain walls**

建筑幕墙层间变形性能分级及检测方法

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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 18250-2000 Test method for performance in plane deformation of curtain walls. Compared with GB/T 18250-2000, the main technical modifications in this Standard are as follows: - provided the definition of deformation performance of curtain wall (see 3.2); - added the graduations for performance of deformation between stories of curtain wall (see Clause 4); - added the outer plane (Y axis dimension) and vertical direction (Z axis dimension) deformation performance and test method (see 10.3, 10.4); - added the test method for displacement performance between stories of curtain wall (see Annex A). This Standard was proposed by Ministry of Housing and Urban-Rural Development of the People's Republic of China. This Standard shall be under the jurisdiction of National Technical Committee on Building Facades Windows and Doors of Standardization Administration of China (SAC/TC 448). The drafting organizations of this Standard. China Academy of Building Research, China Construction Metal Structure Association, Guangdong Provincial Institute of Building Science, Shenyang Yuanda Aluminum Engineering Co., Ltd., Guangzhou Aluminum Decoration Engineering Co., Ltd., Beijing Industry University, Shanghai Institute of Building Science (Group) Co., Ltd., Shandong Provincial Institute of Building Science, Guangdong Kennedy Lang Hardware Products Co., Ltd., Guangzhou City Building Science Research Institute Co., Ltd., Shanghai

Construction Supervision Co., Ltd., Zhongshan Shengxing Co., Ltd., Shenzhen Shenye Tailan Construction Engineering Co., Ltd., Henan Construction Science Research Institute Co., Ltd., Hebei Austrian Run Shunda Window Industry Co., Ltd., Tianjin Jin Bell Construction Engineering Testing Technology Co., Ltd., Zhejiang New Century Engineering Inspection Co., Ltd., Tianjin Jianke Building Energy-saving Environmental Testing Co., Ltd., Ningbo and State Testing Research Limited, Hubei Product Quality Supervision and Inspection Research Institute, China Building Materials Inspection and Certification Center, Jangho Curtain Wall Co., Ltd., Shanghai Timalco Curtain Wall Engineering Technology Co., LTD. Graduations and test method for performance of deformation between stories of curtain wall

1 Scope

China's national grading and test method for how much relative movement between floors a curtain wall can take without failing. It specifies the terms and definitions, the grades, the general provisions, the test principle, the test equipment, the loading method, the specimen and mounting requirements, the test procedure, the results and their assessment, and the test report, and it applies to both grading tests and project-specific tests. A curtain wall is hung on a building that moves. Under wind and above all under earthquake the frame drifts, and each storey displaces relative to the one below it. The wall spans between those storeys and must accommodate the movement in-plane, out-of-plane and vertically, because the alternative is that the wall restrains the frame - which it is not designed to do - or that the glass breaks and falls into the street. Falling glass after an earthquake is a life-safety hazard in its own right, and it also blocks the streets that emergency vehicles need. The performance is therefore graded, and the grade is what a designer specifies against the drift the structural engineer has calculated. The test applies the deformation to a full-size specimen rather than calculating it: the specimen is mounted as it will be built, and the loading equipment imposes controlled in-plane and out-of-plane displacement between the storey supports, statically or cyclically, while the specimen is observed for glass damage, sealant failure, gasket dislodgement, panel displacement and loss of watertightness. The mounting requirements matter as much as the loading, since a specimen fixed more rigidly than the real wall gives an answer that flatters the design. Issued on 9 October 2015 and in force since 1 September 2016, it replaces GB/T 18250-2000.

This Standard specifies the terms and definitions, graduations, general provisions, inspection principle, testing equipment, loading method, specimen and mounting requirements, testing steps, test results and assessment and testing report for performance of deformation between stories of curtain wall. This Standard is applicable to grading testing and engineering testing for performance of deformation between stories of curtain wall.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 15227, Test method of air permeability, water tightness, wind load resistance performance for curtain walls

GB 50011, Code for seismic design of buildings JGJ/T 97, Standard for terminology in earthquake engineering

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB 50011, JGJ/T 97 and the following ones apply.

3.1 deformation between stories relative displacement between two adjacent building stories at horizontal direction (X axis), out plane horizontal direction (Y-axis, perpendicular to X-axis direction) and vertical direction (Z-axis) within the curtain wall plane under the effects of earthquake, wind load, etc.; X axis, Y axis, Z axis directions are shown in Figure 1. parts from damage and dysfunction when the story is repeatedly displaced in the Y-axis dimension

3.6 deformation performance vertical direction of curtain wall curtain wall Z-axis dimension deformation performance the ability that the curtain wall maintains its own and the main connection parts from damage and dysfunction when the story is repeatedly displaced in the Z-axis dimension

3.7 deformation performance combined direction of curtain wall the ability that the curtain wall maintains its own and the main connection parts from damage and dysfunction when the story, in the X-axis, Y-axis, Z-axis dimensions, simultaneously produces two or three dimensions of the repeated displacements

3.8 drift angle between stories the ratio of the inter-story displacement value to the height of the story along with X-axis, Y-axis dimension directions

3.9 vertical displacement between stories the height change between adjacent stories along with Z-axis dimension direction

4.1 Graduation indexes

4.1.1 The deformation performance in plane of curtain wall shall take the drift angle between stories of X-axis dimension direction as graduation index value, in γ_x .

4.1.2 The deformation performance out plane of curtain wall shall take the drift angle

between stories of Y-axis dimension direction as graduation index value, in γ .

4.1.3 The deformation performance vertical direction of curtain wall shall take the vertical displacement between stories of Z-axis dimension direction as graduation index value, in Δz .

4.2 Graduations for performance of deformation between stories of curtain wall The graduations for performance of deformation between stories of curtain

9.1.6 The point support curtain wall specimen shall have at least four glass plates and a complete cross seam same with the actual construction. The support structure shall have at least one typical bearing unit. The point support curtain wall which uses glass rib support shall comply with the provisions of full glass curtain wall simultaneously.

9.2 Mounting requirements The mounting of the specimen shall meet the design requirements. No special attachments or other measures shall be taken. The assembly, mounting method and force of specimen shall be in accordance with the actual conditions. The specimen shall be mounted on a fixed beam or movable beam according to the actual connection method. The fixed beam or movable beam shall be mounted on the mounting bracket.

10.1 Preparation before testing

10.1.1 The specimen shall be inspected after mounting. After the inspection is completed, the openable part of the specimen shall be switched off five times then fastened up.

10.1.2 Inspect that the pendulum or movable beam is not constrained in the range along the displacement direction. At the same time, there shall be a corresponding limit measure outside the range so as to ensure that the pendulum or movable beam does not produce displacement in any other direction.

10.1.3 Mount the test static loader according to the selected loading method. The arrangement of the loading device should be reasonable so as to ensure the effectiveness of the displacement produced.